ABSTRACTS CUM SOUVENIR

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INTERNATIONAL e-CONFERENCE

On

Bio-Electronics & Informatics in the Present Scenario

June 26-27, 2020

Organized by

Department of Electronics & Communication Engineering

Shobhit Institute of Engineering & Technology

(Deemed to-be University)

Campus: NH-58, Modipuram, Meerut-250110, U.P., INDIA.

Editorial Board:

Opinion in this publication are those of authors and not necessarily of the Organizers

Abstracts cum Souvenir of ECBI-2020, June 26-27, 2020, SU Meerut

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INTRODUCTION

Covid-19 pandemic has brought us to a new situation that demands creative efforts by using available advanced technologies. The global scientific community must continue to play an active role in the development of scientific and technological innovations, not only to successfully fighting Corona Virus emergency, but also to contribute to the academics across the globe. With this view, during this social distancing period, the Department of Electronics & Communication Engg., Shobhit Institute of Engineering & Technology, Deemed to-be University is providing an e-platform to the scientific community for sharing their ideas and research by organizing a two day e-Conference with a theme **"Bio-Electronics & Informatics in the Present Scenario", ECBI-2020.**

This e- conference is an initiative to provide a common platform for researchers working in the field of Bio-Electronics & Informatics to share knowledge and ideas for technological advancements. As we all know that 'Medicine & technology' is gripping in diverse fields and providing excellent outcomes in terms of different parameters. Therefore, it should be considered as the need of today to combine different ideas of researchers working in different domains to develop cost-effective and reliable technology for day-to-day life. ECBI e-Conference will be suitable for renowned researchers, young scientists, engineers from industries and other keen professionals. The scientific event will comprise of key-note talks, e-presentations, e-poster sessions and a session for special research outcomes.

This International e- conference will create an opportunity to bring together researchers from academia, industry, students, environmental activists and organizations to encourage collaborations through research and scientific finding presentations to put forward many ideas towards the development of strategies for conservation and sustainable utilization of bio-resources using classical and advanced molecular approaches.

Four Sessions will be organized in ECBI-2020, two sessions for Speakers and reaming for e-presentations, during which eminent researchers from all over the India & abroad will share their findings.

ECBI-2020

Track of Interest	Specific topics of interest include, but are not limited to:
	1. SoC, VLSI and Embedded systems (IoT)
	2. Fuzzy Technology
	3. Biomedical Engineering, Bioinformatics & Agri-informatics
	4. Nano-Biotechnology, Artificial Intelligence and Machine learning
	5. Automation, Mechatronics and Robotics,
	6. Robotics Education During and After the COVID-19 Crisis
	7. Opinion Mining & Big Data Analysis
	8. Sensing, Monitoring, Control and Intelligent Systems.
	9. Engineering Informatics and Simulation.
	10. Microprocessor & Microcontroller based Research
	11. Micromachining and Nano-machning
	12. Nanomaterials and Nanotechnology
	13. Cybersecurity and cyber Forensic Systems
	14. Model reduction of linear dynamic system
	15. Nuclear Physics,
	16. Speech & Image Processing
	17. Sensors & Transducers, Avionics ,Antennas & Propagation
	18. Renewable Energy Systems, Power Electronics

ECBI-2020 e- Conference Schedule
Day -1 Schedule
26th June 2020
Timing: 10:00 am to 05:30 pm

S.No.	Inaugural Session		
i	Inaugural Session	Timing (IST)	
ii	Saraswati Vandana	(10:00-10:05) am	
iii	Welcome Address by Hon'ble Pro-Vice-Chancellor Major General (Retd.) Dr. Sunil Chandra	(10:05-10:10) am	
iv	Introduction about e-Conference by Mr. Aniket Kumar	(10:10-10:15)am	
v	Address by Hon'ble Vice- Chancellor, Prof.(Dr.) Amar P Garg	(10:15-10:20)am	
vi	Address by Hon'ble Chancellor, Shri. Kunwar Shekhar Vijendra	(10:20-10:30)am	
vii	Launch of Souvenir		(10:30-10:35)am
S.No.	Technical Session -1		
1.	Prof. K. Kannan Former VC, Nagaland University	Challenges in quantitative measurement of Biomolecules and reliability of data	(10:35-10:55)am
2.	Prof. (DR) S.K. Chakarvarti, Advisor Research, Manav Rachna International Institute of Research and Studies (MRIIRS), Faridabad	Upsurge of Nanotechnology in Nanodentistry: An Introduction	(10:55-11:15)am
3.	Prof.Ramphal Sharma, TRIL Fellow (ICTP) Italy, Brain Pool Fellow (Govt. of South Korea), Visiting Professor Hanyang University, Seoul (South Korea), Visiting Scientist (Nanotechnology Institute) Berlin, Germany	2D Nanostructure Materials for Electrochemical Energy Storage	(11:15 -11:35)am
4.	Dr.Anjum Qureshi , SabanciUniversity,Nanotechnology Research and Application Center Istanbul, Turkey	Lab-on-a-chip platform for biosensing Applications	(11:35-11:55)am
5.	Prof.ShabanaUrooj , Associate Professor, Electrical Engineering Department, College of Engg. Princess Nourah Bint AbdulrahmanUniversity,Riyadh KSA	HOW TO GET PUBLISHED IN TOP JOURNALS & HOW TO SELECT THE RIGHT JOURNAL FOR YOUR SCIENTIFIC MANUSCRIPT?	(11:55 am-12:15pm)

6.	Prof. DILKESHWAR PANDEY, Head, CSE Department, KIET, Muradnagar, Ghaziabad, U.P. INDIA	Demystifying Big Data	**(12:15-12:35)pm**
7.	Prof.(Dr.) NandLal Singh, Department of Physics,The M. S. University of Baroda, VADODARA - 390 002, Gujarat, INDIA	Effect of Swift Heavy Ion Induced Modification of Insulating/Conducting Polymers	**(12:35-12:55)pm**
8.	Prof.Bechan Sharma, Department of Biochemistry, Allahabad University	SARS CoV2: Infection, diagnosis and therapeutic challenges	**(01:25-01:45)pm**
9.	Prof.(Dr.) Ranjit Singh, Pro-Vice Chancellor, Shobhit University, Gangoh	The art and Science of Electronically enabled Drug Delivery Devices	**(01:45-02:05)pm**
10.	Prof. Moni Madaswamy Professor Emeritus and Chairman, Centre for Agricultural Informatics and Research Studies Shobhit University, Meerut & Former Director General, National Informatics Centre Government of India, New Delhi	Digitalisation of Agriculture in India: Application of IoT, Robotics and Informatics to establish Farm Extension 4.0*	**(02:05-02:25)pm**
11.	Dr. Pradeep Kumar Srivastava, Former Senior. Principal Scientist (Dy. Director) CSIR-Central Drug Research Institute Lucknow	Bioinspired Engineering: Learning Science from Nature	**(02:25-02:45)pm**
12.	Dr. Arun Balodi, Associate Prof.& Head, Department of Electronics & Communication Engineering, Atria Institute of Technology, Bangalore	Application of Artificial Intelligence in COVID-19	**(02:45-03:05)pm**
Technical Session-2		
13.	**Day -1 e-Presentation**	**A. No. 1 to 30 , P. No. 1 to 15**	(03:05-05:30)pm

Day -2 Schedule
27th June 2020, Timing: 10:00 am to 05:45 pm

S.No.		Technical Session -3	
1.	Prof. Amar P. Garg, Vice Chancellor, Shobhit Institute of Engineering & Technology (Deemed to - be University), NH-58, Modipuram, Meerut -250110.	Role of Bio-informatics	(10:00 – 10:20)am
2.	Dr. B.K. Nayak Associate Director , Head Nuclear Physics Division, Bhabha Atomic Research Centre, Mumbai-400 085, India	A Portrait of Nuclear Physics research from basic science to application	(10:20 – 10:40)am
3.	Dr.Vinod Kumar Chaubey, Professor & Head Electrical & Electronics Engineering Department Birla Institute of Technology & Science, Pilani,India-333031 01596-515280 (O) ;	Bio-electronics engineering and its impact	(10:40 – 11:00)am
4.	Dr.Shweta Joshi Singh, Assistant Professor, University of California	COVID-19, immunity, inflammation, and potential anti-inflammatory treatments	(11:00-11:20)am
5.	Prof. (Dr.) Sapna Katiyar, Head, Electronics and Communication Engineering Department, ABESIT, Ghaziabad.	Bio-inspired Metaheuristic Algorithms and Image Processing	(11:20 – 11:40)am
6.	Prof. D. K. Kaushik Vice-Chancellor, Shobhit University, Gangoh (Saharanpur)	ARTIFICIAL NEURAL NETWORKS (ANN)	(11:40 am–12:00)pm
7.	Dr. S.K. Mukherjee, Head, Department of Physics The M. S. University of Baroda, VADODARA - 390 002, Gujarat, INDIA	Review of nuclear reactions related to advanced reactors and astrophysical applications	(12:00 – 12:20)pm
8.	Dr.Rohit Saluja, Assistant Professor, AIIMS, Hyderabad,	Real Time PCR and it's implication in diagnosis of covid 19	(12:20 – 12:40)pm

9.	Prof.(Dr.) Venktesh Singh, Department of Physics South Bihar University, Gaya	"Neutrino and it's possible application"	(12:40 – 1:00)pm
10.	Prof.(Dr.) Jayanand, Director, Research and Innovation Centre, Noida International University,Greater Noida-203201	Pulsed Electromagnetic Field Therapy: An Alternative Strategy for Osteoporosis Management	(1:00 – 1:20)pm
11.	Dr.Jitendra Virmani, Senior , Technical Officer- Grade - II Indo-Swiss Training Centre (ISTC) (Skill-Based Autonomous Govt Institute Duly Approved By AICTE, New Delhi), CSIR-CSIO, Chandigarh	Deep learning for medical Imagining prospective	(1:20 – 1:40)pm
12.	Dr.Taimoor Khan, Assistant Professor Department of Electronics and Communication Engineering National Institute of Technology Silchar.	Knowledge-Based Neural Network Modeling for Antenna Problems	(1:40 – 2:00)pm
13.	Dr.Swaroop Kumar Pandey, Post-doctoral Fellow, Israel	Pharmacodynamics and drug interaction analysis:a better tool for future drug discovery"	(2:00 – 2:20)pm
14.	Prof.(Dr.) Hrishikesh Dhasmana, Department of Physics Amity Noida, U.P. , India	Surface passivated Silicon Solar cells	(2:20 – 2:40)pm
15.	Dr.Nidhi Tyagi Professor, MIET, Meerut, U.P.	Robotic Process Automation	(2:40 – 3:00)pm
	Technical Session -4		
16.	**Day -2 , e-Presentation**	**A No. 31 to 75, P No. 16 to 30**	(3:00 – 5:00)pm
S.No.	**Valedictory Session**		
1.	Address by **Prof.(Dr.) R.P. Agarwal,** Academic Advisor		(5:00 – 5:05)pm
2.	Address by Hon'ble Pro-Vice-Chancellor, **Major General (Retd.) Dr. Sunil Chandra**		(5:05 – 5:10)pm
3.	Address by Hon'ble Vice-Chancellor , **Prof.(Dr.) Amar P Garg**		(5:10 – 5:15)pm
4.	Brief Report of Conference by **Dr. Maya Datt Joshi**		(5:15 – 5:25)pm
5.	Address by Chancellor **Shri. Kunwar Shekhar Vijendra**		(5:25 – 5:35)pm
6.	Vote of Thanks by **Prof.(Dr.) R. K. Jain**		(5:35 – 5:40)pm
7.	National Anthem		

Shobhit

Institute of Engineering & Technology
Deemed to-be-University

EDUCATION EMPOWERS

SHOBHIT DEEMED UNIVERSITY

ROUTE CHART

SARDAR VALLABH BHAI PATEL AGRICULTURE UNIVERSITY, MODIPURAM,

ROORKEE TO MEERUT

DULHERA VILLAGE

SHOBHIT UNIVERSITY, CAMPUS

DULHERA MARG

APPROX 150 MTRS

CENTRAL POTATO RESEARCH INSTITUTE, MODIPURAM, MEERUT

APPROX 2 KMS.

MEERUT TO ROORKEE

PETROL PUMP

PETROL PUMP

Pallavpuram, Phase-II

Pallavpuram, Phase-I

POLICE Check Post, Modipuram

DELHI TO ROORKEE BYE PASS ROAD

MEERUT TO ROORKEE

Shobhit Kumar
Chairman

MESSAGE

I am glad to know that Department of Electronics and Communication of the University School of Engineering and Technology is going to organize International Conference on Bio-Electronics and Informatics in the Present Scenario. I hope the e-conference goes well according to its tenor and objectives with excellent technical coordination and delivery. With best of the people in the faculty and in organizational capability, this e-Conference shall be of immense good use for the subjects it is dedicated to. I wish the organizers a grand success for the conference.

Shobhit Kumar
20.06.2020

Shobhit University

Shobhit Institute of Engineering & Technology, Meerut
(A NAAC Accredited Deemed to-be University established u/s 3 of UGC Act, 1956)
NH-58, Modipuram, Meerut - 250110, Delhi NCR

Shobhit University, Gangoh, Saharanpur
((Notified by Government of Uttar Pradesh vide UP State Act 03/2012))
Adarsh Institutional Area, Babu Vijendra Marg, Distt. Gangoh, Saharanpur - 247341, UP

University Tower, Pocket-B, Mayur Vihar Phase II, Delhi-110091, India
E.: chairman@shobhituniversity.ac.in | U: www.shobhituniversity.ac.in
T.: +91.11.43205500 | F.: +91.11.43205511

Kunwar Shekhar Vijendra
Chancellor

MESSAGE

I am happy to know that the Department of Electronics and Communication of the University School of Engineering and Technology is out to do an international e-conference once again, especially so, this time, on the issues related to Bio-electronics and Informatics. I think the two-day deliberations on the topical matters will correlate the subjects, especially in the complex situation of the present time, in the very right perspectives of reality and doable course of action that must follow. I understand, the eminence and sincerity of participants will make the conference and the compendium of writeups that will follow, an honorable job well done. We know, the universities and departments create glory for themselves on the anvil of thought-exchange, and this conference is one such of the kind.

Please accept my good wishes for the conduct of the conference, and for the quality papers that it will generate.

Kunwar Shekhar Vijendra
20-06-2020

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Vice-Chancellor's Message

Prof. Amar Prakash Garg
Vice-Chancellor, SIET
(A NAAC Accredited, Deemed to-be University, approved by u/s 3 of UGC Act 1956)

It is my pleasant duty to welcome all eminent keynote speakers in International e-Conference on "Bioelectronics and Informatics in present Scenario" from (26-27) June, 2020 at Shobhit Institute of Engineering & Technology (Deemed-to-be-University), Meerut.

The organizers have rightly selected the most relevant topic in the present context of crisis in which Bioelectronics and Informatics are playing major role in improving the human life and the surrounding environment with respect to human welfare. Technology has tremendous effect on environment, Health status, agriculture productivity, disease diagnosis and various developmental activities. During Corona crisis, there is threat to human life as the viral infection is spreading day by day. There is an urgent need to apply the technologies related to Electronics and the practical aspects of Informatics in order to improve the health of infected people through the diagnostic devices and therapeutic agents like drugs and vaccines. The technology is needed for sustainable happy longer human life on this beautiful earth. During COVID-19 lock down, this e-Seminar will provide an excellent opportunity for active interaction with great international Professors and prominent technocrats to discuss various issues of human welfare. I hope that the participants will take fullest advantage of the presence of intellectual mix of technocrats, biologists, medical experts, agriculturists and scientists working in diverse fields. Meerut is a beautiful historical city of India and its residents have rich cultural heritage, traditions and extra ordinary courage.

On behalf of myself and the University, I welcome all eminent keynote speakers and participants in this 2-day e-Seminar.

Prof. (Dr.) Amar Prakash Garg

Pro-Vice-Chancellor's Message

It is a great pleasure to be a part of an International e-Conference on "Bio-Electronics & Informatics in the Present Scenario: ECBI-2020", June 26-27, 2020 at Shobhit Institute of Engineering & Technology (Deemed to be University), NH-58, Modipuram, Meerut -250110.

I am sanguine that technical thoughts, ideas and the hard work of fellow members of the technical fraternity will prove to be stepping stone for scaling scientific heights. Production of innovative products and quality enhancement requires the niche areas of technology which have been encompassed in the domains of the conference. In this event, the representatives from Technical Institutions and Industries of India are expected to deliberate and share their knowledge and experience in the various emerging technological trends and innovations. The attendees at the end of this event, I am sure, would walk away with important takeaways in their lives and research careers.

Welcome all participants and keynote speakers to the sports "Capital of India", Meerut and the "Historian Paradise", which stands at a strategic standpoint both geographically and culturally. Besides, the city has played a pivotal role in the first spark of Indian Independence.

I appreciate the effort taken by the Shobhit Institute of Engineering & Technology (Deemed to be University), Meerut and I would like to extend my best wishes for the success of the event in achieving its objective.

Major General (Retd.) Dr. Sunil Chandra

Major General (Retd.) Dr. Sunil Chandra

Pro-Vice-Chancellor, SIET

(A NAAC Accredited, Deemed to-be University, approved by u/s 3 of UGC Act 1956)

Convener's Message

It is my great pleasure to welcome you to the International e-Conference on "Bio-Electronics & Informatics in the Present Scenario: ECBI-2020", June 26-27, 2020 at Shobhit Institute of Engineering & Technology (Deemed to - be University), NH-58, Modipuram, Meerut -250110.. It has been a real honor and privilege to serve as the convener of the conference.

We organize this e-conference to bring together academician, researchers and exchange their innovative research ideas, research challenges, solutions and practical experiences in all areas of Emerging Trends in Bio-Electronics & Informatics. This e-conference souvenir includes an exciting collection of abstracts & posters resulting from a successful call for papers.

The e-conference would not have been possible without the moral and logistics support of Hon'ble chancellor Sir. We are honored to have key note speakers from different best Universities/Institutes on this special occasion. We would like to express our deep gratitude to the members of the advisory committee, internal advisors and ECBI team for their valuable opinion and expertise to ensure a very high quality conference program. We are thankful to our colleagues for their help to make it successful.

We are grateful to all the authors who responded to our call for papers and trusted the conference with their work. The contributed papers highlight the current focus of research activities in nanoscience and technologies in different disciplines. They represent the current state-of-the-art research in science and technology.

Prof. (Dr.) R.P. Agarwal

Prof. (Dr.) R.P. Agarwal
Advisor, Shobhit University

Message

It is my great pleasure to welcome you to the International e-conference on "Bio-Electronics & Informatics in the present scenario" which will be held at Shobhit Institute of Engineering and Technology, A NAAC Accredited Deemed to-be University, Meerut during June 26-27, 2020. It has been a real honor and privilege to serve as the convener of the conference.

We organize this conference to bring together, academician, researchers and exchange their innovative research ideas, research challenges, solutions and practical experiences in all areas of Bio-electronics & Informatics in the present scenario through online presentation. This conference souvenir includes an exciting collection of abstracts resulting from a successful call for papers of all multiple disciplines.

The conference would not have been possible without the moral support of Hon'ble Chancellor Sir, Vice-Chancellor Sir and Pro Vice-Chancellor Sir. We are honored to have key note speaker from different best Universities/Institutes from India and Abroad on this special occasion. We would like to express our deep gratitude to the members of the advisory committee, internal advisors and e-conference team for their valuable opinion and expertise to ensure a very high quality conference program. We are thankful to our colleagues for their help to make it successful.

We are grateful to all the authors who responded to our call for papers and trusted the conference with their work. The contributed papers highlight the current focus of research activities in Bio-electronics and informatics in different disciplines. They represent the current state-of-the art research in science & Technology.

Prof. (Dr.) Rakesh Kumar Jain

Prof. (Dr.) Rakesh Kumar Jain

Dean, School of Engg. & Technology
SIET, (Deemed to-be Uni.), Meerut

PROF KRISHNAMOORTHY KANNAN
Founder Dean Biotechnology
GGSIPU
Former Vice Chancellor
Nagaland Central university

Message

Shobhit University under the visionary Chancellor Shri Kunwar Shekar Vijendra has made great strides in the field of Education in such a short period of time. The university and its faculties have tried to provide their students with best opportunities to broaden their horizons . ECBI-2020 aims to keep up the tradition of equipping the young minds aware of the challenges of providing quality education due to COVID 19.

International e- conference on Bio-Electronics and Informatics in the Present scenario on two days will allow the participants a great opportunity to listen to diverse views. Looking forward to seeing the compilation of various ideas generated in the two days deliberations.

Message

Colleagues and friends,

Allow me to warmly thank the organizers of this important International e-Conference on "Bio-Electronics & Informatics in the Present Scenario: ECBI-2020" June 26-27, 2020 , at Shobhit Institute of Engineering & Technology (Deemed to – be- University), NH-58, Modipuram, Meerut -250110, of giving me the privilege of delivering the keynote talk and addressing you all. For me it is an honor and a pleasure to be a part of the august galaxy of Speakers.

I would also like to thank them for having brought us together virtually in the wonderful environment of 'Cloud' to discuss various current challenges and domains of research.

These 2 days will be dedicated to cover a wide spectrum of themes related to various aspects of different but vibrant themes and allied fields. I am sure that each one of you will identify subjects of his/her interest and will benefit from many fruitful and enriching discussions.

I am particularly happy to be a speaker in this unique event and to exchange views and share experiences with other high level professors, colleagues and friends, representing many well-known Universities and Research Institutes together with members of relevant international organizations.

I congratulate you for your commitment and active participation and wish you all the success. Thank you for your attention.

Prof. (Dr.) S.K.Chakarvarti,

Ph.D., Advisor Research,
Manav Rachna International Institute
of Research and Studies(MRIIRS).Faridabad,India.

Prof. (Dr.) S.K.Chakarvarti,
Ph.D., Advisor Research,
Manav Rachna International Institute
of Research and Studies
(MRIIRS). Faridabad, India.

About the Organizer

SHOBHIT INSTITUTE OF ENGINEERING AND TECHNOLOGY, MEERUT, INDIA

Shobhit Institute of Engineering and Technology (popularly known as Shobhit University, Meerut), is a NAAC accredited deemed to-be university u/s 3 of UGC Act, 1956. Ranked among the top institutions of India.The University aspires to make academic issues and commitments as the key concerns of the young generation and thereby, make a significant contribution to the academic developments wherever they are in the world.

We believe that the essence of the University is to create, integrate and disseminate better understandings of the world around us through knowledge. Recognizing that students and faculty shift between and share all three roles, we challenge the notion that knowledge is static and insular. Instead, we welcome and enable a diverse and dynamic learning community of scholars, teachers, and learners.

We are committed to creating the best learning environment and provide the right equipment and facilities, to help our students to achieve their potential during studies. Our students learn in a variety of ways, including case studies, role-plays, and simulations. Because we know that no single approach can effectively address the range of challenges they'll encounter throughout their career, this diverse education is designed to give them the breadth and depth of skills and experience they'll need for success.

We are a research-intensive university that shares the values of high-quality teaching within an environment of internationally competitive research. We seek to provide a creative and supportive environment in which ideas are generated and can flourish.

To provide latest information about the things which are happening in science and technology, the University strategically plans and organizes workshops, seminars, conferences, and brain storming sessions at national and international level with the help of experts from academia, industry, and research organizations.

University Training & Development Centre understands that active engagement of the industry with the academia is vital for developing the required skills in the future professionals. To facilitate the industry in the current scenario of the skill gap on one hand and to enrich students with the industry exposure on the other hand; a one semester internship program has been incorporated in the course curriculum of maximum of the academic programs.

Today, Shobhit University is a preferred destination for recruitment among young universities in India. More than 200 renowned Corporate, Research Organizations and Institutions are patronizing our students by providing excellent job offers. The University has evolved into a Campus of Excellence. Our excellent talents are placed in the best of the corporate houses in India and abroad.

The University has developed the following Schools and Centre: School of Engineering & Technology, School of Biological Engineering & Sciences, School of Business Studies; School of Law and Constitutional Studies; School of Education; School of Humanities, Physical & Mathematical Sciences; Centre for Agriculture Informatics & Research; and Centre for Skill Development.
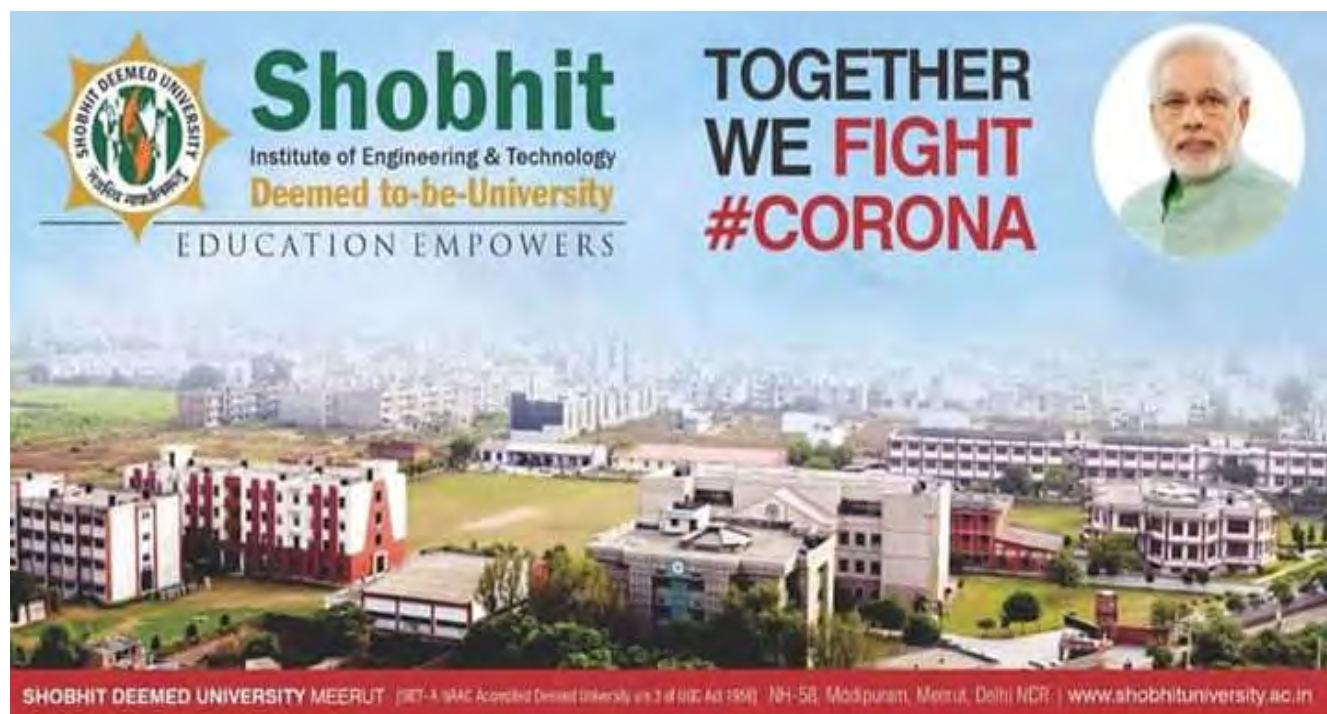
University Part of Corona Fight

Created 100-Bed Quarantine Facility and Developed Sanitizer Inhouse (5000 so far)

The University also launched a "Covid-19 Psychological Tele-Helpline"

आइसोलेशन वॉर्ड के लिए मेरठ के शोभित विश्वविद्यालय ने सौंपा 100 बेड का हॉस्टल

NEWS F1RST TODAY

शोभित विश्वविद्यालय ने प्रशासन को दिए 1000 सैनेटाइजर

मेरठ, संवाददाता। शोभित विश्वविद्यालय द्वारा कोरोना-वायरस से लड़ने के लिए हैंड सेनिटाइज़र की आवश्यकता और महत्व को समझते हुए इन-हाउस हैंड सेनिटाइजर्स विकसित किया है। विश्वविद्यालय द्वारा पिछले काफी दिनों से क्षेत्र में स्वास्थ्य को बढ़ावा देने के लिये हैंड सेनिटाइज़र वितरित किया जा रहा है। विश्वविद्यालय के द्वारा 1000 हैंड सैनिटाइज़र पैक्स को एडीएम (सिटी)मेरठ को समाज में वितरण के लिए उपलब्ध कराए गये। शोभित विश्वविद्यालय के मीडिया प्रभारी डॉ. अभिषेक डबास द्वारा मोदीपुरम स्थित मीडिया भाइयों को भी हैंड सेनिटाइज़र वितरित किए गये। इस अवसर पर उपस्थित विश्वविद्यालय के डिप्टी रजिस्ट्रार रमन शर्मा ने कहा कि शोभित विश्वविद्यालय कोरोना जैसी महामारी से लड़ने के लिए प्रतिबद्ध हैं इस अवसर पर विश्वविद्यालय के डिप्टी रजिस्ट्रार रमन शर्मा, फ़ाइनैन्स कंट्रोलर दीपक गोयल, मनीष, पंकज, रविंद्रधामा, आज़ाद आदि मुख्य रूप से उपस्थित रहे

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hindustantimes

Pvt varsity converts its hospital and hostel into isolation wards

HT Correspondent
letters@htlive.com

MEERUT: Lending its support to government's efforts in stemming the spread of coronavirus, a private university has converted its one hospital and a hostel, meant for international students, into isolation wards of 200 beds.

Shobhit University, walking the extra mile, has also provided 1000 bottles of sanitiser and additional 5000 bottles of it are under preparation in its lab, which would be soon handed over to the administration.

While briefing media about the district's preparedness to deal with the situation, district magistrate Anil Dhingra appreciated the efforts and support, extended by Shobhit University.

ADM (city) Ajay Tiwari along with city magistrate visited the hostel for on-the-spot examination and gave their consent to convert it into isolation ward.

The university's chancellor Kunwar Vijendra Shekher said that they had university's premises in Gangoh of Saharanpur district and also on NH 58 in Meerut. He said that Gabgoh was a rural area, adding that the university administration had converted the university's Ayurvedic Medical College into an isolation ward of 100 beds. He said five suspects were presently admitted there.

- One of hostel rooms converted as a Covid-19 isolation ward at Shobhit University in Meerut.

> The hostel for international students in Meerut campus have been converted into an isolation ward of 100 beds. These rooms have separate bathrooms and comfortable beds.
>
> **KUNWAR VIJENDRA SHEKHER,**
> chancellor, Shobhit University

of 100 beds.

"These rooms have separate bathrooms, comfortable beds and cleanliness", Shekhar said. He also appealed people to make their contributions to win the battles of it are under preparation in the labs and soon would be handed over to the administration. "We have taken special permission from authorities for movement of a few lab staff, who are involved in making the sanitiser, to the lab", said Shekher.

On the other hand, an isolation ward of 200 beds has been created in Lala Lajpat Rai Memorial Medical College and Subharti Medical College has also developed facility of 200 beds isolation ward.

Similarly, Mulayam Singh Yadav Medical College has declared to create an isolation ward of 135 beds and KMC Cancer Hospital has also offered to prepare a 100-bed isolation ward. District magistrate Dhingra said that other locations were also being examined to create more

ECBI-2020

International e-Conference on
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Key Note Address

Role of Bioinformatics in Present Scenario

Prof.(Dr.)A.P. Garg
Vice Chancellor,
Shobhit Institute of Engineering
& Technology (Deemed-to-be-
University), NH-58, Modipuram-
250110, India

Bioinformatics is a combination mathematics, computer and biology. In present day scientific world, it provides an excellent reliable predictable platform where one can design and conduct experiments using various bioinformatic tools. After sequencing the human genome in 2001, enormous amount of data in field of biological research has been generated to find out the relationship of various genomes/organisms with human genome. Computational biology allowed the scientists to handle and store this huge data in files and experimental log books. Initially bioinformatics was just a technique or tool to arrange data in particular fashion, but with its fast popularity and acceptance with major biological research areas, it is now a complete different field of study and expertise. It is now associated with most of the areas in biological researches being carried out in almost all over the world.

Biological research is necessary and essential to understand complete mechanism of living system. The easy access of knowledge accumulated in public databases such as NCBI, Pubmed and other databases, has made it possible to study large number of genes and their interaction with each other and to predict their behavior in nature while earlier using traditional biological research, the scientists were studying one of few genes and the results were not matching with their complicated behavior in nature. It has provided a huge contribution to biological research. Initially the complete aim of bioinformatics was just to handle data in biological research, but with increasing popularity and involvement of tools developed to analyze data in a lesser time to complete research in fast and efficient manner, bioinformatics now has acquired a bigger role in present day research in drug design, study of interaction of bio-molecules, mechanism of action, prediction of structure of bio-molecule, prediction of evolutionary sequences and genetic relationships *etc*. It is widely accepted in field of molecular biology, proteomics, genomics, metabolomics, biotechnology, and agriculture by researchers and even in veterinary and medical science researches also.

Key Note Address

CHALLENGES IN QUANTITATIVE MEASUREMENT OF BIOMOLECULES AND RELIABILITY OF DATA

PROF KRISHNAMOORTHY KANNAN
Founder Dean Biotechnology GGSIPU
Former Vice Chancellor
Nagaland Central university
Nagaland.

COVID 19 pandemic has been a great awareness to the masses and are familiar with many scientific and medical terminologies. They are equally worried about the rise in number of COVID 19 positive cases being reported daily. They wonder how does one know one is positive or false positive? How reliable are these tests? They get lot of misinformation and information. Biosensors can be one of the diagnostic tools. What is a normal range and when one says one is positive or affected.

An attempt will be made to discuss how diagnostic techniques developed, how normal ranges are defined, on what basis tests are quantified, what are the limitations and what is the basis on which they say elderly senior citizens are affected etc. Like weather report can we predict the outcome or likely occurrence of an infection ?

Key Note Address

"Upsurge of Naotechnology in Nanodentistry:An Intoduction"

Prof. (DR) S.K. Chakarvarti,
Advisor Research, Manav Rachna International Institute of Research and Studies (MRIIRS), Faridabad

Current developments during the past decade in physics, and engineering have resulted in a tremendous upsurge of interest in the properties of very minute particles and their possible applications in different fields. In nanotechnology the reductions in the size of any particles is upto a nano scale. The term "Nanotechnology" was coined by Prof. Kerie E. Drexler, a lecturer and researcher of nanotechnology. 'Nanotechnology' influences almost every facet of everyday life from security to medicine. Nanotechnology has been defined as "the creation of functional materials, devices and systems through control of matter on the nanometer scale (1-100 nm), and exploitation of novel phenomena and properties (physical, chemical and biological) at that length scale.The potential of nanosized particles was speculated as early as in 1959 by the physicist Richard P Feynman. Nanotechnology is an interdisciplinary field such as physics, biology, microbiology engineering,chemistry, computer science and more. The concept of nanotechnology is: when one goes down to the bottom of things one can discover unlimited possibilities and potential of the basic particle. In Nanotechnology one analyzes to the level of manipulating atoms, molecules and the chemical bonds between them. Technological innovations have enabled the manipulation of tiny structures called nanopores,nanotubes, quantum dots, nanoshells, nanospheres,nanowires, nanocapsules, dendrimers, nanorods,etc. More recently, tiny machines, known as nano assemblers, which can be controlled by computer to perform specialized jobs have been invented. The nanoassemblers could be smaller than a cell nucleus so that they could fit into places that are hard to reach by hand or with any other technologies. For example, in dentistry, it can be used to destroy bacteria in the mouth that cause dental caries or even repair spots on the teeth where decay has set in, by use of computer to direct the nanoassemblers in their tasks. Nanotechnology is also applied to various medical fields.

Nanodentistry is an emerging field with significant potential to yield new generation of technologically advanced clinical tools and devices for oral healthcare. Nanoscale topology and quantitative biomechanical or biophysical analysis of dental surfaces are of significant interest. In particular, using Atomic force microscopy techniques—diseases such as dental caries, tooth hypersensitivity, and oral cancer can be quantified based on morphological, biophysical and biochemical nanoscale properties of tooth surface itself and dental materials or oral fluids such as saliva. An outlook on future "nanodentistry" developments such as saliva exosomes based diagnostics, designing biocompatible, antimicrobial dental implants and personalized dental healthcare is presented, besides use in Local anaesthesia, Hypersensitivity cure, Nanorobotic dentifrice [dentifrobots] Dental durability and cosmetics Orthodontic treatment ,Photosensitizers, Diagnosis of oral cancer, Nanocomposites Nanosolution Impression materials,Nanoencapsulation,Nanoneedles and many more,.

Of course, research is still continuing on the uses of nanotechnology in dentistry. We can be sure that sooner than later, new applications will come to the fore and our mouths will benefit from them.

Key Note Address

Organic Semiconductor

Prof. (Dr.) R.P. Agarwal
Fromer Dean(Acad.), IITR, Roorkee
Former Expert Committees of AICTE,
UPSC, UGC and IE
Advisor, Shobhit University

In Recent years organic semiconductors(os) such as Pentacence, Polythiophenes, Anthracene etc have emerged as a promising and economically commercial viable alternative to tradition materials like Si and Gas. These materials and devices are certainly easier to fabricate and cheaper then si transistor fabrication. A number of Organic Semiconductor based devices such as OLED, OPUD , Solar Cells, OFETs are fastly being developed. These materials and devices are certainly easier to fabricate and cheaper than Silicon devices(Diodes, Transistor etc) although Carrier mobility is not sufficiently fast. Further large-scale manufacturing is a Challenge.

Key Note Address

Digitalisation of Agriculture in India: Application of IoT, Robotics and Informatics to establish Farm Extension 4.0*

Prof. Moni Madaswamy

Professor Emeritus and Chairman,
Centre for Agricultural Informatics
and Research Studies
Shobhit University, Meerut
& Former Director General, National
Informatics Centre
Government of India, New Delhi

Information Theory of Claude Elwood Shannon (1948) to Internet of Things (IOT) of Kevin Ashton (1999) have impacted digital technological applications very decisively, in various development fields. The emerging GRIN (Genomics, Robotics, Informatics and Nanotechnology) Paradigm facilitates digitalisation process in agricultural system intensively, and therefore demand for agricultural informatics professionals for this paradigm is echoing, to bridge gap of increasing and evolving human resources IT StartUps in farming sector throughout the Country. Robotics Process Automation(RPA), through Virtual Software Agents and physical robots, provide enormous opportunities for products developments by emerging technology StartUps. Digital Signal Processing (DSP), IOTs and Robotics are the essential components of Industry 4.0 applications. Quantum Computing is increasingly finding its applications in biological (agricultural) computing (Systems Biology), through "qubit" information processing.

India has been achieving its milestones on digitalisation, through its national level programmes viz., e-Government – NICNET and DISNIC (1986), Digital Networks for Farmers (ISDA-1995), SMART Village Scheme (2002-07), e-Governance Programme (2005), e-Kranti Renewed Strategy (2014), Digital India Programme (2015), and now consultation paper on National Open Digital EcoSystem - NODE (2020) based on the Singapore Government Model. The Doubling Farmers' Income by 2022 Report (2018), discusses seven mission mode projects for digital technology in Agriculture (Vol-12B, Chapters 7-10). The white consultation paper on Agriculture NODE has to trace its roots in 1986 and wings spread in 1995. Our development strategy shall not end up in "Half Step and Jump" model.

Intelligent systems, Pervasive computing, SMART Systems, Industry 4.0, Medical IOT, Industrial IOT, Web of Things (WoT), M2M, Internet of Everything and Embedded Internet are IOT applications, impacting decisively digitalisation of Agriculture. IoTs are described as "sensors" and "actuators" embedded in physical objectslinked through wired and wireless networks, using Internet Protocol (IP) that connects the Internet.Long Range Radio (LoRa) is the wireless technology mainly targeted for M2M and IoT networks. IoT in Agriculture has become one of the fastest growing fields in the M2M Communication. IBM terms it as "Agriculture Internet of Things (AgIoT)".

Agricultural Data has become a major source of competitive advantage.The "**Future of Agriculture**" Technology

Key Note Address

ARTIFICIAL NEURAL NETWORKS (ANN)

Prof. D K Kaushik

Vice-Chancellor, Shobhit University, Gangoh (Saharanpur)

Artificial Intelligence is the area of Computer Science which focuses on creating machines that is engaged on human behaviors. The area of Artificial Intelligence is being used in the computers so that the computers can think and quickly take decision independently and correctly like the human brains. Now-a-days the power and speed of Modern digital computers are truly astounding. No human can even hope and think to compute a million of operations in a second. However, there are some tasks for which even the most powerful computers namely super computers cannot compete with the human brains.

In fact, the machines work as per the directions of the programmers or the software installed in the machines. It is generally said that the computer is a faithful but mindless servant. Today with the advent of latest and supercomputers and more than 50 years of research into Artificial Intelligence programming techniques, the dream of smart machines is becoming a reality.

A Neural Network is an artificial representation of the human brains that tries to simulate its learning process. In fact, Neural Networks are based on the parallel architecture of biological brains. The artificial neural networks made of interconnecting artificial neurons which may share properties of biological neural networks. Artificial neural network is a network of simple processing elements (neurons which can exhibit complex global behavior) determined by the connections between the processing elements and element parameters.

In fact, neural networks are based on the parallel architecture of biological brains. Neural Networks are a form of multiprocessor computer system having simple processing elements, a high degree of interconnection, simple scalar messages and adaptive interaction between elements. However, human brains consist of a billion of neural cells that process information. Each cell works like a simple processor. The massive interaction between all cells and their parallel processing only makes the abilities of brain possible.

A computer with the power of a human brain has not yet been designed but the researches are going on and the Scientists claim that they made a breakthrough in their pursuits of computers that 'think' like a living thing's brain. If researchers can make computers operate more like a brain thinks - by reasoning and dealing with abstractions, among other things - they could unleash tremendous insights in such diverse fields as medicine and economics.

Key Note Address

Electronically enabled Drug Delivery Systems

Prof. Ranjit Singh

PVC & Director, AdarshVijendra Institute of Pharmaceutical Sciences
(A Constituent Institute of Shobhit University)
Shobhit University, Gangoh, Sahranpur-247341 UP

The electronically enabled smart drug delivery systems represent an exciting trend in the design and development of innovative drug delivery systems which are portable, interactive, wirelessly connected, exhibit greater patient compliance and cost effectiveness. These next generation drug delivery devices can be very effective in the management of chronic ailments. The use of electronics presents a new approach for integration of data from varied multiple sources. Electronics carries immense scope in the improvement of diagnostic and drug delivery devices. Miniaturization of microprocessors, along with development of bio-compatible semiconductor materials can offer breakthrough in drug therapy tomorrow. The current development in the field of bioelectronics leading the way for development of electronic drug delivery systems (EDDS) shall emerge as new subject specialties in the field of electronics and pharmaceutics that may be termed as 'pharmaco-electronics' and 'electro-pharmaceutics'. The basic electronic components of an electronic drug delivery device include a drug reservoir, a power source, pumping system, microcontroller, various sensors for monitoring of ambient temperature, pH, osmotic pressure, light, ion concentrations etc. There is a need to effect close collaborations and associations between the experts from pharmaceutical sciences and electronics in order to design and develop such smart drug delivery systems. The present deliberation shall highlight the areas of mutual interest vis-à-vis the basics of drug delivery systems.

Key Note Address

A Portrait of Nuclear Physics research from basic science to application

Dr. B.K. Nayak
Nuclear Physics Division,
Bhabha Atomic Research Centre,
Mumbai-400 085, India

BARC-TIFR Pelletron-Linac facility has been a major centre for heavy ion accelerator-based nuclear physics research in India. Some of the recent experimental results in the basic physics study of nuclear level density, fusion-fission dynamics will be discussed. The application of heavy ion reactions to determine neutron induced cross sections on (n,f) and (n,p) reactions using surrogate reaction method for fission and fusion reactor technology will be presented.

Preliminary results from Indian Scintillator Matrix for Reactor Anti-Neutrino (ISMRAN) experiment for reactor fuel monitoring will also be discussed.

Key Note Address

BIOINSPIRED ENGINEERING: LEARNING SCIENCE FROM NATURE

Dr. Pradeep Kumar Srivastava,
Former Senior. Principal Scientist
(Dy. Director)
CSIR-Central Drug Research
Institute
Lucknow

Bioinspired Engineering some times called BIONICS, BIOMIMETICS or BIOMIMICRY, basically biologically inspired engineering is defined as a "New science that studies nature's models and then imitates or takes inspiration from these designs and processes to *solve human problems".* Prof. Janine Benyus suggests looking to Nature as a "Model, Measure, and Mentor" and sustainability as an objective of bionics. Bionics looks to nature and natural systems for inspiration. After millions of years of tinkering, Mother Nature has worked out some effective processes. In nature, there is no such thing as waste — anything left over from one animal or plant is food for another species. Human engineers and designers often look there for solutions to modern problems.

Few examples of Bioinspired Engineering are very interesting. The fastest train in the world has initial speed 200 miles per hour, Japan's **SHINKANSEN BULLET TRAIN** is a marvel of modern technology. But there was one major problem after its initial debut: extreme noise. Each time the train emerged from the tunnel, it caused a change in air pressure that caused thunder-like sounds that were a nuisance from a quarter of a mile away. The train's chief engineer, a bird-watcher, had an idea: taking inspiration from the shape of a Kingfisher, a bird's beak to make it more aerodynamic. The resulted design made a quieter train that also consumes 15% less electricity and goes 10% faster than before.

Mick Pearce, architect of East gate Centre in Harare, Zimbabwe, studied the cooling chimneys and tunnels of **TERMITE DENS.** He applied those lessons to the 333,000 square-foot East gate Centre, *which uses 90 percent less energy to heat and cool than traditional buildings.* The building has large chimneys that naturally draw in cool air at night to lower the temperature of the floor slabs, just like termite dens. During the day, these slabs retain the coolness, greatly, reducing the need for supplemental air conditioning. East gate uses only 10 percent of the energy of a conventional building of its size, saved $ 3.5 million in air conditioning costs in the first five years, and has rents that are 20% lower than a newer building next door.

STENOCARA beetle, a **MASTER WATER COLLECTOR**, small black bug lives in a harsh, dry desert environment and is able to survive thanks to the unique design of its shell. The Stenocara's back is covered in small, smooth bumps that serve as collection points for condensed water or fog. The entire shell is covered in a slick, teflon-like wax and is channeled so that condensed water from morning fog is funneled into the beetle's mouth. Researchers at MIT have been able to build on a concept inspired by the Stenocara's shell and first described by Oxford University's Andrew Parker. They have crafted a material that collects water from the air more efficiently than existing designs.

What is most important today is that people are not aware of the promises Bioinspired Engineering holds for the future especially for a country like India and other developing countries with tropical climate which makes it biodiversity rich. Author has started a novel concept of science communication called **scientoon** (a new class of cartoons based on science) and subsequently a new science called **Scientoonics**, will use this science to create awareness about Bioinspired Engineering as what enormous future it holds for a country like India in the time to come.

Key Note Address

Bio-electronics engineering and its impact

Dr. Vinod Kumar Chaubey,
Professor & Head
Electrical & Electronics
Engineering Department
Birla Institute of Technology
& Science, Pilani,
India-33303

The emerging field of bioelectronics encompassing the recent research in two-dimensional materials including graphene, transition metal, and other elementary crystals, have provided suitable functional materials for bioelectronics sensors and thereby opens a superior electrical, optical, and mechanical responsesto develop efficient bio-sensors. Obviously in biological systems most of the time the electrical signals are generated by bio-chemical,bio-mechanical, bio-optical and many similar biological processes and are carried by systematic neuron networks through the nervous systems and thus develop a well-balanced natural close loop of the automated control system.

In conventional Bio-Sensors, the biological materialslike proteins, antibodies, DNA, and cells are properly processed with electronic passive or active elementssuch as MEMS cantilevers, ion sensor field-effect transistors (ISFET), electrodes /electrodearrays, and optical systems to realize functionalbio sensing devices to detect and monitor biological interactions and physiological signals byelectrical/optical readouts as the change in current, potential,conductance, or resonant frequency.

These biosensors have extensively impacted all fields of our day to day life starting from the environment sensing, health / medical diagnostics to intelligent learning of many unfold problems of science, engineering and medical.

A low cost, portable, and eco-friendly field test kit has been developed at BITS Pilanito test and monitor the levels of arsenic in drinking water using a novel EGFP gene based bio-electronic sensing methodology. In the developed kit a green fluorescence signal is generated in proportion with arsenic concentration in samplewhen the strain is illuminated with blue colourand the corresponding arsenic reading is displayed in digital ppb display. In the micro-cantilever based sensors, the bio-receptor transducer converts the bio recognition into measurable signal in the electrical domain to precisely process and prepare for readout systems. Similarly, some bio-material converts the measurable bio signal into electrical charge and manipulates the threshold voltage of the ISFET to make a sensitive bioFET. Cardea-bio is developing a chip to detect DNA,RNA,protein and other biomolecules signal using a programmable bio sensor platform to use this for SARS-COV-2 viral RNA and relevant antibodies/antigens.

These research and development in bio-sensors, especially flexible bio compatible electronic sensors and circuits opens some bright pathways for engineering solutions, medical diagnostics and also for medical processes and instrumentation.

Key Note Address

Effect of Swift Heavy Ion Induced Modification of Insulating/Conducting Polymers

Prof.(Dr.) Nand Lal Singh,
Department of Physics
The M. S. University of Baroda,
VADODARA - 390 002, Gujarat,
INDIA

We have synthesized polymeric blends and polymer nanocomposites by solution cast method. These films have been irradiated with different swift heavy ions at different fluences. The structural, optical, dielectric, thermal, magnetic and surface properties have been studied by different characterization techniques. The various studies have shown that heavier ions are more effectively affect the physicochemical properties than the lighter ions. The cross inking and scission of polymeric chain take place due to ion beam irradiation. The shift in the glass transition temperature (T_g) towards lower temperature and decrease in the transmission intensities of functional groups indicate the degradation of polymer matrix by ion beam irradiation. The changes in conductivity of the ion irradiated polymeric blend of polyvinyl chloride (PVC) and polyethylene terephthalene (PET) in the presence of hydrogen gas have been studied. The sensitivity of irradiated polymeric blend of poly vinyl chloride (PVC) and polyaniline (PANI) has also been studied for ammonia gas. The preliminary results on hydrogen gas and ammonia gas sensitivity will be presented.

Key Note Address

HOW TO GET PUBLISHED IN TOP JOURNALS & HOW TO SELECT THE RIGHT JOURNAL FOR YOUR SCIENTIFIC MANUSCRIPT?

Prof. Shabana Urooj ,

Associate Professor, Electrical Engineering Department, College of Engg. Princess Nourah Bint Abdulrahman University,Riyadh KSA

This presentation will emphasize on two folds of research paper publication. First is "How to prepare your manuscript to avoid rejection and the other is How to select the right and quality journal to publish your scientific manuscript. Major important topographies of this talk are;

i.   To identify and avoid the common pitfalls in manuscript preparation and submission;

ii.   To understand the publication processes and

iii.   How to check the ranking of a journal to submit your ground-breaking work.

Key Note Address

2D Nanostructure Materials for Electrochemical Energy Storage

Prof.Ramphal Sharma,
Visiting Scientist
(Nanotechnology Institute)
Berlin, Germany
Brain Pool Fellow Hanyang
University, Seoul (South Korea)

Energy is an essential factor for sustainable development and poverty eradication. Due to the growing of global energy demand and increasing levels of greenhouse gases and pollutants, scientists nowadays are paying a huge attention to establish a new energy technology, which is clean, environmentally friendly, and cost effective. In this research, we have demonstrated on the development of 2Dnano structure materials for energy storage technology in the lithium rechargeable batteries (Li-X batteries; X=S,Se).

Key Note Address

SARS CoV2: Infection, diagnosis and therapeutic challenges

Prof. Bechan Sharma,
Department of Biochemistry,
Allahabad University

It was December 2019, when the authorities of China declared that there was a pneumonia outbreak by an unknown virus at Wuhan of Hubei Province. After release of the genome of a novel coronavirus (nCoV) and making it available to the scientific community, the attempts towards researches on this subject began with greater enthusiasm. This nCoV, also known as 2019-nCoV, was finally renamed as SARS-CoV-2 as decided by the Coronavirus Study Group of the International Committee on Taxonomy of Viruses. SARS-CoV-2 belongs to the family: Coronaviridae, genus: Beta coronavirus , and subgenus : Sarbecovirus. Using nose, eye and mouth as its entry routes, it reaches into the lung cells via binding of the S1 domain of spike protein with a host cell surface enzyme, angiotensin converting enzyme type 2 (ACE2) receptor. It also influences the functions of kidney and gastrointestinal tract. The SARS-CoV-2 has a positive single strand of RNA with genome size of 29.8 Kb encoding for 29 proteins using 3 open reading frames. After infecting the lung cells, it develops the disease, CoVID19. It has been found to proliferate faster in children and older people than the youngsters and also more to men than women. This virus has caused massive damage not only in China but in many countries of the world. Its rapid spread and intense transmission through many ways has caused massive loss of lives impacting enormously the public health and the economy of affected nations. As on date, only the symptomatic treatments are being given to the patients, as there is no specific drug or vaccine available so far. In this presentation, I would summarize an update of the knowledge on the biology of SARS CoV2, the structure and function of virus constituents, infection, molecular diagnosis, treatment and therapeutic challenges.

Key Note Address

Pulsed Electromagnetic Field Therapy: An Alternative Strategy for Osteoporosis Management

Prof.(Dr.) Jayanand,
Director, Research and Innovation Centre, Noida International University,Greater Noida-203201

Osteoporosis is now a widely recognized public health problem. Worldwide, lifetime risk for postmenopausal osteoporotic fractures and disuse osteoporotic fractures are quite high. Therefore there is a an increasing need to design strategies to prevent and cure this devasting ailment. Among the various strategies pulsed electromagnetic fields (PEMFs) have been used as therapeutic agents for condition such as non-union bone fractures, failed joint fusion and congenital psedo-arthrosis. There areconvincing evidences that electric current and magnetic field can accelerate the bone formation in the fracture healing which provides the base of osteoporosis therapy. The main goal of the present study was to evaluate the effects of pulsed electromagnetic fields on induced osteoporosis in rat bones.

We investigated the preventive effect of capacitive pulsed electrical stimulation (14 M. Hz. Sine wave carrier frequency modulated at 16 Hz square wave pulsed output) and on ovariectomy (OVX) andneurectomy (NX). We also investigated the effect of low intensity pulse magnetic field (PMF) of 17.96 $\mu T/amp/m$ and 0.18 gausson the sublesional bones (femur and tibia) in rat following spinal cord injury (SCI).

It is concluded that SCI induced the osteoporosis most significantly as compared to other mode of osteoporosis induction. Whereas the capacitively coupled pulsed electric field is more efficacious in attenuating the effect of osteoporosis as compared to pulse magnetic field. These experiments demonstrated that pulsed electromagnetic fields significantly suppressthe bone loss and restore the mineralogical, microarchitectural, biochemical and histological properties in osteoporotic rat bones.

Key Note Address

Lab-on-a-chip platform for biosensing Applications

Dr. Anjum Qureshi ,

Sabanci University,

Nanotechnology Research and Application Center Istanbul, Turkey

Biosensors can play an important role in the early diagnosis of diseases such as cardiovascular and cancers without having to rely on hospital visits where expensive and time-consuming laboratory tests are recommended. I will describe our work, where we developed several simple, new label-free and sensitive single/multianalyte capacitive immunosensorsand successfully implemented to detect a panel of disease biomarkers that include CRP, Her2, VEGF, TNFα, and IL6 that representcardiovascular and/or cancer risks. Further development has been made to extend the capacitive biosensing into hand-held devices for point-of-care applications in diagnosis of cardiovascular and cancer diseases.

I will also highlight on extension of our biosensor technology platform todetecting toxicity nanomaterials (NMs) because increase in NM-related products and NMs commercialization bound to increase demand for standardization of methods and tools for testing their potential toxicity. I will also briefly highlight our recent work on development of a lab-on-a-chip biosensor for probing size-dependent toxicity of nanomaterials,whereliving whole-cells-on-a-chip interact with NMs and resulting biological signals were translated into electrical signal. Further developments with capacitive detection platform was made by interfacing graphene nanostructure on bio-capacitor chip for label-free detection of pathogenic bacteria. The biosensing platforms developed by our group address cost-effectiveness with sensitivity and speed that can be extended to detection of variety of other desired target analytes either in defense, disease diagnosis or environmental monitoring applications.

Key Note Address

Review of nuclear reactions related to advanced reactors and astrophysical applications

Dr. S.K. Mukherjee,
Department of Physics
The M. S. University of Baroda,
VADODARA - 390 002, Gujarat,
INDIA

Enormous amount of experimental work has been carried out in low energy neutron induced reactions of actinides and nuclear structural materials. However, experimental nuclear data in medium to high-energy neutron induced reactions are rare and very much limited. There is strong need to measure reaction cross sections of reactor fuel, cladding and shielding materials to the medium energy region (up to 25 MeV) with mono-energetic neutrons. Measurements of the different types of reaction cross sections in the above-mentioned energy region will help us to understand the energy dependence of the activation cross-sections in detail. This could lead us to develop Accelerator Driven Subcritical Systems (ADSs); which would be the future of reactor technology from the India's perspective. Along with ADSs, International Thermonuclear Experimental reactor (ITER) can also be a sustainable energy source in future. Therefore, it is necessary to study the neutron capture cross-sections for its magnetic material Sn, since the magnets used for holding the plasma get irradiated with secondary neutrons which are produced in the operation. In addition to the reactor materials, there are several reactions related to the astrophysical aspects. In view of the above we have planned to measure the reaction cross section in fast neutron induced reaction of fuel and structural materials related to ADSs and ITER and nuclear astrophysics.The present review highlights the applications of nuclear reaction data on various isotopes related to the applications in the advanced reactors and astrophysical aspects. The present review would be helpful to understand the vitality of the reaction cross-section data for advanced reactor/accelerator designing.

Neutrino and its Possible Applications

Prof.(Dr.) Venktesh Singh
Department of Physics, School of Physical and Chemical Sciences, Central University of South Bihar, Gaya - 824236, India

Neutrino is an electrically neutral and weakly interacting elementary particle having half integer spin and it is denoted by the Greek letter ν. Due to its weak interactions every second trillions of neutrinos pass through our bodies without any affect. The study of neutrino can help in understanding the Sun shines and how stars exploded to create the majority of elementary particles. International Atomic Energy Agency is also using emission of neutrino by neutrino detectors to monitor nuclear weapons. Neutrino detectors also have applications in medical imaging.

Key Note Address

Deep Learning for Medical Imaging Prospective

Dr. Jitendra Virmani, Senior ,
Technical Officer- Grade - II
CSIR-Central Scientific
Instruments Organization
(CSIR-CSIO)
Chandigarh-160030 (India)

ECBI-2020

Applying Deep Learning Algorithms is one of the major thrust areas today for a variety of Imaging Applications, including various medical image processing tasks. As deep learning algorithms are data hungry algorithms and in Medical Imaging it is very difficult to get real time data so data augmentation is a very crucial step in applying deep learning algorithms for medical image processing tasks. During my Talk I would address issues like why augmentation is required for training only and why not for testing data, what are the different types of data augmentation techniques, When to augment data online and when to augment data offline, How to select the type of data augmentation techniques, Advantages of data augmentation as a regularizer in comparison to traditional methods.

Different features for different images

Liver Images

Benign   Malignant
Breast US Images

Microscopic Images of Blood
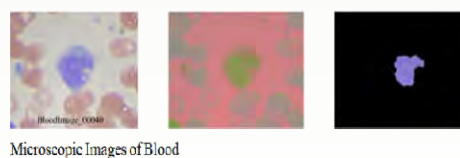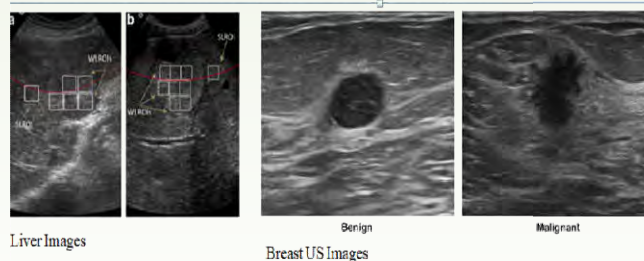
Variety of Medical Images? How do we choose data

Key Note Address

Drug targeting of de novo arginine biosynthesis pathway for treatment of Tuberculosis

Dr Sangeeta Tiwari,
Assistant Professor,
Department of Biological Sciences, Border Biomedical Research Center, University of Texas at El Paso El Paso, TX-79968

Amino acid serves essential component of nutrition and there are evidences that amino acid auxotroph's can lead to attenuation of *M. tuberculosis*. Arginine deprivation of *M. tuberculosis* leads to Reactive oxygen species (ROS) accumulation and DNA damage.Rapid death of *M.tuberculosis*arginine biosynthesis mutants has been found in immunocompromised mice.

The present study shows that Arginine auxotrophy is bactericidal for *M. tuberculosis in vitro, and in vivo* in tested mouse models.Transcriptomics, metabolomics and Flow cytometry data suggests multi-target death mechanism. Rapid sterilization, no suppressor mutant formation and lack of human homologous enzyme suggests its potential as a drug target.

Key Note Address

Demystifying Big Data and its use in COVID'19

Prof. DILKESHWAR PANDEY,
Head, CSE Department,

KIET, Muradnagar, Ghaziabad, U.P.
INDIA

We are in age of internet. Due to online business &different social networking application like facebook, twitter, whatsup etc, data size is growing enormously. The term "big data" refers to data that is so huge, fast or complex that it's verydifficult to process using traditional methods. The act of accessing and storing large amounts of information for analytics has been around a long time. Hadoop, a big data technology provides solution for storage and analysis using HDFS and Map-Reduce.Big data technology is helping in storing and analysing COVID'19 Data.

Key Note Address

Bio-inspired Metaheuristic Algorithms and Image Processing

Prof. (Dr.) Sapna Katiyar,
Head, Electronics and
Communication Engineering
Department,
ABESIT, Ghaziabad.

Bio-Inspired Metaheuristic Algorithms have gained importance in the field of science & technology, medical for developing new algorithms because of more robust and efficient in solving complex problems.Now a day's almost all computer applications required optimization algorithm to optimize results as required or some parameters. Image processing is one of the highly explored and ongoing areas of research because of involvement of huge data therefore use of meta heuristic techniques have been increased exponentially. Some recent advancement in bio-inspired algorithms and their application in Image Processing for accomplishing numerous tasks accurately and efficiently will be discussed.

Key Note Address

Real Time PCR and it's implication in diagnosis of COVID-19

Dr. Rohit Saluja,
Assistant Professor,
AIIMS, Hyderabad,

As the coronavirus that causes the COVID-19 disease spreads across the world, it diagnosis become very important . Real time RT–PCR is one of the most widely used laboratory methods for detecting the COVID-19 virus. It is one of the most accurate laboratory methods for detecting, tracking and studying the COVID-19 coronavirus.The RNA is reverse transcribed to DNA using a specific enzyme. This cDNA further go for amplification by Real Time PCR . If the virus is present in a sample, these fragments attach themselves to target sections of the viral DNA. Some of the added genetic fragments are used for building DNA strands during amplification, while the others are used for building the DNA and adding marker labels to the strands, which are then used to detect the virus.

Pharmacodynamics and drug interaction analysis: a better tool for future drug discovery

Dr. Swaroop Kumar Pandey
Ben-Gurion University of the Negev
Beer Sheva- ISRAEL

Infectious diseases like TB, Malaria, Ebola, Dengue and most recently the deadly Covid-19 are killer diseases and account for millions of deaths every year and unfortunately, effective intervention tools and strategies to fight against these diseases have been minimal.

Drug repurposing and combinatorial therapy are the major area of research and some cutting edge treatments were developed or are being developed using this approach especially for Covid-19. It is safe, economic and less time taking to reach at clinical stage as they are already approved for human use and most of the clinical, pharmacological and PK/PD information is previously available. There are several good successful examples of that, particularly, theuse of antimalarial and macrolide combination for Covid-19.

However, the inappropriate treatment strategies with the therapy cause the problems of resistance, toxicity of the particular drug and its improper therapeutic response.Therefore, there is an utmost demand for the introduction potent and affordable treatment in combination therapy with appropriate pharmacokinetic-pharmacodynamic (PK-PD) properties and only after drug interaction analysis to get good margins of safety as well.

Key Note Address

Knowledge-Based Neural Network Modeling for Antenna Problems

Dr. Taimoor Khan
Assistant Professor
Department of Electronics and
Communication Engineering
National Institute of Technology
Silchar
Silchar-788 010, Assam, India

Analysis and synthesis are the two different ways for classifying antenna related problems. In this talk, the speaker discusses the novel concept of incorporation of prior knowledge in the existing neural model to form a knowledge-based neural network (KBNN) model to both the cases viz. Antenna Analysis and Antenna Synthesis. By incorporating this prior knowledge, the number of required training patterns is drastically reduced. The discussed approach is very much helpful in the situation where it is extremely difficult to create large number of training patterns.

Key Note Address

Robotic Process Automation

Dr. Nidhi Tyagi
Professor,
MIET, Meerut, U.P.

In every era, technology has increased productivity & jobs opportunities, providing a better life to human. The mechanism, which minimizes the human assistance to complete a particular procedure, is referred as Automation. Very simple day to day life example of automation may include, how about the robot that checks all your emails and sends you the important ones as a digest after your vacations? It is driving the digital transformation that covers the use of digital technologies in reshaping business processes. Some automated tasks performed in industries are, customer invoicing, claim processing, customer data gathering, fraud prevention etc. This automation is possible through Robotic Process Automation (RPA). Using basic RPA developing skills one can make professional & individual life better. Robots are here to drive greater productivity, create task efficiently & reduce costs and accelerate human achievement.

The adoption of robots will likely create more jobs than displace. RPA is perhaps the fastest path to digital transformation. It enables computer software to emulate and integrate actions typically performed by human interacting with digital systems. RPA can mimic human actions, operate any application, is quick to implement, powerful to scale and does the task accurately & efficiently without taking rest. This technology is suitable for processes which are highly labor-intensive, cyclic, rule-based and have standard electronic readable input. Number of RPA tools available includes: Uipath, Automation Anywhere, Blue Prism, Pega, Karyon, Linx. RPA will definitely become the next revolution in technology.

Key Note Address

Surface passivated Silicon Solar cells

Prof.(Dr.) Hrishikesh Dhasmana,
Department of Physics
Amity Noida, U.P. , India

Silicon photovoltaic (PV) is a key technology to provide the world with renewable, inexpensive and reliable energy based device to meet global energy demand in sustainable manner. This PV phenomenon based silicon technology has captured more than 90% of global PV market. There are still continuous efforts going on amongst various researchers to reduce device cost via increasing device efficiency so that it can provide higher electrical power throughput at a cheaper rate. M. A. Green is considered to be the pioneer worker in silicon solar cell device fabrication domain and had first proposed an idea of surface passivated silicon solar cell way back in the year of 1985 with high efficiency upto 18.7% in laboratory conditions via optimization of oxide layer thickness onto Silicon surface. The Surface passivation in silicon can be achieved via two approaches - chemical and field effects; which are aimed to reduce recombination of generated charge carrier and so enhance the charge carrier life time. Already substantial research has been carried out on producing remarkable chemical passivated interfaces in different layers of Silicon solar cells. Currently research community is driven towards enhancing silicon solar cell efficiency via field effect component. These ongoing research works amongst researcher in laboratory conditions are now converting into commercial scale in industry. Commercialization of surface passivation based silicon solar cell has been steadily growing which has resulted into industrial viable device products such as passivated emitter rear contact(PERC), passivated emitter and rear totally diffused(PERT), passivated emitter and rear locally diffused (PERL), bifacial etc. silicon solar cells with significant rise in efficiencies upto >23%. These types of silicon solar cell are expected to have dominance in future PV industry with the advancement in the technology, automation and mass scale production in device fabrication process line

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Contributory Papers

S.No.	Author	Affiliation	Topic
1	Vangmayee Sharda	Amity University, Noida	VLSI: An Important Pillar of New Era Signal Processing, IoT and Robotics
2	S. Karmakar, M. K. Singh*, V. Singh, H. T. Wong	G. L. A. University, Mathura	Energy calibration of the sub-keV Germanium detector using different parameters
3	Dr. Neha Goel and Dr. Puneet C. Srivastava, Unnati Kamal and Smriti Singh	RKGIT, Ghaziabad	Hand Gesture to Voice Converter Glove
4	Dr. Neha Goel and Dr. Puneet C. Srivastava, Abhishek Gupta and Mohd. Anas Rashid	RKGIT, Ghaziabad	Design and Simulation of ALU
5	Neha Pareek	Krishi Vigyan Kendra, East Champaran, Dr. Rajendra Prasad Central Agricultural University Pusa, Samastipur - 848 125, Bihar, India	Agromet advisory service-a boon for farmers in the lockdown conditions due to covid-19 in the east chamaparn district of bihar
6	S. Kumar, M. K. Singh*, V. Singh, R.K. Jain	G. L. A. University, Mathura	Characteristics of the shower particles and target fragments produced in $^{84}Kr_{36}$ - emulsion interaction at 1 GeV per nucleon
7	Nikunj Jain, Mamta Bansal, Swati Sharma	MIET, Meerut	Survey on CPU Scheduling Algorithms
8	Ms. Harsh Arora, Dr. Mamta Bansal	IITM	A Deep Learning approach for feature extraction of online tourist behaviour reviews through Sentiment Analysis
9	Disha Chandra, Indukala Tripathi	Mewar University	Patient Services and Time Scheduling for Outpatient Department
10	Neeraj Sirohi, Mamta Bansal, S N Rajan	IMS Engineering College	Study of Automated text summarisation considering syntactic feature of sentence
11	Dr. A. G. Matani	Government College of Engineering, Amravati	IoT applications in renewable energy systems towards improved grid management
12	Dr. Ashok G. Matani	Government College of Engineering, Amravati	Digital and remote technologies in COVID-19 health care services management : Potentialities and Challenges in India
13	Ravindra Pratap Singh Jetawat, M. S. Chandawat, Hari Singh	Agricultural University, Jodhpur	Role of Farm Advisories in tackling adverse effect of COVI 19 on farming community

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14	Priyanka Swami, S. K. Aggarwal, R.L. Solanki	Maharana Pratap University of Agriculture & Technology, Chittorgarh, Udaipur, Rajasthan	Role of Agromet Advisories in combating the adverse effect of Covid 19
15	M. K. Singh, S. Karmakar, D. Singh, V. Singh, H.T. Wong	G. L. A. University, Mathura	Recent Advancements in Detector Technology to Reduce the Background for $0\nu\beta\beta$ decay
16	Nishit Savla[1], Santimoy Khilari[2,*], Bikram Nayak[3], Soumya Pandit[4,*]	Sharda University, Greater Noida	Microfluidic microbial fuel Cell as an efficient BOD biosensor: influence of transition metal oxide as electrode modifier
17	Nishit Savla[#,1], Rukhsar Shaikh[#,1],Dipak Jadhav[2,*], Soumya Pandit[3,*]	Amity University, Mumbai	Microbial Fuel Cell (MFC) based Toxicity Biosensor: A Mini Review
18	Pooja Dange[#,1], Drishti Bhagchandanii[#,1], Dipak Jadhav[2,*], Soumya Pandit[2,*]	Amity University, Mumbai	Biohydrogen evolution in Microbial Electrolysis Cell: Influence of reactor design
19	Mehaboob Mujawar	Goa College of Engineering	headphone audio amplifier circuit on PCB using LM386
20	U. Singh*, M. K. Singh,	G. L. A. University, Mathura	The Techniques to Improve the Efficiency of Mono-Crystalline Silicon HIT Solar Cells
21	DR. ARUNA CHAKRAWARTI	GOVT. DUNGAR COLLEGE, BIKANER	BIOINFORMATIC STUDIES-WASTE PLASTIC MANAGEMENT AS RENEWABLE ENERGY
22	Dr. Ankita Saini[1#] and Dr. K. R. Justin Thomas[2]	Baba Farid College, Bathinda-151001, Punjab	Bio-imaging of Cancerous Cells using Organic Naphthalimide-based Small Molecules and its Structure Property Relationship
23	Sabahat Yasmeen Sheikh*[1], Firoj Hassan[1], Surya Pratap Singh[2], Yusuf Akhter[2], Malik Nasibullah[1]	Integral University, Dasauli, Kursi Road, Lucknow	Drug repositioning against *Leishmania species*
24	Harijyoti Mandal[1], Diksha Dutta[1], Pranabi Maji, Abhik S. Mahapatra	Department of Physics, JIS University, 81, Nilgunj Road, Agarpara, Kolkata	Nanomaterials: Impact on COVID-19
25	Ms.VinayMalik,*Dr.TungVirSinghArya,*Dr.Maya Dutt Joshi*Dr. Sandeep Kumar	LLRMMedicalCollegeandHospital,Meerut,(UP),India;	Covid-19 Effects On HIV Infected Patients ART
26	Manas Kumar Yogi	Pragati Engineering College(Autonomous),Surampalem,A.P.	Application of Eagle Strategy for Minimizing Risk in Cyber Security Optimization
27	Deeksha Sharma[1], Shubham Kumar[1], Tanu Shiri[2] and Monish Roy[3]	ICAR- National Dairy Research Institute, Karnal	The Relevance of Bioinformatics in the Era of COVID-19

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28	*[1]Sanjeev Kumar Gupta, [1]Yash Paul, [1]Rafiq Ahmed, and [1]Kewal Singh	Department of Botany, Govt. Degree College Billawar, Jammu and Kashmir, India -184204	Ethno-medicinal Plants Used by Gujjar Tribe in the Siwalik Hills of Dinga-Amb, District Kathua, Jammu and Kashmir, India
29	Ruchi Baliyan , Dr. Purushottam & Dr. Rekha Dixit	Sardar Vallabh Bhai Patel University of Agriculture and Technology , Meerut	Trends in Biomedical engineering
30	S. Kumar, M. K. Singh*, V. Singh, R.K. Jain	G. L. A. University, Mathura	Characteristics of the grey particle emission in interaction of 84Kr36 with emulsion at relativistic energy
31	Amar jeet yadav	Sardar vallabh Bhai Patel university of agriculture and technology Meerut(250110)	Nano materials and nanotechnology
32	Saurabh Mitra[1], Dr. Shanti Rathore[2], Dr. Sanjeev Kumar Gupta[3]	Dr. C. V. Raman University Bilaspur, (C.G.)	NON-INVASIVE MEDICAL TOOL TO DETECT ANAEMIA THROUGH REAL TIME DATA
33	Koyel Mukherjee	Assistant Professor, Seacom Skills University, Birbhum, West Bengal	AGRI-INFORMATICS …… A FACILITATOR OF MODERN INDIAN FARMING
34	Vishal Singh[1], Amar jeet yadav[2]	sardar vallabh bhai patel university of agriculture and technology meerut (2500110)	Biomedical engineering bioinformatics and agri-informatics
35	Mr. Jitender Kumar Singh Jadon	Shobhit Institute of Engineering and Technology	Flexible motion sensor based Wireless Humanoid Robot
36	Mr. Rajkishor Singh and Mr. Jitender Kumar Singh Jadon	Shobhit	Thermo-mechanical and tribological properties of SU-8/h-BN composite with SN150 / perfluoropolyether filler
37	Neha Jain, Yogesh Awasthi	Shobhit Institute of Engineering and Technology	Smart Farming: A Fusion of Agriculture and Technology
38	Brijesh Goswami[1,2], Rakesh Kumar Jain[1], Suresh Yadav[3,] Pradeep Goswami[4]	Shobhit Institute of Engineering and Technology	Setup Error Measurement with BrainLAB ExacTrac X-ray and Six Dimensional (6D) Robotic Couch
39	Seema Gusain, Dr. Mamta Bansal,	Shobhit Institute of Engineering and Technology	Review Paper: Sarcasm Identification Reflect the user mood on social media
40	Vijay Maheswari, Aniket Kumar, Dr. Maya Dutt Joshi	Shobhit Institute of Engineering and Technology	A Review: Evaluating the potential use of electronic tongue for diabetic patient
41	Aniket Kumar, R.P. Agarwal	Shobhit Institute of Engineering and Technology	App. Development usingIOT based on Matlab(Simulink)

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42	J.K. Mahato, Y.V. Srivastava, Sameer, V.Pal, A. Kumar, P. Sharma, S. Abbas	Shobhit Institute of Engineering and Technology	Internet of Robotic Things: A Review for Future Technologies
43.	Akhilesh Srivastava, Jasvir Singh Rana, D.K. Kaushik	Shobhit University, Gangoh	Order Reduction using Mihailov Criterion and Least Square Pade Approximations
44	Chhabilal Singh	Shobhit Institute of Engineering and Technology (Deemed to-be University)	Speaker identification for channel mismatching condition by using different languages
45	Maya Datt Joshi, Sandeep Kumar, Rupesh Kumar, Dinesh Kumar and Amar P. Garg	Shobhit Institute of Engineering and Technology (Deemed to-be University)	Potential therapeutics and Technology in COVID-19 Drug and vaccine Development: A Review
46	Arun Kumar giri[1] Dr. R.P Agarwal[2]	Shobhit Institute of Engineering and Technology (Deemed to-be University)	Analysis of Signal Processing Algorithm Using L1 Minimization
47	Seema Gusain[1] and Dr. Mamta Bansal[2]	Shobhit Institute of Engineering and Technology (Deemed to-be University)	Review Paper: Sarcasm Identification Reflect the user mood on social media
48	Santimoy Khilari*,[1] and Debabrata Pradhan[2]	Guru Ghasidas Vishwavidyalayaya, Bilaspur-	Nitrogen doped Reduced Graphene Oxide Supported Manganese Ferrite Nanocomposite for Anodic Hydrazine Oxidation and Cathodic Oxygen Reduction Catalysis
49	S. Ranjitha[1]*, V. Aroulmoji[2]	Velalar College of Engineering and Technology,Erode, Tamilnadu, India.	Electron transport Performance of CeO2 Doped TiO2 Nanoparticles in Dye Sensitized Solar Cells
50	Mohammad Asad Qureshi and Farhat Banu	Department of Botany, Government Meera Girls College, MLS University, Udaipur,Rajasthan,India.	Mapping of Bamboo in South-Eastern Rajasthan Plateau (Hadoti Plateau) Using Remote Sensing and GIS Application
51	Vidyottma 1 and S. K. Kataria 2	Department of Chemisry, B.S.A.(PG) COLLEGE, MATHURA	ROLE OF IT AND ITS IMPACT
52	Tanu shiri[1]*, Shailendra S. Gaurav[1], S.K. Singh[2],Deeksha Sharma[3] and Sourabh Jain[4]	*C.C.S. University Campus, Meerut-250004, U.P.*	RNA-DEPENDENT CHAPERONE FACILITATED BUILDING OF FERRITIN BASED CORONAVIRUS NANOPARTICLES
53	Manoj Kumar	Shobhit Institute of Engineering and Technology (Deemed to-be University)	An investigation of different dc-dc converters with solar photovoltaic system

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54	Narendra Kumar	Amity Institute of BiotechnologyAmity University Haryana,Manesar-22413,Gurgaon,Haryana India	Microbial load of frequently used laptops
55	Rupesh Kumar*, Sandeep Kumar, Maya Datt Joshi, Dinesh Kumar and Amar P. Garg	Department of Biotechnology, Shobhit Institute of Engineering & Technology (Deemed -to - be - University), Meerut	IoT based Air Pollution Monitoring System: A solution for Smart Cities
56	*1Sanjeev Kumar Gupta, 1Yash Paul, 1Sushmita Thakur and 1Usha Devi	Department of Botany, Govt. Degree College Billawar, Jammu and Kashmir, India -184204	Ethno-medicinal Plants Used by Women folk in the Siwalik Hills of Mansar, District Udhampur, Jammu and Kashmir, India
57	Dr. Sangeeta Sharma	Associate Professor, Department of Biology School of Life Science and Technology IIMT University, Meerut (U.P)	ENVIRONMENTAL IMPACT OF NANOTECHNOLOGY
58	pankaj sharma	Asstt Professor VCTM ALIGARH	Bioinformatics and its approach in drug technology
59	B.V.KALYAN RAM,	ASSISTANT PROFESSOR, ECE DEPARTMENT, IDEAL INSTITUTE OF TECHNOLOGY, VIDYUT NAGAR, KAKINADA, ANDHRA PRADESH	"Software design management for Zynq based Dynamic Partial reconfiguration FPGA"
60	Tanu shiri1*,Sourabh Jain3,Deeksha Sharma2, Akash Kumar4 and Govind Singh4 *	*1C.C.S. University Campus, Meerut-250004, U.P. 2ICAR- National Dairy Research Institute, Karnal-132001, Haryan 3Shri Ram College Muzaffarnagar-251001, U.P. 4Vinayak Vidyapeeth Modipuram, Meerut-250110, UP	DISTRIBUTION AND DESIGNINGOF THERAPEUTIC siRNAs – SUBMISSION TO MERSE-CoV
61	1Sanjeev Kumar Gupta, *Sushmita Thakur and *Kewal Singh	1Department of Botany, Govt. Degree College Billawar, Jammu and Kashmir, India;	Ethno-medicinal Plants Used by Locals in the Siwalik Hills of Manwal, District Udhampur, Jammu and Kashmir, India
62	Arti Devi, Amar jeet yadav	Sardar Vallabhbhai Patel University of agriculture and technology Meerut.	cyber security and cyber forensic system.
63	Ashok Kumar	Shaheed Rajguru College of Applied Science for Women, Uni. Of Delhi-110096	Effect of X-ray dose on Etching Parameters of Lexan PolycarbonatePlastic Detector
64	Vatsal Gupta (B.Tech IT 3rd Year) , Dr. Nidhi Tyagi (Professor IT Dept.)	Meerut Institute of Engineering and Technology, Meerut	Smart Agriculture System Using IoT (Internet of Things)

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65	Sharun Kumar Bhenwal1, Tanu Shiri2, Sourabh Jain3, Govind Singh1, Rashmi1and Akash Kumar1	1Vinayak Vidyapeeth Modipuram, Meerut-250110, UP 2CCS University, Meerut-250004, UP 3Shri Ram College, Muzaffarnagar-251001, UP	EDUCATIONOF ROBOTIC SCIENCE DURING AND SUBSEQUENTLY COVID-19 CRISIS
66	Naresh Batra1, M A Ansari1,Saveri Singh1and Shabana Urooj1,2	1Department of Electrical Engineering,School of Engineering, Gautam Buddha University, 2Department of Electrical Engineering College of Engineering, Princess NourahBintAbdulrahman University, Saudi Arabia	Microcontroller interfacing with ADC 0808 by using KIEL: An aid for wireless communication
67	*Sanjeev Kumar Gupta, Rafiq Ahmed1 and Kewal Singh1	*1Department of Botany, Govt. Degree College Billawar, Jammu and Kashmir, India- 184204*	Ethno-medicinal Plants Used by Gujjar Tribe in the Hills of Manwal, District Udhampur, Jammu and Kashmir, India
68	Anshul Gaur1, Amit Kumar Singh2 and Abhishek Kumar1	1CBRI, Roorkee, India 2 Department of Biomedical Engineering, Shobhit University, Meerut 250110, India	GSM Security System
69	Gaurav Chaturvedi, Moumita Chakraborty and Neha Pareek,	Ph.D (Research Scholar)Department of AgrometeorologyG.B.Pant University of Agriculture & TechnologyU.S.Nagar, Uttarakhand-263145	" Perspective of Agrometeorological services in India during COVID-19 pandemic"
70	Moumita Chakraborty and Gaurav Chaturvedi,	PhD Research Scholar (ICAR-SRF) Department of Environmental Science G. B. Pant University of Agriculture & Technology Pantnagar (U. S. Nagar), Uttarakhand-263145	"Evolution in the diagnosis of COVID-19 availing nanotechnology"
71	Arpit Chhabra[1] and Niraj Singhal[2]	1Ph.D. Research Scholar, 2Professor Shobhit Institute of Engineering and Technology (Deemed University), Meerut, India	Challenges of Cyber Threats in Smart Cities
72	Punit Chauhan, Sweety Pal, Shiva Sharma1, Amit Kumar Singh2	Department of Biomedical Engineering, School of Biological Engineering and Life Sciences, Shobhit Institute of Engineering and Technology (A Deemed to be University), Meerut	Arsenic contamination of ground water: A Review of Source, Disease, Identification and its Monitoring.

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73	Gulfsha, Sana, Rajath Othayoth, Shiva Sharma, Amit Kumar Singh	Department of Biomedical Engineering, School of Biological Engineering and Life Sciences, Shobhit Institute of Engineering and Technology (A Deemed to be University), Meerut	Paper-Based Piezoresistive MEMS Sensors for the Detection of Cholesterol Content in the Blood
74	Rishabh Chauhan, Anurag Malik, Shiva Sharma, Durg Vijay Rai*	Department of Biomedical Engineering, School of Biological Engineering and Life Sciences, Shobhit Institute of Engineering and Technology (A Deemed to be University), Meerut	Influence of the Menstrual Cycle on Body Fluid, Determined by Whole Body Impedance Analysis
74	A. Rehash Rushmi Pavitra1, Dr.E.Srie Vidhya Janani2	1Research Scholar, 2Assistant Professor, Department of Computer Science and Engineering, Anna University Regional Campus, Madurai, India	Real-Time Oceanographic Monitoring System in Underwater Wireless Sensor Networks
75	RAKESH KUMAR, VIKAS SHARMA	Department of Botany and Agriculture ,SBBS University Jalandhar ,	USING MORPHOLOGICAL CHARACTERS AND SIMPLE SEQUENCE REPEATS (SSR) MARKERS TO CHARACTERIZE FIG (FICUS CARICA L.) CULTIVARS

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Contributory Papers

VLSI: An Important Pillar of New Era Signal Processing, IoT and Robotics

Vangmayee Sharda
Amity University, Noida

Modern day devices are getting smaller, faster, in-expensive, more powerful and efficientevery progressing second. But what drove this change? The whole sphere of computing ushered into a newadvent of electronic miniaturization with the advent of Bipolar Transistor by Shockley (1949) in the Bell Laboratory.The development of microelectronics spans a time which is even lesser than the average lifeexpectancy of a human, and yet it has seen as many as four generations.

Early 60's saw the low-density fabrication processes classified under Small Scale Integration (SSI) in which transistor count was limited toabout 10. This rapidly gave way to Medium Scale Integration (MSI) in the late 60's when around 100 transistorscould be placed on a single chip.

By mid-eighties, the transistor count on a single chip had already exceeded 1000 and henceforth camethe era of Very Large-Scale Integration (VLSI). Though numerous improvements have been made and thetransistor count is still increasing. It was during this time when TTL got defeated in the battle to MOS (Metal OxideSemiconductor) family due to the same problems that had pushed vacuum tubes into slackness, powerdissipation and the limit it imposed on the number of gates that could be positioned on a single die.

VLSI and Signal Processing:

There is strong synergy between VLSI and signal processing. This is because digital signal processing traditionally has led the demand for high levels of computational throughput. Digital signal processing (DSP) is an enabling technology for many applications such as video, speech, wired and wireless communications, and multimedia. With the advent of high levels of integration on a single silicon substrate, a new generation of integrated circuits has been developed that is directly applicable to perform DSP functions. VLSI architecture design of DSP focuses on designing methodologies for the realization of dedicated VLSI systems for signal processing and communication applications. This will also include architectures for big data computing and machine learning. The VLSI architecture design methodologies will be used for exploring area–power–speed tradeoffs for different DSP applications. VLSI developments are affecting the digital signal processing design process by offering more powerful processing elements.

IoT and Robotics:

The availability of inexpensive VLSI devices is the key to success of IoT and Robotics.IoTsystems are usedin a wide range of applications, including energy, medicine, transportation, and smart homes. As IoT develops, we can identify several opportunitiesand associated challenges in the design ofVLSI IoT devices.

VLSI system design for IoT provides range of opportunities beyond traditional semiconductor applications. Traditional SoC design emphasizesbig chips; IoT device design emphasizes low costand low power consumption. The combination oflow power operation, sensing, computation, andcommunication often requires combining noveltechnologies and mature manufacturing nodes insystem-in-package configurations. IoT systems requirelow price points that encourage small chips designedto be deployed as part of larger networks.As a result,IoT devices must be provisioned with capabilities—sensing, computation, storage, and communication—based not just on device capabilities but also on networkedsystem requirements.

The state of the art and challenges in VLSI IoT systems

Several desirable characteristics of VLSI IoTdevices can be identified.
Low cost,
Technology nodes,
 Devices and circuits,
 Node and hub architectures & Sensors
Also, sensors in robotics have evolved from mechanical discipline towards artificial intelligence.
VLSI plays a key role in this development where the boundaries between sensing, signal processing IoT and robotics are gradually fading

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Energy calibration of the sub-keV Germanium detector using different parameters

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For direct detection of Weakly Interacting Massive Particle both in spin dependent and spin independent sector interaction rate increases as we go for lower mass region (m_χ = 1-10 GeV). Point contact germanium detector is a novel technique to study background level of the order of 1 count per kg per keV per day (cpkkd) with detector threshold in the order of sub-KeV range. In the sub-keV region the background rate is much higher as compared to the physics event rates therefore it is a challenging task to reduce the backgrounds. To choose the optimize parameter for energy calibration is also a challenging task in sub-keV region. We have studied several parameters for the energy calibration in sub-keV region and in the present report we have focused our study only on two parameters. One of them is the area under the pulse shape- which is known as charge (Q) and other is the maximum point of the pulse known as amplitude (A). In this study we have found that the amplitude parameter is the best parameter for the energy calibration because it provides good energy resolution as well as better noise edge as compared to the other calibration parameters.

Keywords— Point contact Ge detector; Low energy calibration; Dark matter searches.

Hand Gesture to Voice Converter Glove

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Deaf and dumb people communicate among themselves using sign languages, but they find it difficult to express themselves to the outside world. The language used by muted people is said to be sign language and this communication attribute uses gestures in place of sound. A person can express his/her views by combining hand formations, movement of body, orientation of hand and facial expressions simultaneously. In this paper, we propose to develop an automated device capable of converting sign language to speech to make communication possible between the muted fraction of society and the general public, practicable. In this work, Flex Sensor plays the major role. Flex sensors are sensors that change in resistance depending on the amount of bending of the finger. A glove is used in such a way that the flex sensors are attached with the gloves. Dumb people can use this glove and by performing gestures the bending of flex sensors occur and further processes takes place. The sensors transmit the data to the microprocessor to determine the shape, position and orientation of user. As a result, speech signal is generated. Thus, this hand glove will act as a bridge betwixt the hearing impaired and the general people as it is competent and extremely useful.

Index Terms - Flex sensor, Gesture, Sign to Voice converter, Communication, Automated Hand Glove.

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Design and Simulation of ALU

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The objective of thispaper is to design 8 Bit Arithmetic Logical Unit (ALU) which accepts two 8 Bit binary numbers and one operation code and display result. It is the major component of the Central Processing Unit of a computer system. The ALU circuits is an electronic circuit and electronic circuit can be implemented by using Verilog or VHDL.

Keywords—ALU, HDL, CPU, RTL

AGROMET ADVISORY SERVICE-A BOON FOR FARMERS IN THE LOCKDOWN CONDITIONS DUE TO COVID-19 IN THE EAST CHAMAPARN DISTRICT OF BIHAR

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The impact of COVID-19 on the economy is no doubt devastating. As precautionary measures, farmers and farm labors also have to stay at homes and not allowed to visit agricultural experts to resolve crop related issues therefore agro-advisory and technical support through digital communication methods for the benefit of farmers during the lockdown period are very much helpful. Weather forecast helps to increase agriculture production, reduce losses, risks, reduce costs of inputs, improve quality of yield, increase efficiency in the use of water, labor and energy and reduce pollution with judicious use of agricultural chemicals. District Agro-Met unit (DAMU) has been established at Krishi Vigyan Kendra, Piprakothi in East Cahmaparn district of Bihar. DAMU frames the block level agromet advisory bulletins and disseminate to farmers using multi-channel communication mechanism in the district. Weather based agroadvisory is being published on every Tuesday and Friday including following aspects- Weather forecast for upcoming five days in terms of Temperature (max,min), Rainfall (amount), Wind (speed, direction), Relative Humidity (max,min). Information on these weather parameters is very much helpful for taking decision on farm activities eg: sowing, irrigation, fertilizer application, spraying, harvesting and storage. This agromet advisory bulletin contains crop specific information on suitable varieties, seed rate, plant protection measures. The advisory also integrates information on good care of livestock, poultry and fishery also. These agromet advisory bulletins has been prepared and disseminated to the state agriculture department, farmers, FPOs and NGOs through newspaper, radio, whatsapp groups, facebook e-mail, phone call and mobile-SMS. Precautionary measures against COVID-19 during different cultural practices have also been integrated in this bulletin to make awareness among farmers. In the present lockdown conditions farmers can't visit KVK, therefore this bulletin is very much useful for thousands of farmers to take right decision on farm activities.

Key words- Weather forecast, District Agro-Met unit, agromet advisory, COVID-19

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Characteristics of the shower particles and target fragments produced in $^{84}Kr_{36}$ - emulsion interaction at 1 GeV per nucleon

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In the present analysis we have study the correlation between the shower particles, which produced from the participant region, with the black particles and grey particles, produced from the target spectator region, of the $^{84}Kr_{36}$ – emulsion interaction at 1 GeV per nucleon. The present study show that the production of shower particles is strongly depend on the incident kinetic energy of the projectile beam, because by increase in incident kinetic energy of projectile beam the collision becomes more violent collision as a result the participant region will increases due to which production of shower particles will increasing. The present study also show that the production of shower particles also depend on the interaction of the different type of projectile groups of nuclear emulsion detector.

Keywords—Nuclear emulsion detector, correlation between particles produced from participant and target spectator regions.

Survey on CPU Scheduling Algorithms

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Scheduling is the crucial objective of operating system. For scheduling, resources of system distribute among processes which are going to be executed. CPU scheduling is a way by which processes are allocating to the CPU for a specific time quantum. Scheduling process is needed to maintain each and every process that comes with a processor in parallel processing. In several conditions, not every algorithm performs better on the significant problem. Sometimes the FCFS algorithm performs better than the other in short burst time while Round Robin performs better for multiple processes in every single time. However, it is impossible to predict what process will come after. The motive of this paper is to compare three algorithms, FCFS, SJF, and Round Robin. The target is to know which algorithm is more suitable for the certain process with different parameters, such as running time, burst time and waiting times etc.

Index Terms - FCFS, SJF, Round Robin, Schedule, Burst Time

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"A Deep Learning approach for feature extraction of online tourist behaviour reviews through Sentiment Analysis."

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In the field of tourism industry, machine learning has played a major role to find out the exact online reviews about the tourist places, hotels and other tourism services. Not only taking out the reviews is sufficient but some efficient methods are required to figure them out in the context of good, bad or neutral reviews. Tourist's reviews plays a great role to analyze liking and disliking of tourist services by the customers. Hence, in this paper sentiment analysis has been described along with machine learning techniques and deep learning techniques on tourist's reviews to see their behavior towards various tourist places, hotels and other services provided by tourism industry. Authors used deep learning methods over classical algorithms . Comparison of various machine learning and deep learning methods working on tourist sentiments has been done here in this paper to show that deep learning techniques analyze and classify emotions and polarity with deep layers efficiently where on the other hand classical algorithms of machine learning give results not better than deep learning techniques. If we go through the previous research done in the past to study the tourists behavior or hotel ratings or other related services of tourism, it has been seen that by implementing classical machine learning algorithms and latest deep learning algorithms on same data ,efficiency is much better predicted for future in case of deep learning methods by using CNN,RNN and LSTM advanced techniques. Lastly ,the focus of this paper is towards using deep learning methods that will work on deep layers of unstructured, semi structured data taken from tourism websites by sentiment analysis to know about the customer reviews whether they are good or bad but with more and more clarity to improve the existing tourism system. Such improved tourism system will give benefits to tourists or users in terms of better services and undoubtedly it will help tourism industry to enhance business in future.

Keywords—sentiment analysis, machine learning, deep learning, tourist reviews.

Patient Services and Time Scheduling for Outpatient Department

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Hospitals experience frequent system block whenever or wherever there is more footfall than the expected number of patients. In order to manage the patient number, the hospitals have opted for numerous methods to cope up with operational and structural problems in the hospital to improve patient's overall experience. The first step towards betterment in health services is to reduce the Outpatients' waiting time. This will improve the level of Patient satisfaction as well as overall efficiency of the system. For this purpose, several types of Operations Research Models have been developed in Health Care field. These models help in overcoming the waiting time issues faced by outpatient in hospitals. This paper deals with the outpatient department system characteristics and its major challenges to improve and to solve the problem of patient queuing.

Keywords: Outpatient, Waiting time, Appointment, Scheduling, Arrival System

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IoT applications in renewable energy systems towards improved grid management

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Energy sector has changed over the last 20 years. Renewable energy business is up and running. It's expected to gain another 43% by 2022 according to International Energy Agency. And Internet of Things (IoT) plays an important role in these dynamics. Today, sensor-based technology and data science enable the efficiency and automation of wind farms and solar fields. Connected buildings save millions on electricity. Companies widely adopt IoT based energy solutions to decrease their carbon footprint and cut down on their bills. Internet of Things is the enabler of the modern energy industry. IoT technology helps connect all the elements of power production and consumption, gain visibility in the processes and provide real control at every step of energy flow from exploitation to the supply to the end users. The energy sector is undergoing a massive transformation. Along with solar, wind, storage and other technologies, the internet of things (IoT) is helping to drive this transformation. It's revolutionizing nearly every part of the industry from generation to transmission to distribution and changing how energy companies and customers interact.

Improved grid management to build new infrastructure

IoT technology enables the integration of more distributed resources into the grid thereby improving grid management. Placing sensors at substations and along distribution lines provides real-time power consumption data that energy companies can use to make decisions about voltage control, load switching, network configuration and more which are automated. Sensors located on the grid can alert operators to outages, allowing them to turn off power to damaged lines to prevent electrocution, wildfires and other hazards. Smart switches can isolate problem areas automatically and reroute power to get the lights back on sooner.

Conclusions Power usage data can also serve as the basis for load forecasting resulting in managing congestion along transmission and distribution lines and ensures that all of the connected generation plants meet requirements related to frequency and voltage control. This power consumption data can also help companies decide where to build new infrastructure and make infrastructure upgrades. The IoT is transforming nearly every sector of our economy, including the one that powers — the energy sector. Over the coming years, the energy industry is going to get smarter, more efficient, more distributed and more reliable, thanks in part to the IoT.

Keywords: Digital twin technology, IoT sensors, frequency and voltage control, improving grid management.

Study of Automated text summarisation considering syntactic feature of sentence

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With the dramatic growth of the Internet, people are overwhelmed by the tremendous amount of online information and documents. This expanding availability of documents has demanded exhaustive research in the area of automatic text summarization. According to Radef et al. [1] a summary is defined as "a text that is produced from one or more texts, that conveys important information in the original text(s), and that is no longer than half of the original text(s) and usually, significantly less than that".

Automatic text summarization is the task of producing a concise and fluent summary while preserving key information content and overall meaning. In recent years, numerous approaches have been developed for automatic text summarization and applied widely in various domains. For example, search engines generate snippets as the previews of the documents [2]. Other examples include news websites which produce condensed descriptions of news topics usually as headlines to facilitate browsing or knowledge extractive approaches [3, 4, 5].

In this paper we discuss various areas, applications, techniques and discuss the strength and weakness of each method along with categories of text summarization. Finally identified and address for future research on automatic abstractive text summarization.

Keywords— *Text summarization; abstractive summary, Syntactic featre;*

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Digital and remote technologies in COVID-19 health care services management : Potentialities and Challenges in India

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Connecting health systems together can reduce a huge amount of manual admin tasks by consolidating EMRs (electronic medical records), scheduling systems, and patient monitoring into one place. As all hospital resources are being stretched, having a tool to monitor patients all around the hospital and ensure that medication is delivered effectively will be a massive help. Apart from the many cases of corona virus sectioning off parts of hospitals and taking up a huge proportion of hospital staff's time and attention, other high-risk patients still require the same levels of care. Devices that monitor glucose levels for diabetic patients keep track of blood pressure and heart rate levels and alert to issues can allow hospital staff to take care of these patients remotely while in another section of the hospital. Devices for patients at home can also connect to EMRs (electronic medical records) so that chronically ill patients do not necessarily have to visit the hospital or medical centre while still being attended by medical staff.

The scalability of IoT also comes in handy for monitoring all the patients who are high-risk enough to warrant quarantine but not serious enough to warrant in-hospital care. Right now, the daily check-up of the patients is done manually by healthcare workers who go door-to-door. In one reported instance, a healthcare worker had patients standing in their apartment balconies, so that he could fly a drone up to take their temperatures with an infrared thermometer. With IoT, the patients can have their temperatures taken and upload the data with their mobile devices to the cloud for analysis. This way, healthcare workers can not only collect more data using less time but also reduce the chance for cross-infection with the patients. In addition, IoT can provide relief to the overworked staff at the hospital.

Conclusions:

It is now the moment for countries to fast-track the construction of new digital infrastructure, such as IoT along with AI, in addition to the hastening of vital projects and major infrastructure construction that's already included in countries' financial stimulus plans. The year 2020 should have been the start of an exciting decade in medicine and science, with the development and maturation of several digital technologies that can be applied to tackle major clinical problems and diseases. These digital technologies include the internet of things (IoT) with next-generation telecommunication networks such as 5G, big-data analytics, artificial intelligence (AI) that uses deep learning and blockchain technology. They are highly inter-related: the proliferation of the IoT (e.g., devices and instruments) in hospitals and clinics facilitates the establishment of a highly interconnected digital ecosystem, enabling real-time data collection at scale, which could then be used by AI and deep learning systems to understand healthcare trends, model risk associations and predict outcomes. This is enhanced by blockchain technology, a back-linked database with cryptographic protocols and a network of distributed computers in different organizations, integrating peer-to-peer networks to ensure that data are copied in multiple physical locations, with modified algorithms to ensure data are secured but traceable.

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Role of Farm Advisories in tackling adverse effect of COVI 19 on farming community

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Krishi Vigyan Kendras(Farm Science Centers) are agricultural extension centers by ICAR(Indian Council of Agricultural Research) and its affiliated institutions at district level to provide various types of farm support to the agricultural sector. KVKs provide several farm support activities like providing technology dissemination to farmers, training, awareness etc. To achieve the set objectives KVKs undertake following types of activities in the adopted villages: Farm advisory service, training programme for different categories of people, training programme for the extension functionaries, Front Line Demonstration (FLDs) and On Farm Testing (OFT).A vital role is played by KVKs in conducting on farm testing to demonstrate location specific agricultural technologies. KVKs conduct demonstrations to prove the potential of various crops at farmers' fields. They also conduct need based training programmes for the benefit of farmers and farm women, rural youths. KVKs are creating awareness about improved agricultural technologies through large number of extension programmes. Critical and quality inputs like seeds, planting materials, organic products, biofertilizers and livestock, piglet and poultry strains are produced by the KVKs and made available to the farmers.As on January 2020, there are 716 KVKs. Out of these total KVKs some are under State Agricultural Universities (SAU) and Central Agricultural University (CAU), some are under ICAR Institutes, NGOs, State Governments and other educational institutions.While KVKs are expected to undertake their own projects, they are also expected to serve as a resource center for extending government initiatives to local areas.

During this COVID-19 KVKs all around the nation played a vital role in providing farmers timely solutions to their queries and KVK Sirohi is one of them. Among six KVKs of Agricultural University Jodhpur KVK Sirohi has been working throughout this period with its full capacity. More than 100 farm advisories were issued addressing various farm issues. Farmers were connected through whatsapp groups and advisories issued in these groups on daily basis. Farmers were keen to know the exact remedies for their current situation. As due to nationwide lock down it was not possible to conduct any training so farmers were benefitted with AIR broadcast by AIR-Mount abu station. Among various radio talks by experts onewas provided on mashroom cultivation. The advisories on farm operations were also given through local news papers so that maximum number of farmers can be covered. This lock down brought marketing problems for each and every farmer as this was the harvesting time for rabi crops also poultry farmers were negatively affected with unavailability of transport as well as markets. To combat with these issues we came up with some solution. Poultry farmers were advised to rear chicks instead of selling eggs. They were advised to incubate the eggs and sell the chicks, partially the eggs also at village level. backyard poultry size become larger which will be boon for future income sustainability and definitely increased my income up to 200% after three months. Due to less demand of eggs, farmers changed their strategy and concentrated on upscaling of back yard poultry farm. Instead of stress on selling of eggs, farmers preferred to hatch eggs for getting chicks.This helped the poultry farmers to get stable income during lock down crises. Several video calls were made to know the exact condition of the field if any kind of insect-pest or disease infestation was there. Total number of farmers farmers covered was different each time depending upon the tools used. Around 2 lacs farmers covered by AIR Mount Abu while 500 farmers through whatsapp groups.

Keywords: Covid 19, advisories, KVK,farmer etc

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Role of Agromet Advisories in combating the adverse effect of Covid 19

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Krishi vigyan Kendras are the extension functionaries of Indian Council of Agriculture Research (ICAR), which are meant to provide training to the farmers and extension workers learn the skills developed by agricultural scientist at research stations and maximize the farm income by efficiently utilizing the resources. Under this Covid 19 pandemic KVKs are come out as leading agency to know the problem of farmers and provide timely solutions. Krishi Vigyan Kendra, Chittorgarh is working with same motto, here even before the lock down farmers were connected through whatsapp groups where they were provided weather forecast and farm advisories twice in a week: on Tuesday and Friday under DAMU project of IMD (India Meteorological department). They were open to share their problems including insect-pest, seed quality and best management practices. Under lock down condition agricultural scientists were not able to visit their fields but they were contacted through video calling to know the exact position of their field. Farmers were suffering from various problems: some of them were struggling with unavailability of markets to sell their produce and the others were facing problems in getting quality material such as seed, fertilizer etc. Scientists of KVK, Chittorgarh came out for the solutions. Farmers were contacted through telephony. Advisories were provided to farmers through whatsapp groups, on AIR(All India Radio) Chittorgarh and local news papers to handle the current situation. This was the harvesting time for many crops such as wheat. The weather was continuously changing due to western disturbance. Farmers were timely informed about the abrupt weather and advised to timely harvest and store the grains, it saved the farmers from a huge loss. In some villages the farmers were facing the problem in selling eggs they were suggested to incubate the eggs and encouraged for chick production. They sold the chicks at village level; this inspired a lot of farmers around them to adopt poultry as an income generating source. This lead the farmer to got income not only through selling eggs at village level but also by multiplying poultry bird they have stabilize their income.
Farmers were advised to make group of people at village level to sell their farm produce like vegetables at village level.

All these advisories were provided through personally contacting the farmers, whatsapp group made by KVK, Chittorgarh, AIR Chittorgarh and local news papers. In each advisory farmers were asked to strictly follow the guidelines by maintaining social distancing during any farm operations. They were advised to wash their hands after returning from field, keeping adequate quantity of water and soap at field, not using the cloths used in previous days farm operations and sanitize their harvesting equipment. Time to time advisories were issued in form of audio messages to reach out maximum farmers.

Keywords: Covid 19, advisories, KVK,farmer etc

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Recent Advancements in Detector Technology to Reduce the Background for $0\nu\beta\beta$ decay

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The search for the neutrinoless double beta ($0\nu\beta\beta$) decay is the best way to check the Majorana nature of neutrino and lepton number violation. The High purity Ge detectors enriched in 76Ge is one of the best techniques to discover $0\nu\beta\beta$. Several experimental collaboration such as GENIUS, GERDA, MAJORANA, LEGEND and CDEX are using Ge detector technology and have achieved better limit in the search of the neutrinoless double beta decay and further they are optimizing there detector development techniques as well as the purity of the shielding. This article focuses on the challenges in terms of background reduction, achievements, future plan of background reduction, improvement in detector technology and shielding's.

Keywords : Neutrinoless double beta ($0\nu\beta\beta$) decay, High purity Ge detectors enriched in 76Ge, background reduction techniques, improvement in detector technology.

Microfluidic microbial fuel Cell as an efficient BOD biosensor: influence of transition metal oxide as electrode modifier

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MFCs are bio-electrochemical reactors/devices in which microbes oxidize fuel (such as glucose or acetate) and produce electrons at the anode, and terminal electron acceptors (e.g. O_2) are reduced by accepting these electrons at the cathode. The single chambered micro-size microbial fuel cell (MMFC) has attracted increasing attention because of its capability of converting biodegradable materials into electricity and application as BOD biosensor. The present study deals with development of low cost MMFC comprising of a carbon felt anode, and a proton exchange membrane cathode assembly (MCA) in sequence. Micro-MFC device is constructed by stacking a poly-dimethylsiloxane (PDMS) anode chamber, low cost cathode catalyst. Ferric oxide nanoparticles and manganese dioxide nanotubes (MnO_2 NTs) were used as anode and cathode catalyst respectively; these were synthesized using a typical hydrothermal method. . As synthesized catalysts were characterized by X-ray diffraction, scanning electron microscopy, transmission electron microscopy and Fourier transform spectroscopy. MnO_2 NTs were loaded with Vulcan XC 72 on the air facing sight of the cathode surface. After inoculation of electro active bacteria (EAB) Shewanella putrefaciens current generation was observed on an external load for up to two weeks. Current production was found almost proportional to the Chemical oxygen demand (COD) removal. A maximum volumetric power density of 11 W/m3 was achieved during polarization. Uniform biofilm growth was found on the nano-hematite decorated anode in Electron microscopic studies. This indicated that the improved anode-EAB interaction in the small volume may reduce the start-up time and enhance volumetric current density. This study demonstrates suggests that MMFC combined with Fe_2O_3 loaded anode and MnO_2 loaded cathode could possibly improve the feasibility of MMFC designs for real world applications as (Biological Oxygen Demand) BOD biosensor by improving power generation and lowering production cost.

Key words: Microfludics, nanotubes, microbial fuel cells (MFC)

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Microbial Fuel Cell (MFC) based Toxicity Biosensor: A Mini Review

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With the unprecedented degradation of ecological quality, instant detection of toxic substances is vitally important for real-time monitoring in situ. Though many electrochemical or biosensor-based analytical technologies have been implemented for such detection of toxic chemicals, the vast majority of them seem to be time-consuming, misleading, or tedious for effective implementation. More recently, biosensors based on microbial fuel cells (MFCs) are now luring increasing attention because of their sustainability and cost-effectiveness, with numerous applications from analyzing anaerobic digestion processing parameters (VFA) to water quality detection (e.g. COD, BOD). When an MFC is operating under the optimized conditions, the generated voltage is directly linked to the quantity of the given substrate. Depending on that very linear association, several research studies show biosensors based on MFC could detect heavy metals like chromium, or zinc, along with organic molecules like p-nitrophenol (PNP), formaldehyde, and levofloxacin. MFC-based biosensors can be developed from both bacterial consortia and single strains. Biosensors with single strains exhibit several advantages over bacterial consortia integration systems, such as selectivity and stability. One disadvantage of these sensors is that the range of detection usually exceeds the actual level of emissions. Improving their specificity is indeed the most critical aspect for wide implementation. However, MFC-based biosensors provide a potential approach for single-pollutant detection. The present paper illustrate the working principle, advantages, materials used and challenges with MFC biosensor for detecting toxic biosensor.

Keywords; microbial fuel cell, biosensor, toxic pollutants, bioelectricity, bioanode, power output, substrate concentration

HEADPHONE/AUDIO AMPLIFIER CIRCUIT ON PCB USING LM386

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This paper mainly deals with the Printed circuit Board design of Amplifier circuit using LM386.The main objective is to design a system which will be compact , easy to operate and less expensive. This audio amplifier circuit provides many advantages which includes the use of LM386 the integrated chip LM386 is a low power audio frequency amplifier requiring a low level power supply (most often batteries). It comes in an 8-pin mini-DIP package. The IC is designed to deliver a voltage amplification of 20 without external add-on parts. The use of headphones with devices like mobile phones gives us sufficient sound quality but the main problem arises when we want to use the same amplifier for loud music, in order to overcome this problem we have come up with a solution by designing compact, cost effective headphone amplifier

Keywords--- Audio amplifier, LM 386, PCB, KI-CAD,

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Biohydrogen evolution in Microbial Electrolysis Cell: Influence of reactor design

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Global energy needs and rising concern about greenhouse gas emissions have prompted research into all possible alternative sources of fuel and energy. Hydrogen as a biofuel has an efficiency of providing more energy compared to traditional carbon-based fossil fuels. Microbial electrolysis cell (MEC) is an emerging electro-fermentation technology capable of converting the soluble organic matter to storable energy such as H2. Wastewater contains biodegradable organic matter, which is increasingly being considered as a useful feedstock for the generation of renewable energy. Though investigations of energy recovery from wastewaters using MECs have found promising, however, these have been limited to laboratory-scale experiments and relatively optimal operational conditions. Therefore, significant optimization of various parameters for the operation of MECs will be required for most of the applications. At the current stage, the most likely limiting factors for successful scale-up of this technology are the large internal resistance and high fabrication cost. This review discussed different operational factors during optimization study which affects biogas production which is relevant to the research on physical and biological factors influencing MEC performance in terms of hydrogen production and wastewater treatment. This review presents an attempt to overcome these limitations by developing MEC architecture using an efficient and economic separator, cathode material which can be fed with different types of wastewater. Further, it Further, it includes recent development on reactor design, manipulation at the bioelectrode for improved product output and relevant composites for potential application of MECs for hydrogen evolution reaction (HER) and methane production on the cathode surface. Also, perspective has been provided along with valuable information on the efficiency of the processes.
Keywords: Microbial Electrolysis Cell (MEC); biohydrogen; methane; power density; scale-up; Hydrogen Evolution Reaction (HER).

The Techniques to Improve the Efficiency of MonoCrystalline Silicon HIT Solar Cells

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Hetero-junction with Intrinsic Thin layer (HIT) solar cells are one of the most common technologies deployed to extract high efficiency of the solar cells, reduced costs, and increased lifetime. However, issues of cell degradation and power loss persist that have enhance the idea to develop the various techniques to improve the efficiency of silicon HIT solar cells. The article focuses on the different techniques which optimize the performance of HIT solar cells. It is inferred from this study that by the development of various technologies the achieved efficiency of HIT solar cells are 26%. The article covers current technologies, their effectiveness, drawbacks as well as the way for further improvement in the technology.

Index Terms — *HIT, power loss, efficiency of HIT solar cells.*

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BIOINFORMATIC STUDIES-WASTE PLASTIC MANAGEMENT AS RENEWABLE ENERGY

In this pandemic situation, Bioinformatics is playing a vibrant role, after covid-19 plastic is great problem HANDLE WITH CARE -PLASTIC IS EVERYWHERE.

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Plastics are hydrocarbon, made from petroleum. Each plastic distinctive due to the amounts and arrangements of carbon, hydrogen and oxygen, they can be damage into these elements and then connect in different arrangements to make appreciable materials such as carbon nanotubes. Through conventional technology plastics recycle, make to renewable energy such as natural gas, oil, coal, plants and nowwind turbines, solar cells and converting non-recyclable waste materials into electricity. Pyrolysis is the recycle process in which the plastic heated at higher temperature to form carbon nanotubes which is minute particles with remarkable physical properties. The structure of a carbon nanotube looks a piece of chicken wire wrapped into a cylinder and when carbon is arranged, it can conduct both heat and electricity. It's possible to convert all plastics directly into useful forms of energy and chemicals for industry. Organic material decomposes at temperatures between 400°C and 650°C, in an environment with limited oxygen. Recycling plastics reduces the amount of energy and resources (such as water, petroleum, natural gas, and coal). Recycling plastics saves landfill Space. It's relatively easy. It also presents a promising method of energy generation with sufficient investment. Nanotubes also used as conductive films for touch screen displays, flexible electronics fabrics that create energy, antennas for 5G networks. Scientist can manipulate the molecules in certain plastics to create organize pathways nano wires in which electrical charges can travel more efficiently and also help in reduce plastic waste. Solar cells of plastic are comparatively less expensive, make renewable energy available to many more people, homes, and businesses. The application of cold plasma pyrolysis has potential, in combination with renewable energy systems. It presents a sustainable solution for managing the epidemic of plastic pollution of global proportions. Some sources estimate that 8 million metric tons of plastic enter the oceans each year, and the current projections are far from positive. Global plastic production will likely double over the next 20 years, and if we continue at our current rate, we may see more plastic than fish in the oceans by 2050. Plastic pollution isn't only an environmental issue that harms aquatic ecosystems. So reduces the amount of waste conserves natural resources such as timber, water and minerals, increases economic security by tapping a domestic source of materials and prevents pollution by reducing the need to collect new raw materials. Burning plastic creates harmful dioxins. The consultancy Eunomia says plastics burned in incinerators set up to generate only electricity create heat at 25% efficiency. Normally, plastic items can take up to 1,000 years to decompose in landfills. Even plastic bags we use in our everyday life take anywhere from 10 to 1,000 years to decompose, and plastic bottles can take 450 years or more. Renewable plastics, also known as bioplastics, are made from plant sources through processing, the plant material is broken down into sugars. These sugars are changed through fermentation or chemical processes to form polymers. Bioplastics often promoted as a climate-friendly, alternative to petroleum-based plastics may lead to an increase in greenhouse gas emissions. Overall, their net greenhouse gas balance is assumed to be zero. After refusing, reducing, and reusing as much as possible, recycling is the last resort. Refusing helps eliminate a lot of waste from the start. It's about saying "no" to free stuff that becomes instant waste. It takes a bit of practice and preparation to find and actively incorporate reusable alternatives into your daily life. Recycling aluminum cans saves 95 percent of the energy needed to make new cans from raw materials. Recycling steel and tin cans saves 60 to 74 percent, recycling paper saves about 60 percent. Take your own reusable shopping bag to the supermarket. Carry your own food containers, cup and utensils to avoid unnecessary throw-away plastic crockery and cutlery in cafes, bars and even when on board a plane. Carry a reusable water bottle. Say no to disposable straws.

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Bio-imaging of Cancerous Cells using Organic Naphthalimide-based Small Molecules and its Structure Property Relationship

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A group of 1,8-naphthalimide- based small molecules containing different chromophores withvarying conjugation and electron richness at imidic nitrogen are synthesized and characterized. These amine-functionalized naphthalimides are bipolar in nature and exhibit interesting optical and morphological variations attributable to the nature of N-substituents. Despite the dyes are structurally different due to the substituent variation in the imidic nitrogen, their electronic characteristics are similar and originating from the 4-aminonaphthalimide segment. Nevertheless, they exhibited variations in morphology at the microscopic domain attributable tothe structural differences. Further, these fluorescent dyes display biocompatibilityanddemonstrated in bioimaging of A549 adenocarcinoma cells.

Keywords: Naphthalimide, Small Molecules, Bio-compatibililty, Structure Property Relationship

Drug repositioning against *Leishmania species*

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Drug repositioning (also known as drug repurposing or drug reprofiling) is the process of redeveloping a drug for use in a different disease. *Leishmaniasis* is caused by the parasite of the genus *Leishmania*. It's included among 13 neglected tropical parasitic diseases by the World Health Organization Tropical Disease Research (WHO TDR).

Leishmaniasis is very dangerous and death causing disease and also called the Kala-zaar. In 20 different species of protozoa parasite causing disease and transmitted through female sand fly. In recent time, it is very important for redeveloping of the new and novel medication for this serious disease. In old era many scientist have been discovered medicine that control the *leishmaniasis*, but these medicines is not sufficient for the treatment of the *leishmaniasis*. Few medicine shown high toxicity in human body (Known as drug resistant) eg. Amphothrecin B which is used as antileishmanial but shown high toxicity and now this drug have been redevelop which have less toxic compared to old drug.

If we are going to discover any type of drug, it is very important that, drug should be less toxic. In drug discovery process, first thing to select molecular pathway and choose to indentify suitable drug targets specially two types of genome sequence of *leishmania infantum* and *leishmania major*. It is stored large amount of information because of this; it is the best opportunity to discover the new and novel anti *leishmanial* drugs

Key word: *Leishmaniasis*, antileishmanial, Amphothrecin B, drugs

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Nanomaterials: Impact on COVID-19

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COVID-19 or coronavirus 2019 is an infectious disease. It mainly causes due to SARS-CoV-2, severe acute respiratory system coronavirus 2. It is a type of respiratory illness. SARS-CoV-2 is a positive-sense single-stranded RNA virus. This disease is contagious in humans. World Health Organization declared this disease under the pandemic category. The range of corona virus particles is 0.06 microns to 0.14 microns in diameter. Nanoparticles are typically defined as, particles whose size ranges between 1 to 100 nanometres (nm). These nanoparticles have extensive use in medical science for diagnosis and treatments of diseases caused by different viruses due to their size and intensified properties. The size of these particles is equivalent to the size of the pathogen causing microbes. Hence, these particles can also be used in the diagnosis and treatment of this pandemic caused bySARS-CoV-2. In this observation impact of nanomaterials are highlighted in order to control and reduce the effects of this uncontrolled inflammation COVID-19.

Keywords: *COVID-19, Nanomaterials, Nanomedicin,; Diagnosis, Treatment*

Covid-19 Effects On HIV Infected Patients ART

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The current outbreak of novel coronavirus has prompted an upsurge of fear, stigma and virus-shaming that is all too familiar to people living with HIV. For health care providers and other front-line professionals serving people with HIV, this means not only the added burden of managing the outbreak among their patients and clients, but also the opportunity to alleviate panic and keep those they serve well-informed. This article consolidates the most recent provider-focused information available regarding the intersection between HIV and SARS-CoV-2, the novel coronavirus behind the COVID-19 pandemic.

The emergence of the novel coronavirus disease known as COVID-19 creates another health burden for people living with HIV (PLWH) who face multiple morbidities and may be at heightened risk for severe physical health illness from COVID-19. Our abilities to address these morbidities in PLWH must be considered alongside the socially-produced burdens that both place this population at risk for COVID-19 and heighten the likelihood of adverse outcomes. These burdens can affect the physical, emotional, and social well-being of PLWH and interfere with the delivery of effective healthcare and access to HIV treatment. We posit that a syndemic framework can be used to conceptualize the potential impact of COVID-19 among PLWH to inform the development of health programming services.

Keywords :- HIV, COVID-19, SARS-CoV-2, Health care, HIV Antibody

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Application of Eagle Strategy for Minimizing Risk in Cyber Security Optimization

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Most global optimization problems like risk management in cyber security are nonlinear and thus difficult to solve, and they become even more challenging when uncertainties are present in objective functions and constraints. This paper provides a new optimization search method, called Eagle Strategy, for stochastic optimization. This strategy intends to combine the random search using Levy walk in an iterative manner. As we know there are multiple risk factors in the domain of cyber security risk management, this paper explores the idea of a bio-inspired evolutionary algorithm to solve the risk optimization process in organisations. Numerical studies and results suggest that the proposed Eagle Strategy is very efficient for stochastic optimization. Finally practical implications and potential topics for further research makes this paper a readymade guide for researchers in this field.

KEYWORDS: Eagle Strategy, Optimization, Cyber security, Levy Flights, Search,Risk

TheRelevance of Bioinformatics in the Era of COVID-19

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Bioinformaticsis a branch of biological science that uses the knowledge of computer science with mathematics and statistical tools to understand the large and complex biological data. Commonly known as system biology. Bioinformatics is used to study the coronavirus genomics, proteomics, and metabolomics which gives insights to understand the possible mechanism of migration of virus from one species to another, successive accumulation of mutation/changes during the transfer process and its mode of action on the immune system. One of the bioinformatics tools used to analyze the coronavirus genome is a genome detective. It is successfully employed to detect severe acute respiratory syndrome (SARS)-related coronavirus (SARS-Cov-2) sequences isolated worldwide and validated approximately hundreds of whole genome from 10 coronavirus species and categorized them accurately.It also allows tracing of new viral mutations occurring globally which may help in the development of novel diagnostics drugs. Conventionally development of a drug/vaccine takes 10-15 years however with the advancement of bioinformatics, the reverse vaccinology approachcan be used with the aid of in silico tool to design drugs in a year.Another tool is computer-aided drug design toexplore the existing FDA approved drug for the treatment of the coronavirus. Predicted results suggest that anti-psychotic and some anti-inflammatory drugs such as prednisone target the glycoprotein spike of the SARR-CoV2 virus. In conclusion in the current pandemic of the COVID-19 bioinformatics tool can be used to understand the omics of the virus, trace the evolution, and ultimately finding a cure by designing drugs.

Keywords- Bioinformatics, coronavirus, pandemic, vaccine, drug

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Ethno-medicinal Plants Used by Gujjar Tribe in the Siwalik Hills of Dinga-Amb, District Kathua, Jammu and Kashmir, India

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The district Kathua of Jammu and Kashmir is geographically located in the north-western Himalayas. It is mostly a mountainous part inhabited by a mixture of races and ethnic tribes like *gujjar, gaddi* and *bakerwal*. The *gujjar* is a migratory tribe primarily engaged in cattle rearing not only of this region but the whole of Union Territory. They are largely dependent on the valuable plant resources to meet out their day to day requirements including the ethno-medicinal benefits due to lack of better medicare facilities. The exploratory research work brings to light some important ethno-medicinal plants of the region used by gujjar tribal population. The study has an aim to explore the valuable traditional knowledge of herbal plants. A total of 54 medicinal plants belonging to 23 families and 47 genera have been documented as an outcome of exploratory research work in the region. All the plant species have been found to be greatly employed by tribal men to treat a number of human ailments in specific formulations. *Phyllanthus embelica, Asparagus adscendens* and *Zanthoxylum armatum* are commonly used plant species. The over-exploitation together with high grazing pressure has rendered some medicinally important local species to the brink of extinction. There is the need to create awareness of the conservation and sustainable use of certain medicinally important plant species in the region to maintain plant biodiversity of the region.

Keywords: ethnic tribes, over-exploitation, extinction, biodiversity.

Trends in Biomedical engineering

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Biomedical engineering is a multidisciplinary field that combines biology and engineering ,applying engineering ,principles and materials to medicine and healthcare . it focuses on the advances that improve human health .This field seeks to close the gap between engineering and medicine combining the design and problem solving skills of engineering with medical biological sciences to advance health care treatment ,including diagnosis,monitoring and therapy also the management of current medical equipment within Hospitals . The increasing demand for Biomedical Engineers is linked to society's general shift towards everybody utilization of machinery and technology in all aspects of life . The combination of engineering principles with Biological knowledge to address medical needs has contributed to the development of revolutionary and life saving concepts .

Keywords: Biomedical, Medicine, Healthcare, &Biological knowledge.

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Characteristics of the grey particle emission in interaction of $^{84}Kr_{36}$ with emulsion at relativistic energy

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This article is focused on the emission characteristics of the grey particles produced in the interaction of the 84Kr36 with AgBr target nuclei of nuclear emulsion detector at 1 GeV per nucleon. We have studied the average multiplicity distribution of the grey particles with respect to the emission of black particles in forward hemisphere (θ < 900), backward hemisphere ($\theta \geq 900$) and 4π space angle. In the present study we have observed that the average multiplicity distribution of the grey particles showing the linear dependency on black particle emission. We have also observed that the multiplicity distribution of the grey particles is not strongly depending on the mass of the projectile beam. We have compared our results with other experimental observations and found consistent.

Index Terms - Nuclear emulsion detector; target fragmentation, emission characteristics of grey particles.

Nano materials and nanotechnology

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Nanotechnology is the emerging field of science which deals with the surface science, biochemistry, biotechnology, agriculture, molecular biology, genetics, electronics, biology, bioengineering, medical science, semiconductor physics,and microfabrication etc. different types of nanoparticles and nano materials are used in bioengineering and information technology.it is study of nanoparticles that have size from 1nm to 100 nm. top down and bottom up approach are used for synthesis of nano materials. Fullerens, Carbon nanotubes,nano robots ,nanorods are used in cancer treatment,drug delivery, sensor development, febrics , electrical cables making, biomedical instrumentation etc. Atomic force microscopy and scanning tunneling microscopy are used in nanotechnology for analysis of nanoparticles. Nanotechnology may be able to create new material and devices with a vast range of applications such as in medicine, electronics , biomaterials, tissue engineering, defence and security, cosmetics etc.

Keywords- fullerens, AFM, STM, bottom up and top down approach, carbon nanotubes.

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NON-INVASIVE MEDICAL TOOL TO DETECT ANAEMIA THROUGH REAL TIME DATA

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World Health Organization (WHO) distinguishes pallor, a wellbeing danger condition set apart by the insufficiency of red platelets or hemoglobin in the circulation system, as insulting a fourth of the absolute total populace. A computerized, fast and solid location of frailty is subsequently basic. Starter location of pallor is normally embraced outwardly by the doctor by analyzing the shade of the front conjunctiva of the eye and affirmed with an obtrusive blood test. In this examination, we planned a component for the robotized recognition of iron deficiency through non-intrusive visual strategy. Our procedure includes the identification of paleness by dissecting the front conjunctival whiteness of the eye. It works by evaluating the conjunctival shading from advanced photos of the eye taken with a cell phone camera of fitting goals under satisfactory lighting conditions with the assistance of an android application that we have formulated. These pictures are then prepared to get the red and green part spectra of the conjunctiva shading and contrasted against an edge with decide if the patient is iron deficient or not. We utilized our technique on 19 guineas pigs with realized hemoglobin levels. The outcomes got from our procedure concurred with the patient's blood report in 15 out of the 19 cases which means a precision of 78.9 percent. Our examination was pointed towards the computerization of medicinal services offices in immature pieces of the world lacking appropriate human services offices like clinics and social insurance communities. Along these lines we built up an electronic, noninvasive, basic, financially savvy, simple to utilize and convenient essential screening test for iron deficiency which can give a reasonable option in contrast to intrusive techniques for weakness discovery and have significant helpful effect in the immature zones of the world.

Key Words: Invasive, Non- Invasive, Digital image processing, Computer vision, Device, Blood, Nails, Eyes

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AGRI-INFORMATICS ......A FACILITATOR OF MODERN INDIAN FARMING

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Agricultural informatics is a very important issue for modern agricultural development.For the ultimate success, we should make the farmers more aware of it. Though there are several scopes in Information and Communication Technology, very few farmers are known to it. Different apps are available in market (i.e Kisan Suvidha, Pusa Krishi, Soil Health Card Mobile App, Krishi Video Advice etc.). But it's really unfortunate that most of the farmers have no knowledge of utilization of such apps.This study focuses on the utility of agri-informatics on economic upliftment of modern Indian farming.About 50 farmers were interviewed in Chakdaha Block in Nadia district in West Bengal with semi structured questionnaire and it's found that 19 of them did not have Android mobiles. Among rests, only 7 are known to such mobile app providing essential informationsabout different aspects of farming likewise soil structure, weather forecast, Integrated Pest Management (IPM) etc. Those who access the apps, told that apps are really helpful against crop damage. By weather forecast, they come to know about the coming situation and are able to take necessary step. They are also introduced with different organic farming methods too.

It's revealed that those who cannot access the apps, are eager to know about it. So Government, Non-Government farmers producers and training organizations(FPOs) must come forward to make them aware of it. They should get in touch with modern techniques of agriculture.Farmers can be made aware of various organic methods which will increase their yields and also protect them from crop losses.So we should create more awareness among the farmers about this agri informatics.

Key Words: Agri-informatics, apps, awareness, IPM, FPO

Biomedical engineering bioinformatics and agri- informatics

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Biomedical engineering or medical sciences is the application of engineering principles and design concepts to medicine and biology for healthcare purposes (e.g. diagnostic or therapeutic). biomedical engineering is identified as one of the niche engineering branches in the country which deals with the study of engineering principles. biomedical engineers are also involved in the designing of electrical circuits, software to run this medical equipment, or computer simulations in order to test the new drug therapies. prominent biomedical engineering applications include the development of biocompatible prostheses various diagnostic and , ranging from clinical equipment to micro-implants, common imaging equipments are mri (magnetic resonance imaging),electrocardiogram, regenerative tissue growth, pharmaceutical drugs and therapeutic biologicals.bioinformatics is an interdisciplinary field that develops methods and software tools for understanding biological data. common uses of bioinformatics include the identification of candidate genes and nucleotides (snp). bioinformatics also tries to understand the organisational principles within nucleic acid and protein sequences. bioinformatics is the science of storing, retrieving and analysing large amounts of biological information. now a days bioinformatics is considered to be a much broader discipline, encompassing modelling and image analysis in addition to the classical methods used for comparison of linear sequences or three-dimensional structuresagri-informatics is the application in agriculture with innovative ideas, techniques and scientific knowledge to expand the horizons of the computer science. It is information technology applied to management and analysis of agricultural data. today these bioinformatics , biomedical engineering and information technology play important roles in developing new technologies , computer based drug design, disease identification ,cancer treatment etc

Keywords- candidate gene , mri , information technology, insilico drug design, medical devices etc.

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Thermo-mechanical and tribological properties of SU-8/h-BN composite with SN150 / perfluoropolyether filler

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In this study, SU-8 and its composites are fabricated by blending 10 wt. % hexagonal boron nitride (h-BN) fillers with/without lubricants, such as 10 wt.% base oil (SN150) and 20 wt.% perfluoropolyether (PFPE). The thickness of SU-8 and its composites coating are fabricated in the range ~100–105 μm. Further, SU-8 and its composites are characterized by a 3D optical profilometer, atomic force microscopy, scanning electron microscopy, a thermal gravimetric analyzer, a goniometer, a hardness tester, and an optical microscope. Under a tribology test performed at different normal loads of 2, 4, and 6 N and at a constant sliding speed of 0.28 m/s, the reduction in the initial and steady-state coefficient of friction is obtained to be ~0.08 and ~0.098, respectively, in comparison to SU-8 (~0.42 and ~0.75), and the wear resistance is enhanced by more than 103 times that of pure SU-8. Moreover, the thermal stability is improved by ~80–120 ºC, and the hardness and elastic modulus by ~3 and ~2 times that of pure SU-8, respectively. The SU-8 composite reinforced with 10 wt. % h-BN and 20 wt. % PFPE demonstrated the best thermo-mechanical and tribological properties with a nano-textured surface of high hydrophobicity.

Keywords: *SU-8; boron nitride; PFPE; base oil (SN 150); in-situ lubrication*

Smart Farming: A Fusion of Agriculture and Technology

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Abstract: The rapid growth in population requires high production of food. But, the arable land area are diminishing due to urbanization and the traditional methods are not worth enough to cope up with the present demands of food. Hence, some more efficient techniques has to be introduced which might improve the production as per the requirements. Several novel techniques have already been implementing in this new era which is a fusion of technology in agriculture. One such technique is known as Smart Farming, which helps the farmer to automatically gather the information and process it to take the necessary action to boost the production and results in high crop yields. The advent of low cost ubiquitous sensor network along with the Internet of Things (IoT) have empowered the system to read the deficiencies or abundance of scarce and expensive resources in the field and make a necessary decision which resulted in the consumption of optimum resources while producing the maximum possible crop yield. This research work proposes an integration of Internet technologies, Artificial Intelligent system and smart communication which encourages the development of a Smart Farming paradigm.

Keywords: Internet of Things (IoT), Artificial Intelligence, Ubiquitous sensors, data analysis.

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Evaluation of Optimal Treatment Technique for the Treatment of Head and Neck Cancer

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The purpose of this study is to evaluate the optimal treatment technique for the treatment of head and neck cancer. Retrospectively, computed tomography (CT) datasets of 11 patients with head and neck cancer are selected for this study. In this set carcinoma of the Oro-pharynx and Hypo-pharynx were included. Two different plans were generated by using intensity-modulated radiotherapy (IMRT) technique and double modulated RapidArc technique. Dose prescription was set to 66 Gy at 2.2 Gy/fraction to the planning target volume (PTV) including the primary tumors and the lymph-nodal metastases (PTV66 – high risk). Two additional elective PTVs were defined to be irradiated at 60 Gy (intermediate-risk) and 54 Gy (low-risk, sub-clinical disease) in the nodal regions (PTV60 and PTV54). All volumes were to be simultaneously treated according to the simultaneous integrated boost (SIB) approach. All treatment techniques were generated using the Eclipse treatment planning system. The calculations were done with the high definition-120 multileaf collimator (HD-120 MLC). In compare to IMRT, RapidArc achieved comparable or better target coverage with improved sparing of Organ at Risk (OAR). RapidArc monitor unit (MU) values are 1.5 times lesser than IMRT technique. RapidArc is 3 time faster than well established IMRT technique. From this study we also observed that dose constraint value to OAR enhanced when we shift from IMRT to RapidArc technique. Beam on time is also very less for RapidArc in compared to IMRT. In the conclusion, we can say that RapidArc plans are clinically comparable and acceptable as well establish IMRT plan.

Keyword: IMRT, MLC, Head and Neck cancer, Radiotherapy, RapidArc, Organs at risk.

Review Paper: Sarcasm Identification Reflect the user mood on social media

Seema Gusain[1] and Dr. Mamta Bansal[2]
Shobhit University, Modipuram, Meerut, UP

A Raw data available on social media in the form of huge amount of data and access that data in a manner is a data mining just like a pearl take out from ocean. Sentiments nothing but it come from our mind in form of feeling or emotions. Social media is come in our life deep down inside and all our sentiments to share in it related to any problem. Presently we are facing a bunch of problems and need to understand public opinion of regarding issue for prediction of future problems related of society. Analysis of people sentiments on social media play a key role to reach an outcome but identify a sarcastic statement is a challenging task because it is used in humorous way for tone others and it is also show the sentiments of individuals in a sticky condition. In this paper we review about sarcasm identification and detection on social media that reflect the user emotions on social media.

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A Review : Evaluating the potential use of electronic tongue for diabetic patient

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Electronic tongue (ET) is a simple device that may have some applications in the medical field   as an alternative tool to traditional diagnostic methods. The aim of this study is to evaluate the potential use and accuracy of ET in the diagnosis of certain diabetics' patient.

Tongue diagnosis is one of the valuable diagnostic methods in traditional system. The salient advantage of tongue diagnosis lies in its simplicity and immediacy. Sugar taste is indispensable information in food testing. The technical of electronic tongue system is one of research directions to identify different Sugar tastes. This research work presents a survey on recent research status of automated Sugar taste detection. This research focuses on the Back Propagation method based on learning vector quantization (LVQ) neural network. The electronic tongue system designed could identify all the samples of Sweets, fruit and milk successfully in the experiments. The result shows that LVQ neural network is applicable in the chemical recognition of electronic tongue system and can also be used on condition that information is gathered by multi-sensors array. The Sugar recognition methods of the universal electronic tongue are proposed in this work. The effective universal electronic tongue has much advantage over others such as simple methods of pattern recognition and classification, easy for training approaches and wider application fields like Diabetic Patient. An Asian Diabetic patient database with comprehensive information is also constructed.

Keywords: electronic tongue, sensors, bacteria, diagnosis

Order Reduction using Mihailov Criterion and Least Square Pade Approximations

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In this paper author presents a mixed method for reducing the order of the large-scale dynamic systems using the Mihailov Criterion and Least Square Pade Approximation. The denominator coefficient of the reduced order model is obtained by using the Mihailov Criterion while the coefficients of the numerator are obtained by Least Square Pade approximations. The mixed method is conceptually simple and always generates a family of stable reduced models if the original high-order system is stable. The proposed method is illustrated with the help of the numerical examples taken from the literature.

Keywords—Mihailov Criterion, Order reduction, Least Square Pade approximation, Stability, Transfer function.

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App. development using IOT based on MATLAB(Simulink)

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Increasing memory size and reducing hardware size is users demand now a days. Physics, medical & Electronics engineers developing biosensors like Insulin belt i.e. auto insulin injector whenever insulin level goes down the threshold. To create an employment IOT are actually a buzzword and industry are adopting it as a resource. IOT is also known as Internet of Everything (IOE) has no any standard as IEEE8.10 for wireless communication. Deploy of Roberts in real time applications medical surgery , nuclear reactor etc , if hijacked may do some misshaping hence anything that is IOT controlled if is real time needs to be monitored. As energy awareness is increasing lots of research has been done as a result now a days we have more smart devices. Like searching hotels on mobile & laptop have their own prospective of search.

MATLAB environment may fulfill Need of Automation for monitoring traffic for chalan , statistical data analysis by accelerometer, smart dustbin for municipality etc.

To connect matlab to cloud mode, using Think-speak.com that supports matlab (online open data platform application) , were user have to create his id, and get channel ID , API keys i.e. read & write keys, which enables user to read and write on channel via his matlab coding irrespective of the systems provided.

Simulink Software Supports package for Ardino Hardware and is required to operate Ardino Hardware .

Through add –Ons(In Matlab) >> Get Add-Ons one can add hardware package , use to writing any program on any hardware. One can find examples on Matlab Central . After designing the model, program is executed , following certain rules. Model Settings>> Hardware Implementation>> Ardino UNO>>Target hardware resourses >> Host-board connection >> Set host COM Port >> Manullay>> COM Port number(Details will be at Computer Management>> Device Manager) .

Keywords : IoT, Matlab, Simulink, IoE

Internet of Robotic Things: A Review for Future Technologies

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The applications of Internet of Things (IoT) in wide field of areas like Military, Industry, Robotics, Healthcare, Agriculture, Nanotechnology etc. are increasing hurriedly day-by-day and till date, billions of devices are already connected through network using internet protocols and in the coming few years, number can even reach to trillions. Advancements in research and applications in vast field of areas of robotics using machine language and artificial intelligence (AI) have been increasing since last decades. Now at present days it cannot be thought that Internet of Things and Robotics are two separate domains. As a consequence, these two research fields have started interacting, and thus now-a-days an advanced research work on the field of new concept of IoT especially for robotic fields i.e. Internet of Robotic Things (IoRT) is carrying on all over the world. The objective of this review paper is to enlist the technologies behind IoRT, applications of IoRT and to predict the conversion of existing robotic systems to IoRT system for future advanced technologies. In addition, this review paper provides the detail discussion of IoRT architecture, technological challenges and cyber security for privacy and safety.

Keywords: Internet of Things, IoRT, Robotics, Cloud Computing, Artificial Intelligence and Cyber Security.

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SPEAKER IDENTIFICATION FOR CHANNEL MISMATCHING CONDITION BY USING DIFFERENT LANGUAGES

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This paper is a study on the topic of text-dependent speaker identification for channel mismatching condition by using different languages. Here two databases have been prepared both consist of Hindi and English sentences of 50-60 seconds duration. Firstly via directly recording on mobile and second one is Hindi and English database having 23 speakers via telephone channel recording on mobile using call recorder simultaneously. In both databases have same Hindi and English sentences with similar speakers. Hindi sentences and English sentences that are recorded on two 'Vivo Z1 Pro' mobiles both have in-built microphone in parallel in a closed room in noise free environment. In both databases consists of ten Hindi & ten English sentences of each 23 speakers. Identification process adopts the methods of feature extraction based on Mel-frequency cepstrum coefficients (MFCC), linear predictive coding (LPC) coefficients and Delta- Mel-frequency cepstrum coefficients (Δ-MFCC). Methods and algorithms for speaker modeling are implemented in MATLAB.

On the basis of obtained results a high degradation in performance due to mismatch of sensors of training and testing data is resulted. MFCC-SVM performs better during matched condition but Δ-MFCC-GMM performs better than others in mismatched conditions. Our results also show that when comparing both GMM and SVM classifier.

The paper presents a detailed description of the research undertaken, describes the experimental investigations and provides a thorough analysis of the outcomes.

Key words: Speaker recognition, Microphones, Robustness, Testing, Natural languages, Spatial databases,Speech, Reverberation, Degradation,

Potential therapeutics and Technology in COVID-19 Drug and vaccine Development: A Review

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COVID-19 Pandemic has taken a serious condition in India and worldwide. More than 3 lakh people are presently being infected with the deadly virus and more than 10,000 people already died in India. Although, Lockdown and precautionary measures by people had limited the infection earlier, but now the situation is alarming.

Technology is playing a vital role in the detection of coronavirus infection through development of various assay kits that are being used in Hospitals and authorized medical centers for testing the samples of patients. Moreover, there is development of assay kits that have minimized the testing time of samples from corona infected patients. Early detection is very important for the treatment of coronavirus patients at early stage. Several diagnostic kits are based on antibody testing and the confirmatory testing is done by Real-time PCR Kit. Technology had played a major role in development of these diagnosis kits.

Presently, there is an urgent need for the therapeutics in the form of either Drug or vaccine that will be helpful in the treatment of COVID19 patients. Several pharmaceutical and Biotechnology based companies had already started the process of Drug and vaccine development in India and worldwide. Bharat Biotech. from Hyderabad and Moderna from USA had already got the lead. There will be further testing of these drugs or vaccines through clinical trials in human patients.

The present review will discuss the role of technology in the recent development of therapeutic strategies for Drug and vaccine development against COVID-19. There will be exhaustive focus on the technology based outcomes relevant to COVID-19 therapeutics that has the potential for saving human life at the COVID-19 crisis period.

Keywords: COVID-19, Drugs, Vaccines, Technology, Therapeutics,Moderna, Bharat Biotech.

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Analysis of Signal Processing Algorithm Using L1 Minimization
Arun Kumar giri[1], Dr. R.P Agarwal[2]

In recent year Compressed Sensing (CS), a joint compression process, is an emerging area in the field of Imaging in which signal/Image can be sampled and simultaneously compressed at a reduced rate. This technique can also be used for reconstruction of sparse signal in high dimensional space.The first ℓ1-minimization methods a Basis Pursuit on linear optimization process to recover the signal. While the second uses greedy algorithm to compute the signal iteratively. The paper discuss the process of implementing to algorithms in GPU card for Bio-Medical imaging, Regularized Orthogonal Matching Pursuit (ROMP).The best resolution image is achieved when using Compressive Sampling Matching Pursuit (COSAMP) on image dimension N=1024. The lowest image recovery time was achieved by using Compressive Sampling Matching Pursuit (COSAMP).

Review Paper: Sarcasm Identification Reflect the user mood on social media
Seema Gusain[1] and Dr. Mamta Bansal[2]
Shobhit University, Modipuram, Meerut, UP

A Raw data available on social media in the form of huge amount of data and access that data in a manner is a data mining just like a pearl take out from ocean. Sentiments nothing but it come from our mind in form of feeling or emotions. Social media is come in our life deep down inside and all our sentiments to share in it related to any problem. Presently we are facing a bunch of problems and need to understand public opinion of regarding issue for prediction of future problems related of society. Analysis of people sentiments on social media play a key role to reach an outcome but identify a sarcastic statement is a challenging task because it is used in humorous way for tone others and it is also show the sentiments of individuals in a sticky condition. In this paper we review about sarcasm identification and detection on social media that reflect the user emotions on social media.

Keywords:- Sentiment Analysis, Sarcasm, Mood, Emotions

Nitrogen doped Reduced Graphene Oxide Supported Manganese Ferrite Nanocomposite for Anodic Hydrazine Oxidation and Cathodic Oxygen Reduction Catalysis

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Electrocatalyst plays a pivotal role on the performance of direct hydrazine fuel cell. Herein, we report a facile hydrothermal synthesis protocol to couple $MnFe_2O_4$ nanoparticles (NPs) with nitrogen-doped reduced graphene oxide (h-$MnFe_2O_4$ NPs/N-rGO) and demonstrate its bifunctional electrocatalytic behavior for both anodic hydrazine electrooxidation and cathodic reduction of molecular oxygen. The h-$MnFe_2O_4$ NPs/N-rGO composite not only catalyzes hydrazine electrooxidation via a quasi 4-electron pathway (n=3.94) but also capable to reduce molecular oxygen by an efficient 4-electron pathway. The electrocatalytic activity of h-$MnFe_2O_4$ NPs/N-rGO composite was found to be superior as compared to $MnFe_2O_4$ NPs/rGO, $MnFe_2O_4$ NPs, N-rGO, and physical mixture of $MnFe_2O_4$ NPs and N-rGO. The better efficiency of h-$MnFe_2O_4$ NPs/N-rGO composite originates from the synergetic physiochemical properties of $MnFe_2O_4$ NPs and N-rGO which facilitates analytes diffusion, reduces charge transfer resistance, and offers a large number of active sites.

Keywords : *Electrocatalyst, nanocomposite, fuel cell, graphene.*

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Electron transport Performance of CeO$_2$ Doped TiO$_2$ Nanoparticles in Dye Sensitized Solar Cells

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The sol-gel synthesis is promising a new material fabrication method for nanoscale materials and nanotechnology. Mesoporous high surface area and high crystallinity MO2 (M = Ti, Ce, nanopowders were synthesized by a modified sol-gel method using metal alkoxide and acetylacetone. The prepared powders had crystalline size of about 5-10µm, Mesoporous CeO$_2$and CeO$_2$nanopowders responding to visible wavelength were also obtained by using the same process. A small addition (5 mol %) of CeO2 did not affect anatase phase. However, further addition of CeO$_2$ increased while anatase TiO$_2$ decreased. These synthesis methods provide simple route to fabricate nanostructured materials under mild conditions.The synthesized nanoparticles were characterized using X-ray diffraction, field-emission scanning electron microscopy, UV-visible spectrophotometry,Photoluminescence and electrochemical impedance spectroscopy. The results indicated that the adsorption of anthraquinone dyes through the CeO$_2$ doped TiO$_2$ was increased along with enhancing the short-circuit photocurrent and open-circuit voltage of the cell. An optimal power conversion efficiency of 3% was obtained in a dye-sensitized solar cell (DSSC) containing the CeO$_2$doped TiO$_2$ film. This material combination is a highly promising agent for the enhancement of the conversion efficiency for the fabrication of high efficient, low cost and high stable DSSCs.

Key Words: CeO$_2$, TiO$_2$,DSSC,TEM and SEM

Mapping of Bamboo in South-Eastern Rajasthan Plateau (Hadoti Plateau) Using Remote Sensing and GIS Application

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The current study deals with mapping of bamboo in South-Eastern Rajasthan Plateau (Hadoti Plateau). The Hadoti Plateau area is located at the edge of Malva plateau at 23^045' to 25^053'N latitude and 75^09' to 77^026'E longitude in South-Eastern corner of Rajasthan state. It is cover total area is 24156.6 sq.kms geographical area with Bundi,Kota,Jhalawar and Baran district. Its Eastern, Southeren, and South -Western boundaries border the Madhya Pradash while Northern and North- Western adjoin with Bhilwara,Chittorgarh,Tonk and Swai Madhopur district. Geographical entity of the plateau average height of 300 bamboos is tree like grasses which are fast growing with highest productivity in the world. The India has the world's richest resources of bamboo occurring over an area of 10.05 mha (12.8%) of the total forest area of the country. In India, According to ISFR report 2019, 125 indigenous and 11 exotic species of bamboo belonging to 23 genera are reportedly found in India. 1976 sq.km bamboo bearing area of Rajasthan with density 415 sq. km dense, 1326 sq.km scattered area and 24 sq. km bamboo present (ISFR report 2019).Mix miscellaneous forest covers are mostly found in south-eastern districts of Rajasthan with 2.5% bamboo forest cover. Visual image interpretation technique was adopted in mapping the heterogeneity of land cover classes at 1:50,000 scale. UPM-APSB's AISA airborne hyperspectral imaging sensor (Landsat-8 & Sentinel-2 data in India) use for bamboo mapping in the forest. The use of remote sensing and geographic information system (GIS) for mapping of vegetation system shows the presence of a variety of bamboo species, *Bambusa bambos* and *Dendrocalamus strictus* mostly found in South-Eastern plateau(Hadoti Plateau) of Rajasthan.

Key Words: Bamboo species, Forest cover, Hadoti Plateau, Remote sensing, Mapping

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ROLE OF IT AND ITS IMPACT

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COLLEGE, MATHURA

Information technology (IT) play a significant role in all aspects of modern society. IT have changed the way in which we communicate with each other, we find needed information. It has become an important part of our daily lives and we are living in the age of information and great impact on our society. Besides this technology is playing a crucial role in the success of society. In the 'information age.' The changing times and the invention of computer have transformed every aspect of our society. However, the rapid growth of technology has both positive and negative aspects in our lives. The impact of Information technology is increasing day by day. With the help of internet, direct, face to face communications have become so easy. Even mobiles phones have become cheaper, which have modern facilities to communicate effectively. It is a true fact that we are living in the era of computers and technologies. The impacts of these new technologies are enormous. In many aspects we find IT solving complex problems very efficiently.

With the objective represent the face of information technology and the impact in our society. we found out that the IT efficient in solving complex problems at a very small type, can perform lots of task and operation that the human cannot do. As result of this the use of IT we can have cost effectiveness, globalization, communication and new jobs creation. Despite all the advantages the IT faces the disadvantages like unemployment, privacy, insufficient of job Security.

Key Words: IT, society, internet, security, globalization

RNA-DEPENDENT CHAPERONE FACILITATED BUILDING OF FERRITIN BASED CORONAVIRUS NANOPARTICLES

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The advanced methodical structures are vital for healthy and effective production of nanoparticles (NP) vaccines in a timely and reproducible manner and used folded monomeric antigens with subsequent assembly. Despite significant advances in in-silico design and structure-based assembly, most engineered NPs are refractory to soluble expression and fail to assemble as designed, presenting major challenges in the manufacturing process. The disappointment is due to a nonexistence of empathetic of the kinetic pathways and allowing technical platforms to ensure successful folding of the monomer antigens into consistent assemblages. A robust protein folding vehicle that applied to NP in bacterial host in exploiting on an innovative function of RNA-dependent chaperone (RDC). The RNA – interaction domain (RID) and bacterioferritin are combined with receptor binding domain (RBD) of coronavirus and expressed in Escherichia coli in liquid form. It was identified by electron microscope and dynamic light scattering and site-specific proteolytic amputation of the RID prompted the assemblage of monomers into NPs. Reducing the overall yield of NPs of a defined size, the mutations that affected the RNA binding to RBD expressively increased the soluble aggregation into amorphous structures. The overall kinetic network of the antigen folding pathway in favor of enhanced assemblage of NPs into highly regular and immunologically relevant conformations, this underscored the RNA-antigen interactions during NP assembly. In future the RNA-binding controls. The concentration of the ion Fe^{2+}, salt, and fusion linker also underwrote to the assembly in vitro, and the stability of the NPs. The role of chaperon in the super molecular assembly of antigen monomers holds promise for the development and delivery of NPs and virus-like particles as recombinant vaccines and for serological detection of viral infections.

Keywords: Nanoparticles, RNA – interaction domain, RNA-dependent chaperone and receptor binding domain.

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An investigation of different dc-dc converters with solar photovoltaic system

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In this paper a theoretical and simulated investigation of different dc to dc converters has been presented with solar photovoltaic system. In the present time, solar systems are used for different application which also save and complete the requirement of electrical energy. The energy from the sun is free and present in a huge amount which can never be finish until life. Hence there is a requirement of efficient output from the solar photovoltaic system which can be done by the different dc to dc converters like as buck converter, boost converter, buck-boost converter, cuk converter etc. as per the requirement of output voltage. So this paper describes the basics and operation of these converters with solar photovoltaic system. The responses of various voltages and currents are simulated to understand the working of converters to obtain the desired output.

Microbial load of frequently used laptops

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This is the era of digital technology. Now no work is done without using Laptops and everyone is having apersonal or shared computer.The computers easily get contaminated with microbes which can affect/infect the users. To Identify these microorganisms and check their numbers, a study was conducted for elimination of bacteria and ensuring safety of people using computers. Students' laptops were observed for microbial counts.This was done by taking a sterile, cotton tipped swab moistened with sterile water.This was rubbed on key board & then placed in 10 ml water for making suspensions which were individually plated on nutrient agar media. The

microbial counts were recorded and identified through gram staining. E coli, Staphylococcus, Salmonella etcwerefound present in very large numbers on the Keyboard, body and even on the cover lid. When the laptop was rubbed with 2% Dettol and swab suspension incubated on nutrient agar media, it showed negligible(+) microbial count. The laptops which are cleaned/sterilized daily showed presence of a high(++)microbialcount.The laptop which was cleaned weekly registered very high(+++)microbial count.The laptop which was never-ever cleaned by the students showed presence of extremely large(++++)microbial count. Detailed work on as to how to manage the laptop's microbial contaminations is in progress through Ecofriendly means.

Keywords: microbialcount,digitaltechnology,laptop, dettol

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IoT based Air Pollution Monitoring System: A solution for Smart Cities

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Air pollution is growing due to rapid industrialization and it has reached to alarming stage. According to World Health Organization (WHO), 4.2 million premature deaths globally linked to ambient air pollution, mainly from heart disease, stroke, lung cancer, obstructive pulmonary disease and acute respiratory ailments in children. Therefore, some prominent technology is needed to analyze the air pollution data and based on analyzed data issue guideline to counter life hazards as a safety measures.   Conventional air pollution monitoring system has certain disadvantages in terms of response time and accuracy. Internet of Thing (IoT) based air pollution monitoring system is used to monitor the air quality over a web server using internet. The system uses Arduino UNO and gas sensors for monitoring air quality as it can detect harmful pollutants and can measure their concentrations more accurately. It will give indication when air quality goes down beyond a prescribed limit due to presence of harmful gases like CO, CO_2, SO_X, NO_X, benzene & smoke in the air. In this way the system monitor the air of environment using Arduino UNO microcontroller & proposed IoT technology to improve quality of air as a solution for smart cities.

Key Words: IoT, Arduino UNO, Air quality, Gas sensor.

Ethno-medicinal Plants Used by Women folk in the Siwalik Hills of Mansar, District Udhampur, Jammu and Kashmir, India

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The Shiwlik Hills of the north-western Himalayas abound in rich floristic diversity. They have also been used as a source of medicine from prehistoric times. The women folk of Himalayan ranges are not less capable in possessing the knowledge and dosage formulations of the herbal plants growing in their neighborhood. The present study has an aim to explore the hidden wealth of the use of ethno-medicinal plants by women in the Siwalik Hills of Mansar in district Udhampur of Jammu and Kashmir. The data was prepared on account of explorations of research area of the wild plants growing there and interactions with knowledgeable female inhabitants. The study revealed documentation of 50 medicinal plants belonging to 22 families 50 genera and 57 species. The documented plant species are extensively used by the rural women inhabitants to treat numerous human ailments. The women folk are actively involved in the collection, dosage formulations and administering herbal formulations to cure household human ailments including children. The herbal plants are used in different formulations and dosages either externally or taken internally. *Phyllanthus embelica, Tinospora cordifolia, Centella asiatica* and *Zanthoxylum armatum* are commonly used ethno-medicinal plants in the area. *Amaranthus spinosus* and *Micromeria biflora* are used as an antidote against snakebite without any validity. The traditional knowledge of some herbal species is required to be investigated to draw valid inferences. The populations of some medicinal plant species have been decreasing over the period of time due to many factors including over-exploitation, habitat destruction and invasive alien species with the result there is dire need creating awareness of conservation and judicious use of the valuable resource.

Keywords: diversity, explorations, formulations, conservation.

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ENVIRONMENTAL IMPACT OF NANOTECHNOLOGY

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An increased understanding of the environmental and human health impacts of engineered nanoparticles is essential for the responsible development of nanotechnology and appropriate evidence-based policy and guidelines for risk assessment. The environmental impact of nanotechnology is the potential effects that the use of nanotechnological devices and materials will have on the environment. Nanotechnology's environmental impact can be divided into two aspects: the potential for nanotechnological revolutions to help in improvement of the environment, and the possibly novel category of pollution that nanotechnological materials might cause if released into the environment. Engineered nanomaterials are being proposed for use for applications ranging from medicine to environmental cleanup, which will ultimately lead to their release into the environment, either directly or as waste. As many pollutants reach the aquatic environment it will become increasingly important to assess the specific risk posed by the release of nanomaterials into freshwater systems.

Key words: Environment, Nanotechnology, Nanomaterials, Freshwater system

Bioinformatics and its approach in drug technology
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Bioinformatics involves the integration of computers, software tools, and databases in an effort to address biological questions. Bioinformatics approaches are often used for major initiatives that generate large data sets. Two important large-scale activities that use bioinformatics are genomics and proteomics. COMPUTER-AIDED DRUG DESIGN (CADD) is a specialized discipline that uses computational methods to simulate drug-receptor interactions. CADD methods are heavily dependent on bioinformatics tools, applications and databases. Drug biotransformation (metabolism) gives metabolites with physicochemical and pharmacological properties that differ significantly from those of the parent drug. It is usually investigated by experimental and computational approaches. Due to the importance of drug metabolism in terms of safety and efficacy, it becomes important to have efficient and reliable ways to predict drug metabolism in vitro, in silico, and in intact organisms. Molecular modeling and data modeling are in silico tools available for predicting drug metabolism. Prediction of drug metabolism has applications in drug design, medicinal chemistry, pharmacokinetics, toxicology and helps in the structural characterization of metabolites.

Keywords: Genomics and proteomics, CADD, pharmacological, in silico

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Software Design Management for ZynQ Based Dynamic Partial Reconfiguration FPGA

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Partial Reconfiguration is the ability to Dynamically modify blocks of logic by downloading partial bit files while the remaining logic continues to operate without interruption. Partial Reconfiguration enables system Flexibility that is to swap functions and perform remote updates while system is operational. The FPGA is used as a communications hub and must Remain Active . Hence it cannot perform full reconfiguration due to established links. That is why There is need to use Dynamic Partial Reconfiguration(DPR) based FPGA Soft-core processor.

In this paper, The proposed system utilizes Dynamic Reconfiguration capability of ZynQ SoC so that Partial Reconfiguration of different bit streams is performed during run time. The main objective of author is to show how to manage Reconfiguration Process using Xilinx Vivado software.
The FPGA Dynamic Partial Reconfiguration can be Managed by Designing ICAP pathways. The idea behind this paper is to develop dedicated HW component ICAP Management. The system uses a set of reconfiguration services through a simple bus interface , which is based on a bidirectional FSL and unidirectional Native Port Interface(NPI). In this paper, we Review FPGA reconfiguarion,Properties of Modern SoC Architectures built for the Purpose and then Investigate design flows,key challenges in software Design Management.

Keywords : Dynamic Partial Reconfiguration,ZynQ,FPGA, Xilinx Vivado

DISTRIBUTION AND DESIGNING OF THERAPEUTIC siRNAs – SUBMISSION TO MERSE-CoV

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The MERS-Coronavirus is a novel human coronavirus causing respiratory syndrome since April 2012. The replication of MERS-CoV is mediated by ORF (Open reading frame) 1ab and viral gene activity can be modulated by RNAi approach. The reserve of virus replication has been documented in cell culture against multiple viruses by RNAi approach. Now, very few siRNA against MERS-CoV have been computationally published. In this abstract, we have discussed the computational distribution of potential siRNAs. Probable siRNA can be designed to silence aanticipated gene by considering many factors like target site, specificity, length and nucleotide content of siRNA, elimination of potential off-target sites, toxicity and immunogenic responses. The efficient transfer of siRNAs into targeted cells faces many challenges like enzymatic degradation and quick clearance through renal system. The siRNA can be delivered using transfection, electroporation and viral gene transfer. Currently, siRNAs delivery has been improved by using advanced nanotechnology like lipid nanoparticles, inorganic nanoparticles and polymeric nanoparticles. The efficacy of siRNA-based therapeutics has been used not only against many viral diseases but also against non-viral diseases, cancer, dominant genetic disorders, and autoimmune disease. This innovative technology has attracted researchers, academia and pharmaceuticals industries towards designing and development of highly effective and targeted disease therapy. Through using this technology, effective and potential siRNAs can be designed, delivered and their efficacy with toxic effects and immunogenic responses can be tested against MERS-CoV.

Keywords : MERS-CoV, nanoparticles and siRNAs.

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Ethno-medicinal Plants Used by Locals in the Siwalik Hills of Manwal, District Udhampur, Jammu and Kashmir, India

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The district Kathua of Jammu and Kashmir is geographically situated in the north-western Himalayan region of India. It is mostly a mountainous part inhabited by *dogras*. The people are primarily engaged in cattle rearing not only of this region but the whole of Union Territory. Their habitations in the high mountains are far off the medicare centres and thus enforcing them to rely on their own treasure of traditional knowledge of healing herbs to get rid of health related disorders. There is a long list of ethno-medicinal plants used by them. The present study was carried out through field study in consultation with nomadic practitioners, elderly people and has resulted in the documentation of 45 medicinal plants belonging to 13 families 35 genera and 45 species. The main objective of the study is to explore the much valuable traditional knowledge of herbal plants known to the people after comprehensive surveys in the difficult terrain. The over-exploitation together with high grazing pressure has rendered some medicinally important local species to the brink of extinction. There is the need to create awareness of the conservation and sustainable use of certain medicinally important plant species in the region to maintain plant biodiversity of the region. Plant species like *Ajuga bracteosa* are considered indispensable in curing chronic and serious skin ailments.

Keywords: healing herbs, over-exploitation, conservation, biodiversity.

Cyber security and Cyber Forensic systems

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Cyber security refers to the body of technologies, processes, and practices designed to protect networks, devices, programs, and data from attack, damage, or unauthorized access. It's also known as information technology security or electronic information security. the global cyber threat continues to evolve at a rapid pace, with a rising number of data breaches each year. medical services, retailers and public entities experienced the most breaches, with malicious criminals responsible for most incidents. some of these sectors are more appealing to cybercriminals because they collect financial and medical data cyberattacks are usually aimed at accessing, changing, or destroying sensitive information , extorting money from users , or interrupting normal business processes.
Implementing effective cybersecurity measures is particularly challenging today, because there are more devices than people, and attackers are becoming more innovative. the U.S. the national institute of standards and technology (nist) has created a cyber-security framework. to combat the proliferation of malicious code and aid in early detection, the framework recommends continuous, real-time monitoring of all electronic resources. the threats countered by cyber-security are cybercrime, cyberattack ,cyberterrorism etc . computer forensics also known as computer forensic science is branch of digital forensic science pertaining to evidence found in computers and digital storage media. the goal of computer forensics is to examine digital media in a forensically sound manner with the aim of identifying, preserving, recovering, analyzing and presenting facts and opinions about the digital information. safety tips are protects ourself against cyberattack, update our software, use antivirus software ,use unsecure wi-fi network in public places for protection of cyber attack. today information technology and computer science play a vital role in forensics science and cybersecurity .

Keywords- NIST , information technology, cyberterrorism, cybercrime, digital information etc.

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EDUCATIONOF ROBOTIC SCIENCE DURING AND SUBSEQUENTLY COVID-19 CRISIS

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There is a global battle is going on against the COVID-19 and the world has seen technology play an extremely important role in assisting humans in order to contain the spread of the virus and dealing with existing cases. The COVID-19 outbreak has forced us to leave our work place and offices in order to maintain social distancing by staying at home. This has affected manufacturing and the economy throughout the world. Therefore, in order to tackle this crisis, AI based system are employed which can be used in places to do the work. A large number of hospitals across the world have recently started using robots to aid both the healthcare staff and patients. In this corona virus pandemic, robotic systems can significantly reduce the risk of disease infection or transmission to healthcare workers by making it possible to triage, evaluate, monitor and treat patients from a safe distance. Non-contact robotically controlled ultraviolet (UV) surface disinfection is quite useful in disease prevention because COVID-19 spreads via close contact respiratory droplet transfer and as well as via contaminated surfaces. Mobile robots doing temperature measurements in public areas and parts of entry represent a more practical use of mature technologies. Moreover, it is also possible to retrace contacts of infected individuals with the help of networking existing security system with facial recognition software which will help in alerting others. However, social robots could be deployed to provide continued social interaction and adherence to treatment ways with no fear of disease spread. Now, the impact of COVID-19 may further drive the research of robotics in order to address risks of infectious diseases. By fastening a fusion of engineering with infectious disease professionals with right kind of funding, we can be ready when the next pandemic arrives.

Keywords:COVID-19, Ultraviolet, Pandemic and Infectious treatment.

Microcontroller interfacing with ADC 0808 by using

KIEL: An aid for wireless communication

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An 8051 microcontroller is interfaced with an analog to digital converter (ADC). ADC is used in digital signal processing, in commercial applications as well as in industries to convert the data from analog to digital in order to create the data to be used in compact disks. Further, a circuit has been simulated using PROTEUS demo version and represented and illustrated. The 8051 microcontroller is programmed by using KIEL software based on C language. In this paper, the interfacing process between an ADC and microcontroller 8051 has been explored.

Keywords: Interfacing, Proteus Demo Version, KIEL, wireless communication.

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Ethno-medicinal Plants Used by Gujjar Tribe in the Hills of Manwal, District Udhampur, Jammu and Kashmir, India

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The district Udhampur of Jammu and Kashmir is geographically situated in the north-western Himalayan region of India. It is mostly a mountainous part inhabited by *dogras* as well as other communities like gujjars and bakerwals. The nomadic tribe gujjar is primarily engaged in cattle rearing not only in this region but the whole of Union Territory and it is a one of the predominant nomadic tribe in the area. Their habitations in the high mountains are far off the medicare centres and thus enforcing them to rely on their own treasure of traditional knowledge of healing herbs to get rid of health related disorders. There is a long list of ethno-medicinal plants used by them. The present work was carried out through field study in consultation with elderly nomadic men and women. It has resulted in the documentation of 45 medicinal plants belonging to 13 families and 35 genera. The main objective of the study is to explore the much valuable traditional knowledge of herbal plants known to the people after comprehensive surveys in the difficult terrain. The over-exploitation together with high grazing pressure has rendered some medicinally important local species to the brink of extinction. There is the need to create awareness of the conservation and sustainable use of certain medicinally important plant species in the region to maintain plant biodiversity of the region. Plant species like *Ajuga integrifolia* Buch. Ham. is considered indispensable in curing chronic and serious skin ailments.

Keywords: healing herbs, over-exploitation, extinction, conservation.

GSM Security System

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Security is one of the primary needs of today. We have developed a security system for residential colonies. At present several types of security systems are in use. Each of the systems has its merits and demerits. One of the most popular systems is the PIR motion sensor-based security system. It works on the principle that living beings emit IR radiation. Basically, it senses the change in IR radiation due to the movement of living beings. The output of this sensor can be used in several manners, like to sound a siren, to the flashlight, to send some signal through wireless/wired connection for appropriate action. This indication will alert the persons of a particular home or in some nearby periphery. Now in that situation, the persons want to send this information to all the colony members and nearby police stations, so that collective action may be taken. For this purpose, the need for such a system arises, and to fulfill this need the system is designed.

Design and Simulation of H-Bridge inverter with PWM technique

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In this paper, Cascaded H-Bridge Multilevel inverter is designed and simulated using the pulse width modulation (PWM) Technique to reduce the harmonic distortion in supply. Specific odd harmonics can be reduced by operating the semiconductor switches in H-bridge inverters at optimized switching angles of the Pulse width modulation signals. The system is designed with a photovoltaic array, a lift converter to accelerate the output of the panel which uses Maximum power point Tracking (MPPT), and an H -bridge inverter for conversion from DC to AC. A Multilevel inverter using Cascaded H-Bridge may be a DC-AC inverter to cut back total harmonic distortion with different sinusoidal pulse width modulation (PWM) like phase disposition, phase opposition disposition, and space vector.

Keywords: Multilevel inverter, Cascaded H Bridge, Harmonic distortion, MPPT, Pulse Width Modulation.

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PERSPECTIVE OF AGROMETEOROLOGICAL SERVICES IN INDIA DURING COVID-19 PANDEMIC

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Both lives and livelihoods are at risk from this pandemic. COVID-19 is disrupting activities in agriculture and supply chains. India Meteorological Department (IMD) and Ministry of Earth Sciences (MoES), Government of India have launched the integrated agromet advisory service scheme renamed as "Gramin Krishi Mausam Sewa" (GKMS) during 11th Five Year Plan. Service has the potential to reduce the weather aberration associated losses to a large extent by suitable adoptive measures dissemination to the farmer and planner's community. Quantitative district level (656 districts) weather forecast for 8 weather parameters from GFS-1534 model at 12.5 km special resolution provided to State Meteorological Centers for value addition purpose and further send to 130 AgroMeteorological Field Units (AMFUs) for Agro advisory preparation and dissemination to farmers through SMS. Extended range forecast of outlook for next 15 days and weekly update on every Friday also translated in advisory in collaboration with ICAR-CRIDA to help the planners and other stakeholders under the scheme. Advisories are disseminated through Short Message Service (SMS) and Interactive Voice Response Technology (IVR) etc. New mechanisms are also being practiced such as Kisan Call Center and Text to Speech to reach upto each and every end user. Number of farmers benefited from the service is now 40.1 million with the objective of reaching 95.4 million farming household of the country. At present only 24% of the farmers are benefiting from the SMS service. The economic profit estimates rupees 42,000 crore on 4 principal crops viz. paddy, wheat, sugarcane and cotton only. This service has the potential of generating net economic benefit upto Rs. 3.3 lakh crores at 2012-13 prices on the 22 principal crops when AAS is utilized by 95.4 million farm households. Weather forecast in all temporal ranges is desirable for effective planning and management of agricultural practices during this pandemic. The development of response strategy can help farmers to realize the potential benefits of using weather based agrometeorological information in minimizing the losses due to adverse weather conditions and lack of farm activities during this lockdown period, thereby improving yield, quantity and quality of agricultural productions. In fact, short and medium-range weather forecasts play a significant role in making short term adjustments in daily agricultural operations as well as preparation of contingent plans. Weather based agricultural operations for different crops are mainly incorporated in these bulletins along with specific recommendations to monitor the disease and pest occurrence, their control and precautionary measures against COVID-19 during different cultural practices have also been integrated in this bulletin to make awareness among farmers. Issue of agromet advisories well in advance has facilitated farmers in operational management and also resort to intercultural operations to conserve soil moisture and take up foliar application of nutrients to correct any deficiency.

Keywords: GKMS, India Meteorological Department, COVID-19, Lockdown.

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EVOLUTION IN THE DIAGNOSIS OF COVID-19 AVAILING NANOTECHNOLOGY

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Since the discovery of the health calamity, SARS-CoV-2, the viral etiology of COVID-19 in December 2019, it has spread globally. Till now there is no report of any clinically approved antiviral drugs or vaccines that are effective against COVID-19. The analysis by the UN Department of Economic and Social Affairs (DESA) said the COVID-19 pandemic is disrupting global supply chains and international trade. Almost all the nations are struggling to slow down the transmission of the disease by testing & treating patients, quarantining suspected persons through contact tracing, restricting large gatherings, maintaining complete or partial lock down etc. So, under such inescapable circumstances the role of nanotechnology along with nanomaterial is undeniable. Nanotechnology involve designing and producing objects or structures at a very small scale, on the level of 100 nanometres (100 millionth of a millimetre) or less. Nanomaterials are one of the main products of nanotechnologies – as nano-scale particles, tubes, rods, or fibres. As nanotechnology develops, nanomaterials are finding uses in healthcare, electronics, cosmetics, textiles, information technology and environmental protection. Report contents include that market analysis of nano-based diagnostic tests for COVID-19 including nanosensors incorporating gold nanoparticles, iron oxide nanoparticles, graphene, quantum dots, carbon quantum dots and carbon nanotubes and that of antiviral and antimicrobial nanocoatings for surfaces including fabric (mask, gloves, doctor coats, curtains, bed sheet), metal (lifts, doors handle, nobs, railings, public transport), wood (furniture, floors and partition panels), concrete (hospitals, clinics and isolation wards) and plastics (switches, kitchen and home appliances) are being carried out. For suppression of both viral and bacterial respiratory infections, treatment protocols based on nano-silver colloids (NAgC) by inhalation delivery are presented. The core aspects to be analysed was the nano-particle size that is most effective in covering up the virus surface inhibiting its further action. Results show that the dosage is highly sensitive to the silver nanoparticle size, with 3nm - 7nm being the optimal size. The observed sizes of nanoparticles bound to the virus were exclusively within the range of 1–10 nm, with peak virus attachment effectiveness for nanoparticles size in the range of 3nm – 7nm. The fact that no nanoparticles greater than 10 nm in diameter were observed to interact with the virus is significant. From the clinical therapeutic point of view, this treatment formulations may be most effectively applied as a first-line intervention at an early stage of respiratory infections, i.e., when mostly affecting the upper respiratory system and bronchial tree. For example, the proposed formulations could be used to control local outbreaks of COVID-19 via early stage home treatment. It was noted that similar NAgC dosages also provide anti-bacterial effectiveness. Thus it is proposed that for hospital ventilator associated pneumonia (VAP), inhalation delivery of NAgC can be implemented prophylactically to lower VAP risk.

Key words – Nanotechnology, Nanomaterials, COVID-19, nano-silver colloids (NAgC)

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Challenges of Cyber Threats in Smart Cities

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Cyber threats to smart cities are one of the most important challenges. Considering the ever-expanding risk landscape, India's emerging smart cities may be targeted for various adversary interests. From e-governance services to telemedicine and other smart city services-accepting and delivering these services depends on security and the underlying technology empowers them.

Many countries around the world have established cyber security frameworks and defined security and privacy guidelines in the context of smart cities. The unique challenges to the Indian context weaken efforts for the implementation of cyber security in smart cities. The main challenges are,Cyber security is not identified among the top priorities and limited stakeholder awareness on cyber security. While safety is a necessity, in the Indian context, it is often a rethink. When cities throw their weight behind schedule to run services, security takes a back seat. Based on the analysis for assessing cyber threats and security, smart cities may face many challenges in implementation today cyber security.

In order for smart cities to pursue technology-centric smart solutions, they need to realize that these solutions have their own security limitations. Therefore, smart cities can become attractive targets for large-scale cyber threats and security attacks, which have a wider impact on the entire smart city ecosystem and the smart cities' residents.

Keywords: Smart cities, Cyber threats, smart solutions

Arsenic contamination of ground water: A Review of Source, Disease, Identification and its Monitoring.

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Arsenic contamination of groundwater in different parts of the world is an outcome of natural and/or anthropogenic sources, leading to adverse effects on human health and ecosystem. Millions of people from different countries are heavily dependent on groundwater containing elevated level as for drinking purposes. The contamination of drinking water supplies with natural Occurring arsenic is major health problem. High risk areas are crossing the permissible level of arsenic consumption according to WHO. Long-term exposure to arsenic in drinking water can cause cancer in the skin, lungs, bladder and kidney. It can also cause mutation, cancer, ulcer etc. There is a clear need for cheap, simple, non-toxic field test kits for routine monitoring of arsenic levels in drinking water. Whole-cell biosensors may provide a solution, but current systems require expensive reagents or laboratory equipment. Enzyme-catalyzed fluorescence assay capable of detecting arsenic at concentrations below the allowable level adopted by the World Health Organization (10 ppb in drinking water). The enzyme catalytically produces fluorescent NADH in the presence of arsenate, which enables facile detection of arsenate at concentrations in the 0 – 200 ppb range. This method holds potential for interfacing with automated analytical sampling systems to allow arsenic determinations in environmental health applications.

Keywords: Source, Health Problems, Biosensor, Catalyst, Enzyme, Application.

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Paper-Based Piezoresistive MEMS Sensors for the Detection of Cholesterol Content in the Blood

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This works describes the development of Paper-based MEMS sensors as the structural material. The working principle on which these paper-based sensors are based is the piezoresistive effect generated by conductive materials patterned on a paper substrate. The device is inexpensive, simple to fabricate, lightweight, and disposable. The paper-based sensor can measure forces with moderate performance. These sensors are used to measure the cholesterol content in the different blood samples. Today innovation and technology lead people in to area once never imagined miniaturization remote control raid information transfer or biomedical plants we are interested in the development of new MEMS technologies where the emphasis is on minimizing cost and the ratio of performance to cost is maximized by minimizing cost rather than maximizing performance. Raised cholesterol increases the risks of heart disease and stroke. Globally, a third of ischaemic heart disease is attributable to high cholesterol. Overall, raised cholesterol is estimated to cause 2.6 million deaths (4.5% of total) and 29.7 million disability adjusted life years (DALYS), or 2.0% of total DALYS. Raised total cholesterol is a major cause of disease burden in both the developed and developing world as a risk factor for Ischemic heart disease and stroke. A 10% reduction in serum cholesterol in men aged 40 has been reported to result in a 50% reduction in heart disease within 5 years; the same serum cholesterol reduction for men aged 70 years can result in an average 20% reduction in heart disease occurrence in the next 5 years. . We have chosen papers the material to serve as the basis for this exploratory progress A conceptually related effort to reduce the cost of diagnostic systems by developing paper based diagnostic systems has developed into a new approach to diagnostic system technologies.

Keywords: Piezoelectric Sensor, MEMS, Cholesterol, Hypertension.

Influence of the Menstrual Cycle on Body Fluid, Determined by Whole Body Impedance Analysis

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Abstract:

Young women experience some type of discomfort during the menstrual cycle such as headaches, breast tenderness, mood swings and most notably, water retention. The purpose of this study was to determine if there were significant fluctuations in body composition during a normal menstrual cycle using multi-frequency (MFBIA) body impedance analysis. MFBIA analyzer measured the impedance, resistance, reactance and phase angle of the body on passing an alternating current (<1 mA) at multiple frequencies (5, 50, 100 and 200 K Hz) in succession and quantified the physiological parameters by utilizing the software built-in the instrument. On the basis of our results it is concluded that there were no statistically significant fluctuations in body hydration or total body water (26.6±1.98 % of Total Body Weight or 49.2±11.27 kg) during menstrual cycle. However, intracellular water was significantly higher on test day 14th and extra cellular water was significantly higher on test day 22nd of the cycle.

Keywords: Menstrual Cycle, Estradiol, Progesterone, Impedance, Body composition.

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Real-Time Oceanographic Monitoring System in Underwater Wireless Sensor Networks

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Underwater Wireless Sensor Networks (UWSNs) finds its way actively in current researches where sensors are deployed for examining discrete activities such as tactical surveillance, ocean monitoring, offshore analysis and instrument observing. All these activities are based on the number of sensors deployed in ocean for data collection and communication. Naturally, underwater medium is asymmetric. Consequently sensors and Base Station (BS) serves on distinct frequencies thereby complementing under water communication. Sensors grouped into clusters ensure an ordered distribution over the definite area of the sensing field. Despite, routing schemes in UWSNs seems to be challenging with relevance to multi-path propagation, noise and attenuation due to continuous movement of water. On the other hand, recharging or replacement of sensor nodes is least possible after deployment especially in under water environments. In spite of several existing protocols guaranteeing efficient data transmission from source to destination (BS) very few of them have focused on energy efficient data transmission. Our research attempts to analyze wave frequency level using Hexagonal based Clustering with Mobile Sinks (HBC-MSs) strategy and MSs are exploited to reduce energy consumption in data transmission. The simulation results prove that HBC-MSs outperforms than the Opportunistic Backpressure Collection (OBC) in terms of energy efficiency, network lifetime together suggesting reliable disaster indicator level to the BS.

Keywords: Wireless Sensor Networks, UWSNs, Sensor Nodes, Clustering, Mobile Sinks.

USING MORPHOLOGICAL CHARACTERS AND SIMPLE SEQUENCE REPEATS (SSR) MARKERS TO CHARACTERIZE FIG (FICUS CARICA L.) CULTIVARS

RAKESH KUMAR, VIKAS SHARMA

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Punjab-144030

In the present study we used 25 morphological characters and SSR markers to characterize fig (Ficus carica L.) cultivars. Morphological characters show a high level of variation in the germplasm. Principal component analysis (PCA) and canonical discriminant analysis (CDA) are used to examined the structure of morphological variations. UPGMA dendrogram were constructed from estimated Mahalanobis distances.SSR markers were used to compare genetic polymorphism with the observed phenotypic variation. Six SSR markers are used to compare genetic polymorphism. The aim of this work was using of morphological traits and SSR markers for characterization of fig (Ficus carica L.) in order to start a program for the conservation of fig germplasm to protect this species from genetic erosion.

Keywords: Ficus carica L., Cultivars, Morphological characters , SSR markers ,Genetic polymorphism

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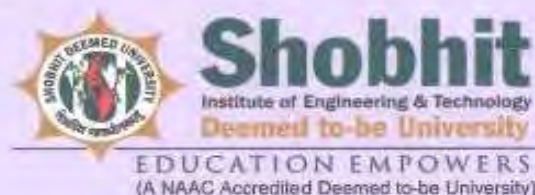
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Bioinformatics as a tool to fight against Covid-19 in different perspectives

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Introduction: Bioinformatics can simply be defined as the application of information technology in storage, processing and application of biological data.

In the present scenario of Covid-19 where there is an urgent requirement of collection, processing and getting some output from the information regarding virus structure, process of infection, development of drug/vaccine etc. bioinformatics is playing a very important role. It is to preview the role bioinformatics is playing in the battle of humanity against Covid-19.

Genomic Similarity: Studies showed that genome of this new virus strain is 96% similarity to a known coronavirus in bats and is 86-92% identical to a coronavirus in pangolin.

Based on specific positions on the genome and their function in viral replication and cell entry, strategies are developed for creating vaccine and drug design against Covid-19.
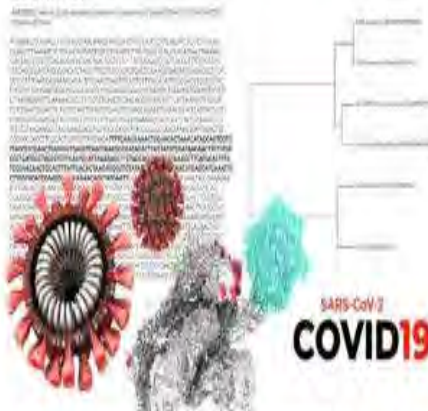
Fig-1: Representation of Covid-19 virus and it's phylogeny

To Analyse blueprint of Novel Corona Virus: Australian researchers from the Commonwealth Scientific and Industrial Research Organization (CSIRO) used bioinformatic approach to decode the genome of the severe acute respiratory syndrome coronavirus.

Infection Mechanism: Dr. Tamas Korcsmaros & his team, **Earlham Institute, Norwich, England** tried to develop a holistic picture of how COVID-19 affects the human body using bioinformatic approach. Worked on cytokine storm occurs in some patients between 7-10 days. Immune system go into overdrive. Struggling to cope, the body can fill the lungs with fluid, cause multiple organ failure, and perhaps even lead to some neurological effect.

SalmoNet, SignaLink and OmniPath are the bioinformatic resources used by Tamas. His PhD student have already carried out a **successful pilot study to understand the effect of the virus on infected lung cells.** Further is to study how signaling in primary infected cells is linked to those cells involved in the cytokine storm with aim being to find ways to limit the dangerous immune responses seen later on in some infections.
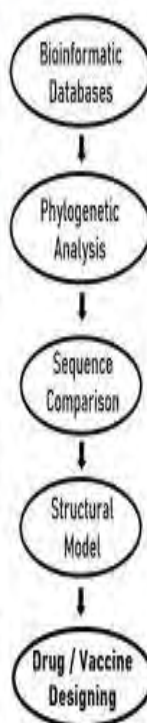
Fig-2: Common approach used in application of bioinformatics

Towards Synthetic Vaccine: Using QUEL (a query language) Robson, 2020 identified sequences of amino acids that are well conserved across many coronaviruses including 2019-novel CoV. KRSFIEDLLFNKV found conserved corresponds to the region around one of the cleavage site, important for viral entry into cell.
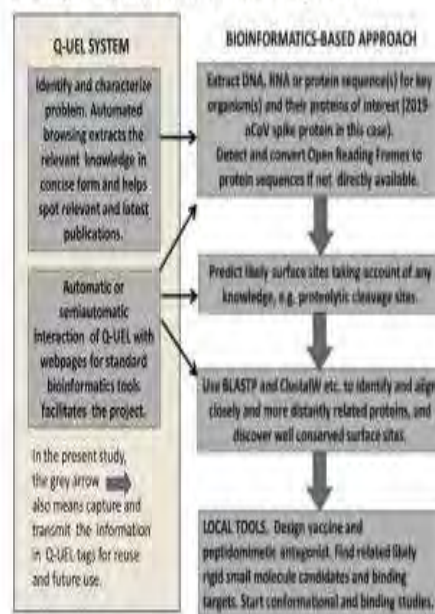
Fig-3: Main Workflow of Robson's Study. Bioinformatics based approach can also be reproduced by standard tools, but is facilitated by Q-UEL tools, especially with the explosive growth in studies regarding 2019-nCoV. (Ref-1)

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Bio-imaging of Cancerous Cells using Organic Naphthalimide–based Small Molecules and its Structure Property Relationship

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Department of Chemistry, Indian Institute of Technology Roorkee, Roorkee-247667, Uttarakhand.
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Abstract

A group of 1,8-naphthalimide- based small molecules containing different chromophores with varying conjugation and electron richness at imidic nitrogen are synthesized and characterized. These amine-functionalized naphthalimides are bipolar in nature and exhibit interesting optical and morphological variations attributable to the nature of N-substituents. Despite the dyes are structurally different due to the substituent variation in the imidic nitrogen, their electronic characteristics are similar and originating from the 4-aminonaphthalimide segment. Nevertheless, they exhibited variations in morphology at the microscopic domain attributable to the structural differences. Further, these fluorescent dyes display biocompatibility and demonstrated in bioimaging of A549 adenocarcinoma cells.

Introduction @ ECBI – 2020; 26-27 JUNE, 2020 @SHOBHIT UNIVERSITY

Organic materials

Polymeric materials — Small molecules

Electronic and Biological applications

Electron-rich core (D) | Electron-deficient core (A)

- Facile dual functionalization
- High electron affinity and carrier mobility
- High chemical and thermal stability

Structures of D-A dyes

Synthesis of the dyes

Theoretical Studies

Fig. 3 Electronic distribution in the frontier molecular orbitals of 2 and 5a.

Optical properties

Fig. 4 (a) Absorption and (b) emission spectra of dyes recorded in DCM.

Fig. 5 (a) Absorption and (b) normalized emission solvatochromism of 4a.

Results and Discussion

Electrochemical and thermal properties

Fig. 6 (a) DPV recorded in DCM and (b) TGA curves of dyes.

Morphological properties

Biological studies

Fig. 9 Microscopy images of A549 cells incubated with 30 μM

Fig. 10 Cell viability of dyes with A549 cells of 4a, 4b and 2 for 12h

Conclusions

- Synthesized and characterized naphthalimide based D-A small molecules and demonstrated them in cellular bioimaging.
- Model compounds were optimized and theoretically investigated using DFT to gain insight into the electronic distribution in the frontier molecular orbitals. These dyes reflect the properties as predicted from the theoretical calculations.
- The photophysical and electrochemical studies revealed that these dyes are electronically similar although structurally different from each other.
- The structural variations helped to fine tune the morphology of the dyes at microscopic level. The synthesized small molecules reflect unique and uniform morphology depending on their molecular structure.
- Biological applications of the reported dyes are evaluated by investigating their biocompatibilities and cell uptake behaviors.
- Carbazole-based dyes exhibited supremacy in terms of brighter cell imaging than fluorene-naphthalimide analogs.
- It can be inferred that strategic structural modifications in designing the molecules play a crucial role in determining the properties and behavior of the functional materials. @ECBI – 2020; 26-27 JUNE, 2020 @SHOBHIT UNIVERSITY

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Integration of plant nutrient sources reflect better productivity of soybean-wheat cropping sequence on long term basis

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INTRODUCTION

- Long term fertilizer experiment provides valuable information on the impact of nutrient management strategies with varying sources, types and combinations of plant nutrient inputs on soil fertility as well as productivity of crops.
- The aim confined to monitor the pattern of sustenance in crop productivity under long term fertilizer application for last four decades in a Vertisol.

METHODOLOGY

- **Treatment details :**

50% NPK	100% NP
100% NPK	100% N
150% NPK	100% NPK+FYM
100% NPK+HW	100% NPK (–) S
100% NPK+Zn	Control

Soybean- 20:80:20 wheat-120:80:40

EXPERIMENTAL FINDINGS

Effect of Long Term Fertilizer application on productivity sustenance of soybean-wheat cropping sequence
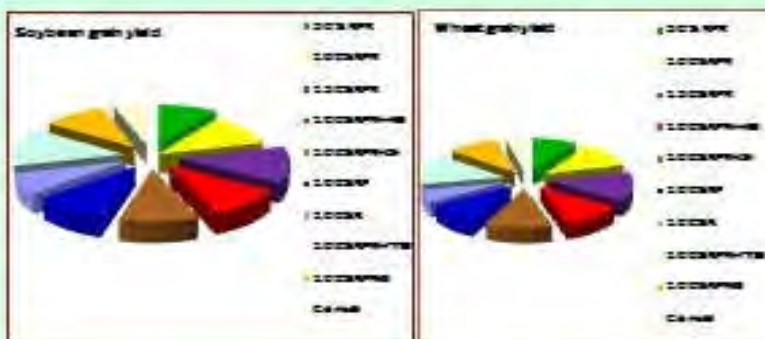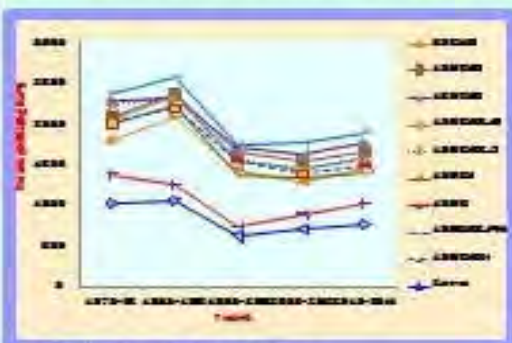
CONCLUSIONS

- Continuous cropping without fertilizers reduced yields while, it was increased with successive addition of fertilizer over control. Imbalance use of fertilizers in long run deteriorates the crop yields. Hence, balance nutrition is needed for sustainability.
- S sustained the productivity, reduction in yield was noticed due to without addition of S in fertilizer schedule.
- Thus, the results confirmed that under continuous cropping of soybean and wheat in sequence over 43 years, the integrated application of organic manure with RDF sustained the higher yields as well as improved the soil fertility.

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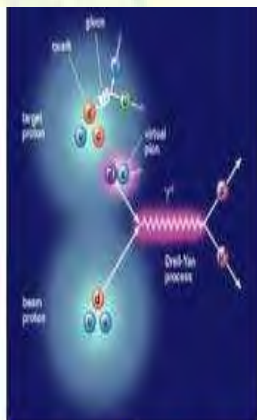
TITLE – NUCLEAR PHYSICS
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CONTACT NUMBER- 9897998467

INTRODUCTION – NUCLEAR PHYSICS is the study of the protons and neutrons at the centre of an atom and the interaction that hold them together in a space just a few femto metres(10 -15) across. Examples nuclear reactions include radioactive decay, fission, the break-up of the nucleus, the fusion the merging of nuclei. Discoveries in nuclear physics has lead to application in many fields will stop this include nuclear power, nuclear weapons, nuclear medicine , magnetic resources imaging, industrial and agricultural isotopes, ion implantation in materials engineering and radiocarbon dating in geology and archaeology. Nuclear physics deals with the interaction of mostly radioactive atoms iso topes and elements inside of the nuclear reactor and its corresponding nuclear components.

OBJECTIVES – one of the main objectives of the study of nuclear physics is the understanding of the structure of nuclei. Most basic property of a nucleus is its binding energy. This is brought about the specific nuclear forces, counteracted partially by the coulomb repulsion between the protons. Study of the nucleus of the atom is the heart of our ability to understand the universe. it provide answers and expand our knowledge of both the infinitely small and the extremely large.

METHODOLOGY- Nuclear physics made primary beams of electrons protons and heavy iron over a wide range. They are complementary class of experiments. Secondary beams of other particles it is neutrons protons neutrons neutrons and radioactive science can be derived principally from intense proton and heavy metal beams.

REVIEW OF LITERATURE – Ernest Rutherford , 1st baron Rutherford of Nelson, OM ,FRS, HFRSE(30august 1871- 19october1937), was a New Zealand born British physicist who came to be known as the father of nuclear physics. Some encyclopaedia Britannica considere d him to be greatest experimentalist since Michael Faraday (1791-1867)

CONCLUSION AND RESULTS- Power plants is a affordable and is environmentally friendly, It is extremely energy efficient and cheap, overall nuclear plant it is very beneficial to the community.The main users of nuclear physics Data analysis, naturally drives us towards considering current generally industry data Tools in an Increasingly modular data analysis Environment with a low barrier of entry to first results and algorithm modifications..

Nuclear power leads to the instrumentation And theoretical concepts that address problems of societal Concern And to advances in others Areas of science. A heavy nucleus contain hundred of nucleons , most of the current research in nuclear physics , related to the study of the nucleus under extreme Conditions such As high Spin and excitation energy. And There are 4 types of nuclear Reactions - Fission , fusion , Nuclear decay , Transmutation..

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Software Design Management for ZynQ Based Dynamic Partial Reconfiguration FPGA

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Introduction

Partial Reconfiguration is the ability to Dynamically modify blocks of logic by downloading partial bit files while the remaining logic continues to operate without interruption. Partial Reconfiguration enables system Flexibility that is to swap functions and perform remote updates while system is operational. The FPGA is used as a communications hub and must Remain Active . Hence it cannot perform full reconfiguration due to established links. That is why There is need to use Dynamic Partial Reconfiguration(DPR) based FPGA Soft-core processor. In this paper, The proposed system utilizes Dynamic Reconfiguration capability of ZynQ SoC so that Partial Reconfiguration of different bit streams is performed during run time. The main objective of author is to show how to manage Reconfiguration Process using Xilinx Vivado software.

The FPGA Dynamic Partial Reconfiguration can be Managed by Designing ICAP pathways . The idea behind this paper is to develop dedicated HW component ICAP Management. The system uses a set of reconfiguration services through a simple bus interface , which is based on a bidirectional FSL and unidirectional Native Port Interface(NPI). In this paper, we Review FPGA reconfiguarion,Properties of Modern SoC Architectures built for the Purpose and then Investigate design flows,key challenges in software Design Management

Reconfigurable Partition
A Partition is a logical section of the design, user-defined at a hierarchical boundary, to be considered for design reuse.

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Bioinformatics tools

- Bioinformatics tools are used to identify the gene from protein structure or amino acid sequence
- Such as identify the gene of ACE-2 from surface receptor

BLAST Programs

Program	Query	Database
BLASTP	Protein	Protein
BLASTN	DNA	DNA
BLASTX	Translated DNA	Protein
TBLASTN	Protein	Translated DNA
TBLASTX	Translated DNA	Translated DNA

In 1st image show gene construct, and 2nd image show ACE-2 gene location on chromosome
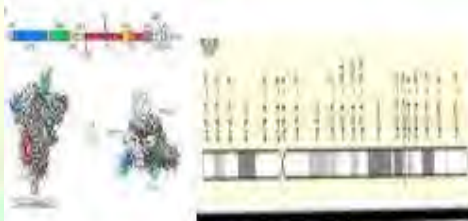
Recombinant DNA technology and molecular genetics

- Add molecular markers and isolate the ACE-2 gene construct
- Add primer for amplify the gene segment in PCR
- Run pcr product in gel electrophoresis
- Then isolated gene insert in to the pulmonary Blastomycosis Fungus by using Ti plasmid of Agrobacterium tumefricne on the media
- Insert any marker gene for screening in the gene construct

Modified fungus insert in the respiratory system

- Reproduction rate of this fungus is 4-5 days.
- Concentration of the fungus should be less.
- Overgrowth can be cause respiration problem therefore reduce the growth by antifungal medicine(Fluconazol, Amphotericin,terbinafine ,etc) at 4 days interval

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- SARS(severe acute respiratory syndrome) have positive sense rna and use host mechanism to multiplication and make fast copy of itself and damage host cell
- The less amount of antibodies (Ig M,IgG,IgA) are not work on lage number of covid 19 strain
- Therefore the receptor of genetically modified pulmonary Blastomycosis Fungus are bind to covid 19 thus virus are not penetrate in lung cell and not multiplying, and growth is reduced of covid 19 and fungus receptor work as antibodies and destroye to virus and less population of virus also killed by immune system(Antibodies)

Mainly three techniques are used

- 1- Microbiological techniques
- 2- Bioinformatics tools
- 3- Recombinant DNA technology and molecular genetics techniques

Microbiological techniques (Isolation and Identification of pulmonary Blastomycosis Fungus)

- PCR amplification of Blastomyces in soil samples
- To extract DNA from soil samples, the MoBio Ultra-Clean Soil kit was used
- Extractions took place as outlined in the kit, wit severall amendments
- The samples were vortexed for 30 min, and the DNAs were eluted with 30 ml of S solution.
- Unspiked soil samples were used as a control.
- In the in vitro experiments, soil spiked with 10-fold dilutions of an initial concentration of 10 pg/ml pTIV DNAA was used after addition of S2 solution.

- Additional experiments were run using soil samples with B.dermatitidis yeast cells grown on Middlebrook 7H-1 garar for 2 wk at 378C. For the B. dermatitidis yeast cell assays, two loopfuls of cells were added to 1.0 ml of sterile water and vortexed in microfuge tubes.
- Ten ml of thee suspension was pulled from the tube and placed onto a haemocytometer to count the cells.
- With the yeast counted, 10-fold serial dilutions of the yeas suspensionn through 10 6 were made into sterile wate andd 100 ml of each dilution was added to a soi extractionn tube containing 0.75 g sterilized soil.
- soil samples were diluted 1/40 and 25 ml template was added to two eparatete reaction tubes.

After identification the Blastomyces dermatidis was grown at 378C on Middlebrookk 7H10 agar.

Kill the covid 19 virus by genetically modified pulmonary Blastomycosis using bioinformatics tools

Today's we have not vaccine to killed covid 19 virus therefore large population of human life are killed by covid 19.

In this presentation my aim to Stop the death of human being By using genetic altered pulmonary Blastomycosis Fungus.

Sardar Vallabhbhai Patel University of agriculture and technology modipuram Meerut

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- Degree- M Tech (Biotech)
- College of Biotechnology

Why I am use Blastomycosis Fungus

- 1- Able to survive in lungs environment.
- 2- it can be easily growth
- 3-time take less to grow.
- 4-it is a eukaryotic cell therefore able to uptake large size genome
- 5-Easily killed by antifungal medicine
- 6-Fungus and human are both eukaryotic cell therefore it can easily express human genes

Introduction of this presentation

- Covid 19 virus are recognise the angiotensin converting enzyme 2 receptor to attack on epithelial cell of lungs and then penetrate inside the cell by endocytosis mechanism.
- The gene construct of angiotensin converting enzyme 2 are identified by bioinformatics tools and isolate by molecular genetic markers and endonuclease enzymes.
- Isolated gene construct are inserted into pulmonary Blastomycosis Fungus by using Ti plasmid of agrobacterium tumefrcince bactria.
- Receptor containing fungus send in lung environment .
- Now this fungus are bind to corona virus with spike Protein therefore corona virus are not penetrate or less penetrate inside the lunge cell

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ECBI-2020

Using of GPS and GIS in Precision Agriculture

Dr. Saurabh Tyagi
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Abstract

The development and implementation of precision agriculture or site-specific farming has been made possible by combining the Global Positioning System (GPS) and geographic information systems (GIS). These technologies enable the coupling of real-time data collection with accurate position information, leading to the efficient manipulation and analysis of large amounts of geospatial data. GPS-based applications in precision farming are being used for farm planning, field mapping, soil sampling, tractor guidance, crop scouting, variable rate applications, and yield mapping. GPS allows farmers to work during low visibility field conditions such as rain, dust, fog, and darkness.

Introduction

The widespread availability of the Global Positioning Systems (GPS) and Global Information Systems (GIS) to the general public opened many doors to the uses of new technologies, particularly in the agricultural sector.

GPS and GIS are valuable tools that can be used to increase efficiency and productivity in agriculture.

mapping natural resources; marking weed infestations; evaluating insect damage; referencing crop yield, identifying crop stress; and labeling soil types.

agricultural businesses an additional management tool to deal with production issues, strategize management decisions, and implement control methods.

GPS and GIS

GPS is short for **Global Positioning System** which is "a network of satellites that continuously transmit coded information, which makes it possible to precisely identify locations on earth by measuring distance from the satellites".

GIS is short for **Geographic Information System(s).** "In the strictest sense, a GIS is a computer system capable of assembling, storing, manipulating, and displaying geographically referenced information , i.e. data identified according to their locations. Practitioners also regard the total GIS as including operating personnel and the data that go into the system".

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Language For Data Science: Python *vs* R

Aviral Kumar Singhal and Niraj Singhal

Introduction:

Python and R, both are open-source programming languages with a large community. New libraries (or tools) are added continuously to their respective catalogs. R is mainly used for statistical analysis while Python provides a more general approach to data science. R and Python are state of the art in terms of programming language oriented towards data science. Learning both of them is an ideal solution. Python is a general-purpose language with a readable syntax. This poster provides a comparative study between the two.

Python:

Python was developed by Guido van Rossum, a computer guy in circa 1991. Python can do the same tasks as R i.e. data wrangling, engineering, feature selection web scrapping, app and so on. Python is used to deploy and implement machine learning at a large-scale. Its codes are easier to maintain and more robust than R. Python is catching up and provides cutting-edge Application Programming Interface (API) for machine learning. Most of the data science jobs can be done with five Python libraries i.e. **Numpy, Pandas, Scipy, Scikit-learn and Seaborn.**

Python makes replicability and accessibility easier than R. In fact, if one needs to use the results of analysis in an application or website, Python is the best choice. Python is easier to deploy, integrate and scale than R, because Python tools already exists within the organization. Most interfaces for novel machine learning tools are first written and supported in Python. Python is the go-to language for many Extract, transform, load (ETL) and Machine Learning workflows.

R:

R was developed by Ross Ihaka and Robert Gentleman in 1993. It has many libraries and tools specialized for data operations. The language and these tools allow users to modify the data structures easily, transform them into more efficient structures or clean them up for the specific use-cases. There is a lot and popular packages and libraries, such as tidyverse that takes care of data manipulation and visualization end to end. It has a very well-designed IDE called R Studio. Integrated with the language itself, R Studio provides syntax highlighting, code completion, integrated help, documentation, data visualization, and debuggers, allowing you to develop your R projects without leaving your screen.

The team behind R has been strongly focused on ensuring that the tools will work on all platforms, and thanks to those efforts R can run on Windows, mac-OS and Unix-like operating systems. It has tooling around building web-based dashboards for data analysis and visualizations, such as Shiny which allows building interactive web apps directly from R.

Python	R language
Python is considered as a good language for beginner programmers.	R is not hard for experienced programmers to learn.
Great for mathematical computation and learning how algorithms work.	Great for statistical analysis.
Python is a good tool to implement algorithms for use in production.	Statistical models can be written with a few lines of code.
Python requires users to install packages for data analysis, and these packages have greatly improved in recent years.	R is great for data analysis because of its huge number of packages, readily usable tests, and the advantage of using formulas.
Numpy and Pandas, among others, are popular for data analysis.	Big datasets require the use of packages such as data.table and dplyr.
There are many Python IDEs to choose from which drastically reduce the overhead of organizing code, output, and notes files. Jupyter Notebooks and Spyder are popular, and Jupyter Lab is gaining traction.	R Studio is the most popular R IDE. It's available in two formats: R Studio Desktop for running locally as a regular desktop application and R Studio Server for access via web browser while running on a remote Linux server.
Python has many nice visualization libraries, for example, Pygal, Bokeh, and Seaborn. However, it becomes slightly difficult to choose from the vast range of options.	Moreover, as compared to R, these libraries produce complex visualizations which may not be very pleasing to look at.

Conclusion:

One can think Python as a pure player in Machine Learning. However, Python is not entirely mature for econometrics and communication. It is the best tool for Machine Learning integration and deployment but not for business analytics. However, R is developed by academics and scientist. It is designed to answer statistical problems, machine learning, and data science. R is the right tool for data science because of its powerful communication libraries. Besides, R is equipped with many packages to perform time series analysis, panel data and data mining. It is difficult to make a conclusive statement on which language is "better", as both of these languages are in great demand and can be used to solve many unique problems. Both R and Python don't have any customer service support. This means that if you run into any trouble, you're on your own. However, both R and Python have online communities for help. Since Python is older than R, it has greater community support as compared to R.

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A Modified Photonic Router Architecture Based on Array Waveguide Grating in Data Centers

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Introduction: In the optical packet switching this buffering will be required when two or more packets arrive for the same destination in any time slot, then one of the packet will be directed to the output port, and rest of them have to be stored in random access memory (RAM).an automatic gain controlling (AGC) scheme for the loop buffer. We have shown that by changing the position of EDFA automatic gain controlling scheme will not be required. We have utilized the availability of filter in Tunable Wavelength Convertor (TWC) to reduce number of components in the buffer. Finally we replaced the combination of splitter and filter as in existing architecture by array waveguide grating (AWG) demultiplexer, which reduces the loss in the architecture. The performance evaluation of the router is done in terms of packet loss probability and delay.

Materials and Methods: *Drawbacks of the existing architecture are given below:-*
(i)Absence of Gain Control
The main drawback of the existing architecture is the absence of automatic gain control (AGC). This controlling is necessary to compensate the gain variation, which arises due to the number of channels present in the loop buffer in any time slot. This gain variation violate the condition ($loss*gain$)=1, which is the optimal condition to maximization SNR for the loop buffer switch. Thus this variation in the gain of the amplifier reduces the maximum number of allowed circulations (K) of the data at different power levels in the loop buffer. This reduction in the circulations degrades the switch performance.
(ii)Large Loop Losses
The total loss of the switch is very large. This large loss degrades the signal quality very quickly.

Proposed Modifications
(i) AGC Scheme:
In this automatic gain control scheme (Fig. 1), a small amount of power is tapped at the both input and output end of the EDFA and by comparing them gain of the EDFA is evaluated. Gain of the EDFA is designed in such a way, when all the channels are present the loss of the loop is fully compensated by the gain of the EDFA. As the number of channels passing through the EDFA decreases, the gain of the EDFA increases and degrades the switch performance. To combat this variable attenuator is placed after EDFA, which attenuate the extra gain of the EDFA to maintain constant gain irrespective of number of channels present in the buffer.

Figure 1: Schematic of gain controlling scheme

(ii)Shifting the position of EDFA

This AGC scheme will not be required if we shift the position of the EDFA in the loop buffer. The new position of the EDFA is shown in Fig. 3. In this scheme each channel is con- trolled by a separate EDFA, thus each channel will always get the gain which is equal to the loss of the loop. Other advantage is that no extra filter will be required at the output of the amplifier, because TWC is placed after EDFA which consist of tunable filter that will allow only in-band noise components to pass through it.

Figure 2: Schematic of AWG loop section in the modified architecture

Table 1:Routing Table For AWG

	1'	2'	3'	4'
1	λ_1	λ_2	λ_3	λ_4
2	λ_2	λ_3	λ_4	λ_1
3	λ_3	λ_4	λ_1	λ_2
4	λ_4	λ_1	λ_2	λ_3

Figure 3: Schematic of modified loop buffer architecture

Algorithm FOR Router Operation:
The switch uses ($B+N$) wavelengths, in which B are buffer wavelengths, and N are the number of wavelengths used for direct transmission to the output bypassing the fiber loop. The scheduling algorithm for the architecture is as follows:
1. All tunable wavelength converters at the inputs of the switch can be tuned to any of the ($B+N$) wavelengths instantaneously.
2. If there are i ($1 \leq i \leq b$) packets in the buffer for the output j, where $2 \leq b \leq min$ (K, B) then one of them will be send to the output. If in that slot, there are one or more packets also pre- sent at the inputs for the output j, then these will be buffered in the loop buffer to the extent allowed by the rules 4-5.
3. Considering the case when there is no packet in the buffer for the output j, but m input lines have packets for that output. Then, one of these m packets is directly sent to output j. The remaining $m-1$ packets will be buffered in the buffer to the extent allowed by the rules 4-5.
4. Number of packets X_i in the buffer for the output j should never be greater than min of (K, B), i.e. $X_j \leq min$ (K, B) for $j=1.....N$. Here K is the maximum recirculation allowed in the buffer.
5. The total number of buffer used should never be greater than B, i.e $\Sigma X_j \leq B$.
6. Simultaneously read and write is allowed in the same slot for the same wavelength in the loop buffer.
7. If there are X_j packets in the buffer, and I_j packets at inputs than $I_j-(K-X_j)-1$ packets will be dropped as at the end of this slot and X_j will be equal to K.

Results:

Figure 4: Packet Loss Probability vs Load on the system for switch size N= 4, B= 8 solid line for existing architecture, dotted line for modified architecture

Figure 5: Packet Loss Probability vs Load on the system for switch size N= 4,B= 16 solid line existing architecture, dotted line modified architecture

Figure 6: Average delay vs Load on the system for switch size N= 4, B= 8 solid line existing architecture , dotted line modified architecture

Figure 7: Average delay vs Load on the system for switch size N= 4, B= 8 solid line existing architecture , dotted line modified architecture

Conclusion: This poster proposed a modified architecture for photonic packet switching. The performance evaluation of the router is done through computer simulation, and it has been found that performance of the switch improves drastically in terms of packet loss probability.

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INFORMATION TECHNOLOGY : BUILDING BLOCK OF FAKE IMAGE DETECTION

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ABSTRACT

Forging images and identifying such images are promising research areas in this digital era. The tampered images are a detected using neural network which also recognizes the regions of the image that have been manipulated and reveals the segments of the original image. It can be implemented on Android platform and hence made available to common users. The compression ratio of the foreign content in a fake image is different from that of the original image and is detected using Error Level Analysis. Another feature used along with compression ratio is image metadata. Although it is possible to alter metadata content making it unreliable on its own, here it is used as a supporting parameter for error level analysis decision

A simple neural network

input layer   hidden layer   output layer

INTRODUCTION

Fake Image Detection:

In this technological era a huge number of people have become victims of image forgery. A lot of people use technology to manipulate images and use it as evidences to mislead the court. So, to put an end to this, all the images that are shared through social media should be categorized as realer fake accurately. Social media is a great platform to socialize, share and spread knowledge but if caution is not exercised, it can mislead people and even cause havoc due to unintentional false propaganda. While manipulation of most of the photos hoped images is clearly evident due to pixelization & shoddy jobs by novices, some of them indeed appear genuine. Especially in the political arena, manipulated images can maker break a politician's credibility

Reenactment

Source   Target   Output

Replacement

Source   Target   Output

Manipulation

ARCHITECTURE DIAGRAM

Fake Image Detection: Architecture Diagram

FAKE IMAGE DETECTION METHODS AND APPROACHES

Category	Method	Core mechanism	Potential result of detecting colorized images
Copy-move detection	[13]	Quantized DCT coefficients	Not applicable
	[14]	Fourier-Mellin Transform	Not applicable
	[15]	Zernike moments	Not applicable
	[16]	SIFT feature	Not applicable
	[18]	SIFT & CFA features	Not applicable
	[19]	Hierarchical SIFT-based keypoint matching	Not applicable
Splicing detection	[20]	DCT coefficient distributions of each block	Not applicable
	[21]	Multiscale scheme based on Benford's law	Not applicable
	[22]	CFA artifacts	Possible but with low robustness
	[23]	PRNU noises	Possible but with low robustness
	[24]	Multiscale scheme based on PRNU noises	Possible but with low robustness
	[25]	Blur type inconsistency	Not applicable
	[26]	Illuminant-based transform spaces	Not applicable
	[27]	Two-view geometrical constraints	Not applicable
	[28]	Planar homographies	Not applicable
Image retouching detection	[29]	Block similarities and distances	Not applicable
	[3]	Peak/gap artifacts	Not applicable

Fake General Image Detection

- BigGAN (Large Scale GAN Training for High Fidelity Natural Image Synthesis)

- SA-GAN (Self-Attention GAN)

- SN-GAN (Spectral Normalization GAN)

Neural Network

Neural network structure

Layer	Neurons
Input Layer	30,000
Hidden Layer 1	5000 – Sigmoid
Hidden Layer 2	1000 – Sigmoid
Hidden Layer 3	100 – Sigmoid
Output Layer	2

CONCLUSIONS

Neural network has been successfully trained using the error level analysis with 4000 fake and 4000 real images. The trained neural network was able to recognize the image as faker real at a maximum success rate of 83%. The use of this application in mobile platforms will greatly reduce the spreading of fake images through social media. This project can also be used as a false proof technique in digital authentication, court evidence evaluation etc.

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Nitrogen doped Reduced Graphene Oxide Supported Manganese Ferrite Nanocomposite for Anodic Hydrazine Oxidation and Cathodic Oxygen Reduction Catalysis

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Introduction

Present global energy scenario

Present Global Energy Sources

By 2020, consumption will triple

Direct Hydrazine Fuel cell (DHFC) : Carbon free electricity generation

Major factors affecting power generation of DHFC

- Sluggish anodic N_2H_4 oxidation
- Efficiency of proton exchange membrane
- Oxygen reduction reaction (ORR) kinetics at cathode
- High cost noble metals used as catalyst in DHFC.

Objective

To synthesize $MnFe_2O_4$ NPs/N-rGO nanocomposite for anodic N_2H_4 oxidation and cathodic O_2 reduction.

Metal oxide as electrode modifier in DHFC

- Metal oxides are used as low cost electrocatalyst for N_2H_4 oxidation and O_2 reduction in DHFCs.

Experimental procedure

- $MnFe_2O_4$ NPs were synthesized by a single step hydrothermal method at 180 °C for 12 h. $MnCl_2$, $FeCl_3$, and liq. NH_3 used for $MnFe_2O_4$ NPs synthesis.

- h-$MnFe_2O_4$ NPs/N-rGO composite was synthesized by *in situ* hydrothermal reduction of GO and simultaneous N doping. Hydrothermal synthesis was carried out at 180 °C using $MnCl_2$, $FeCl_3$, GO, and liq. NH_3 for 12 h.

- N-rGO was synthesized by similar method without using metal salts.

Results and Discussion

XRD analysis

XRD patterns of the (a) $MnFe_2O_4$ NPs, (b) h-$MnFe_2O_4$ NPs/N-rGO, (c) GO, and (d) N-rGO.

FESEM & TEM

FESEM (a,c,e) and TEM (b,d,f) images of $MnFe_2O_4$ NPs (a,b), N-rGO (c,d), and h-$MnFe_2O_4$ NPs/N-rGO composite (e,f).

XPS analysis

XPS survey spectra of $MnFe_2O_4$ NPs and h-$MnFe_2O_4$ NPs/N-rGO composite (a), region XPS spectrum of Fe 2p (b), and Mn 2p (c). C 1s region XPS spectrum of h-$MnFe_2O_4$ NPs/N-rGO composite (d) and GO (e). N 1s region XPS spectrum of N-rGO sheets (f).

Hydrazine electro-oxidation

Cyclic voltammograms of (a) h-$MnFe_2O_4$ NPs/N-rGO with and without N_2H_4, (b) different catalysts with N_2H_4, (c) h-$MnFe_2O_4$ NPs/N-rGO at different scan rates, and (d) Nyquist plots of different electrodes in 0.1 M pH 7 PBS.

Mechanism of N_2H_4 oxidation

$$N_2H_4 + H_2O \longrightarrow N_2H_3 + H_3O^+ + e^- \quad \text{(slow, rate determining step)} \quad (1)$$
$$N_2H_3 + 3H_2O \longrightarrow N_2 + 3H_3O^+ + 3e^- \quad \text{(fast, final step)} \quad (2)$$

Overall reaction can be presented as
$$N_2H_4 + 4H_2O \longrightarrow N_2 + 4H_3O^+ + 4e^- \quad (3)$$

No. of electrons transfer for N_2H_4 oxidation

h-$MnFe_2O_4$ NPs/N-rGO = 3.94

$MnFe_2O_4$ NPs/N-rGO = 3.86

$MnFe_2O_4$ NPs/rGO = 3.68

$MnFe_2O_4$ NPs = 3.54

N-rGO = 3.0

ORR kinetics study with RDE-LSV

LSV plots (a) recorded at 1600 rpm, and 10 mV/s scan rate, and Kouteckye - Levich plots (b) of different catalysts.

Koulteckye-Levich equation

$$\frac{1}{J} = \frac{1}{J_L} + \frac{1}{J_K} = \frac{1}{B\omega^{1/2}} + \frac{1}{J_K}$$

$$B = 0.2nFAC_0(D_0)^{2/3}\nu^{-1/6} \qquad J_K = nFkC_0$$

J = disk current density
J_L = diffusion-limiting current density
J_K = kinetic-limiting current density
ω = rotation speed of RDE
n = no. of electron transfer
C_0 = conc. of O_2
D_0 = diffusion coefficient of O_2.

No. of electrons transfer for O_2 reduction

➤ h-$MnFe_2O_4$ NPs/N-rGO = 3.94
➤ $MnFe_2O_4$ NPs/N-rGO = 3.86
➤ $MnFe_2O_4$ NPs/rGO = 3.72
➤ $MnFe_2O_4$ NPs = 3.61
➤ N-rGO = 2.89
➤ Pt/C = 4.0

Conclusions

- h-$MnFe_2O_4$ NPs/N-rGO composite efficiently catalyzed both anodic N_2H_4 oxidation and cathodic O_2 reduction.

- h-$MnFe_2O_4$ NPs/N-rGO composite can be used as an alternate to Pt/C.

- Nitrogen doping on rGO plays a key role for catalytic activity enhancement.

- h-$MnFe_2O_4$ NPs/N-rGO composite can be used as a bifunctional electrode material for DHFC.

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Electron transport Performance of CeO_2 Doped TiO_2 Nanoparticles in Dye Sensitized Solar Cells

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The sol-gel synthesis is promising a new material fabrication method for nanoscale materials and nanotechnology. Mesoporous high surface area and high crystallinity MO2 (M = Ti, Ce, nanopowders were synthesized by a odified sol-gel method using metal alkoxide and acetylacetone. The prepared powders had crystalline size of about 5-10μm, Mesoporous CeO_2 and CeO_2 nanopowders responding to visible wavelength were also obtained by using the same process. A small addition (5 mol %) of CeO2 did not affect anatase phase. However, further addition of CeO_2 increased while anatase TiO_2 decreased. These synthesis methods provide simple route to fabricate nanostructured materials under mild conditions.The synthesized nanoparticles were characterized using X-ray diffraction, field-emission scanning electron microscopy, UV-visible spectrophotometry,Photoluminescence and electrochemical impedance spectroscopy. The results indicated that the adsorption of anthraquinone dyes through the CeO_2 doped TiO_2 was increased along with enhancing the short-circuit photocurrent and open-circuit voltage of the cell. An optimal power conversion efficiency of 3% was obtained in a dye-sensitized solar cell (DSSC) containing the CeO_2 doped TiO_2 film. This material combination is a highly promising agent for the enhancement of the conversion efficiency for the fabrication of high efficient, low cost and high stable DSSCs.
Key Words: N3 and N719 dye,CeO_2, TiO_2,DSSC,TEM and SEM

UV-VISIBLE SPECTRUM AND PHOTOLUMINESCENCE ANALYSIS

X - Ray Diffraction Analysis

CeO2   CeO2/TiO2

Photovoltaic performance of CeO_2 and CeO_2/TiO_2

Electrochemical Impedance Analysis Of CeO_2 And CeO_2 With TiO_2

FE-SEM and EDAX Analysis

Sample	Element	Weight (%)	Atomic (%)
Pure – CeO_2	O	16.88	64.01
	Ce	83.12	35.99
CeO_2-TiO_2	Ti	43.61	74.
	Ce	7	24.17
	O	42.75	4.33

CONCLUSION

❖ The anthroquinone dyes used for making six dye-sensitized solar cells and for comparison, N3dye have also been used. The anthroquinone dyes were attached to the CeO_2 and CeO_2 / TiO_2 surface and hence their maximum absorbance wavelength in solutions was shifted on CeO_2/ TiO_2 surface accordingly. This shift was a good indication for the reaction of the quinone dyes with the CeO_2/ TiO_2 surface leading to a photo electrochemical reaction when their cells exposed to light.

❖ The highest current density was obtained for the N3 dye, while the current density for as anthroquinone dye is close to that of Alizarin, Purpurin and Quinizarin. The difference in the current densities of the cells is due to the difference in the structure of the dyes of each cell and how fast the charge is injected into the conduction band of the CeO_2/TiO_2 film and this is affected by the type of attraction between the sensitizer and its anchoring group with the porous CeO_2/TiO_2 film.

❖ The electrochemical impedence analysis shows significant results in longer electron lifetime (τ_n) faster electron transport time (τ_t) and charge collection efficiency (η_{cc}) for CeO_2/TiO_2 and CeO_2 based DSSCs with efficiencies 49% and 65%.

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"Theme: Biomedical Engineering, Bioinformatics & Agri-informatics"
International e-Conference on: Bioelectronics & informatics in the Present Scenario -2020; 26-27June; Shobhit University,Meerut,U.P.India

Mapping of Bamboo in South-Eastern Rajasthan Plateau (Hadoti Plateau) Using Remote Sensing and GIS Application

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Abstract:

The current study deals with mapping of bamboo in South-Eastern Rajasthan Plateau (Hadoti Plateau). The Hadoti Plateau area is located at the edge of Malva plateau at $23^0 45'$ to $25^0 53'$N latitude and $75^0 9'$ to $77^0 26'$E longitude in South-Eastern corner of Rajasthan state. It is cover total area is 24156.6 sq.kms geographical area with Bundi,Kota,Jhalawar and Baran district. Its Eastern,Southeren, and South -Western boundaries border the Madhya Pradash while Northern and North-Western adjoin with Bhilwara,Chittorgarh,Tonk and Swai Madhopur district. Geographical entity of the plateau average height of 300 bamboos is tree like grasses which are fast growing with highest productivity in the world. The India has the world's richest resources of bamboo occurring over an area of 10.05 mha (12.8%) of the total forest area of the country. In India, According to ISFR report 2019, 125 indigenous and 11 exotic species of bamboo belonging to 23 genera are reportedly found in India. 1976 sq.km bamboo bearing area of Rajasthan with density 415 sq. km dense, 1326 sq.km scattered area and 24 sq. km bamboo present (ISFR report 2019).Mix miscellaneous forest covers are mostly found in south-eastern districts of Rajasthan with 2.5% bamboo forest cover. Visual image interpretation technique was adopted in mapping the heterogeneity of land cover classes at 1:50,000 scale. UPM-APSB's AISA airborne hyperspectral imaging sensor (Landsat-8 & Sentinel-2 data in India) use for bamboo mapping in the forest. The use of remote sensing and geographic information system (GIS) for mapping of vegetation system shows the presence of a variety of bamboo species, *Bambusa bambos* and *Dendrocalamus strictus* mostly found in South-Eastern plateau(Hadoti Plateau) of Rajasthan.

Key Words: Bamboo species, Forest cover, Hadoti Plateau,Remote sensing, GIS,Mapping,

Introduction:

Bamboo occurs significant quantity in distributed area. Continuous bamboo forest can change quickly in short time so that remote sensing has been playing a important role in the mapping & identification of bamboo species. Surveying of bamboo is time consuming and also involves high cost. Present study based on proper mapping of bamboo in SE Rajasthan plateau

Objectives:

➤ To identify bamboo species & map out the distribution of bamboo growing area in South-Eastern Rajasthan Plateau
➤. To study Forest cover of South-Eastern Rajasthan Plateau with bamboo Forest cover

Material & Methods:

Acquisition UPM-APSB AISA data — Geometric correction
Pre-Processing — Radiometric correction
Ground Sampling
Image Processing
Image Classification — Image Post classification
Ground Verification
Output Map of Bamboo Location & Distribution

Methodology
Re-projection

Results:

Study Area

KEY MAP

forest cover of rajasthan

Fig .showing Bamboo forest of South-Eastern plateau
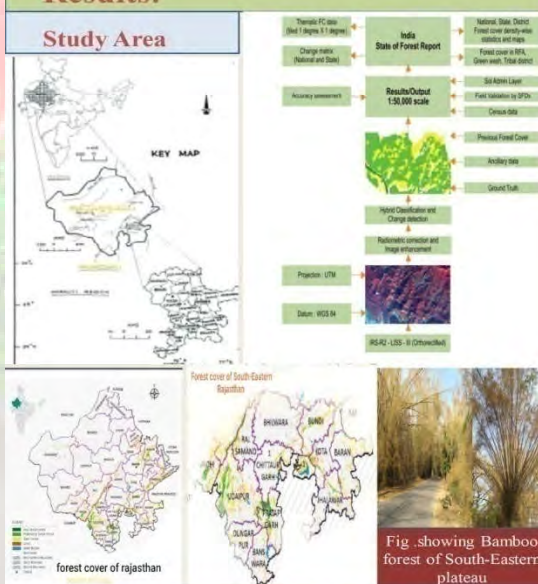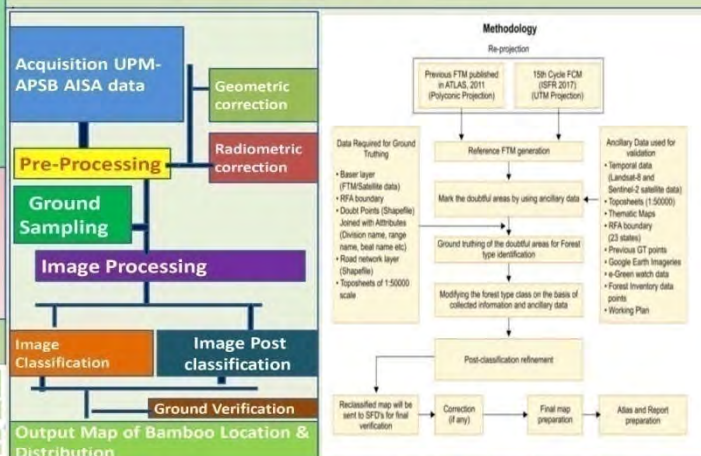
SE plateau Districts	Geographical Area (Sq.km.)	Forest Cover (Sq.km.)	Reserved Forest (Sq.km.)	Total Forest Cover (Sq.km.)	Total Bamboo Area in Rajasthan
Jhalawar	6219	1349.79	413.45		
Baran	6992	2239.32	0.00	24156.6	1976 Sq.km
Bundi	5776	1559.98	1559.98		
Kota	5217	1310.04	1310.04		

Forest cover & Bamboo Forest cover of district of South-Eastern Plateau

Conclusion:

From this study, it can be concluded that remote sensing and GIS application data is capable of mapping bamboo species in South-Eastern plateau forest cover .The bamboo species identified Dendrocalamus strictus with a mapping maximum accuracy and Bambusa bambos with minimum accuracy.

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International Conference on "Bio-Electronics and Informatics in the Present Scenario: ECBI-2020", 26-27 June 2020

Microbial Fuel Cell (MFC) based Toxicity Biosensor: A Mini Review

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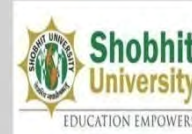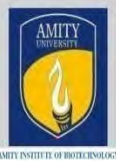
Introduction

Basic Biosensor Schematics
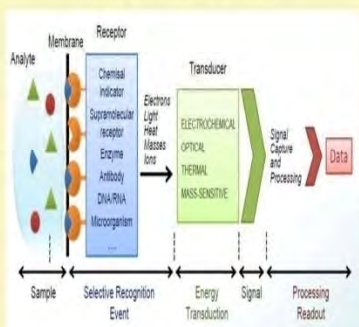
Basic MFC Schematics
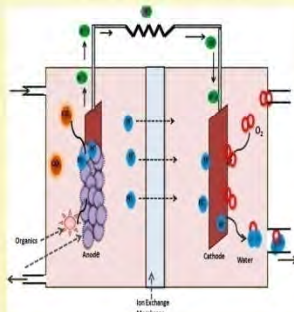
Microbial Fuel Cell: A new eco-friendly wastewater treatment tool utilized as Toxicity Biosensor
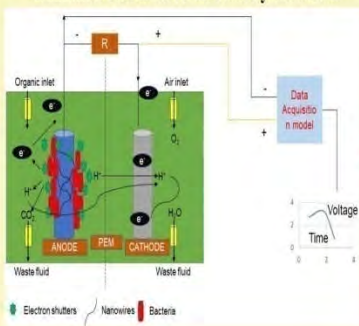
Microbial exocellular electron transport
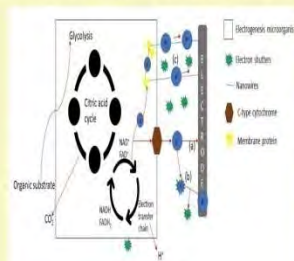
Critical Limitations

- Low Selectivity
- Expensive PEM and catalysts
- Variation in EABs causing lack of reproducibility

Future Prospects

- Decrease in internal resistance
- Screening new anodophilic microbes
- Specificity in receptor proteins of toxins and deletion of key functional genes of EABs.
- To recognize toxins in mixed environment with providing stable output signal

Conclusion

- Substrate concentration has an impact on the formation and activity of biofilms, resulting in current densities proportional to the concentration of pollutants.
- The implementation of MFC as specific substrate biosensor presents an obvious advantage and provides a novel aspect of MFC application.
- A promising future in developing portable and self- powered sensing devices for in situ, online, high-throughput, highly selective; and sensitive environmental monitoring.

Table.1: MFC used as Toxic Biosensor for the detection of heavy metals and organics

Sr. No	Heavy metals/ Organics	Source inoculum	MFC Configuration	Electrode material	Detection range (Mg L⁻¹)
1.	Cu	Domestic Wastewater	Single chamber	Carbon felt	5-7
2.	Zn, Cr, Cd	Anaerobic sludge	Double chamber	Carbon felt	Zn: 15-80 Cr: 0.3-1 Cd: 0.4-10
3.	Cr, Fe	Fresh wastewater	Single chamber	Carbon felt	Cr: 1-8 Fe: 1-48
4.	Formaldehyde	*Shewanella oneidensis MR-1*	Single chamber	Graphite rod	100-1000
5.	p- Nitrophenol	*Pseudomonas monteili LZU-3*	Double chamber	Carbon felt	50-200
6.	Acetate	Activated sludge	Single chamber	Carbon cloth	1-7

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Biohydrogen evolution in Microbial Electrolysis Cell: Influence of reactor design

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Introduction

- ✓ Electrochemically driven fermentation.
- ✓ New and upcoming field
- ✓ Microbial environment function as electron sources or sinks
- ✓ EF uses a symbiotic approach of combining the microenvironment with electrochemistry to carry out electrochemical redox reactions.

Fig 1. MEC research in different countries

About MEC

- ✓ Contains an anode and a cathode joined by an external wire to complete an electrical circuit divided by IEM
- ✓ MECs is an electro-fermentation technology,
- ✓ Uses the process of electrical hydrogenesis
- ✓ Anode chamber,- organic compounds get oxidised
- ✓ Cathode chamber-hydrogen production

Fig 2. Working principle and construction of MEC

Reactor design

The reactor can be of two types, single chambered and dual chambered.

1. *Single chambered MEC:*
- ✓ Reactors lack a membrane.
- ✓ Rate of production (high) = rate of conversion (low)
- ✓ Energy losses are less when compared to recovery

There are two types of single-chambered MEC's:
- • Up-flow
- • Smallest scale

2. *Dual chambered MEC:*
- ✓ Consists of electrodes, anode and cathode.
- ✓ Chambers can be connected or separated (separator or IEM).

Dual chambered MEC's are classified into 2 types:
- • BEAMR(Bio-electrochemically assisted microbial reactor)
- • New high performance MEC

Fig 3. Different reactor configurations

Applications

MECs are extensively used for various applications such as:-
- ✓ Electricity generation
- ✓ Hydrogen and biomethane production
- ✓ Formic acid production
- ✓ Lingo-cellulosic ethanol and bio-oil production
- ✓ Can be integrated with various other technologies

Integration type	Electrode type	Energy applied	Type	Hydrogen produced
MES/MFC	Anode :carbon brush Cathode: silver nanowires	N/A	Single chamber	1.35mL/hI,light) g²/2mL/h (dark)
MEC- hydrogen bioreactor	Anode: Graphite plate Cathode: graphite plate	0.2V-0.8V	Single chamber	0.35mmol/hto 0.50mmol/h
MEC with anaerobic digester	Anode :carbon brush Cathode: stainless steel mesh	0.8V	Double chamber	N/A
Dark fermentation	Anode :Carbon brush Cathode: Pt. coated carbon cloth	0.33-0.47V	Single chamber	0.48 m³H₂/m³/d
MEC with biomass and pyrolysis effluents	Anode :Carbon felt Cathode: Pt. coated carbon cloth	0.96V(continuous) 0.8V(batch)	Double chamber	4.3LH3/L/d 2.5LH3/L/d
MEC with thermo electric converter	Anode :Plain CF Cathode: Carbon paperwith pt.	0.17 to 0.83V	Single chamber	0.16 m³H₂/m³/d

Table 1. Integration of MEC with various other technologies

Table 2. Hydrogen production in MEC

Conclusion

Several organizations have researched MECs is developing electro-fermentation technology for wastewater treatment, hydrogen evolution and methane production. Electrochemical systems involving microbial culture can efficiently control pH, redox imbalances, substrate purity along with product selectivity. For the production of bulk chemicals, purified sugars are considered a less sustainable form of substrates. The fermenting industries produce a huge amount of carbon-rich waste that can use as substrates for electro fermentation. Also, MECs based production provides a lesser effect on the environment and hence can be an alternative sustainable source of fuel and energy

Fig 4. Number of articles produced over the years

Future Prospects

Various advancements have been made with an inventive motive to make the process of fermentation applicable for the versatility of substrate. Nevertheless, it cannot be ignored that EF is no longer merely a combination of electrochemistry and fermentation technology but has combined with various other fields as well such as industrial biotechnology, microbiology, environmental biotechnology and engineering. EF requires a high-end multidisciplinary approach and has promising opportunities and applications that are expected to flourish soon.

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Techniques to Improve the Efficiency of Mono-Crystalline Silicon HIT Solar Cells

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Introduction

Crystalline silicon that can be either multi-crystalline or mono-crystalline, is rendered to be the most prominent semiconducting material used for the construction of solar cells. Such cells are combined to develop solar panels as a part of photovoltaic electricity production. The construction and development of solar cells are in use from a long time as an alternative renewable energy source that offers high efficiency and eco-friendly consequences.

Layered Structure of HIT Solar Cell
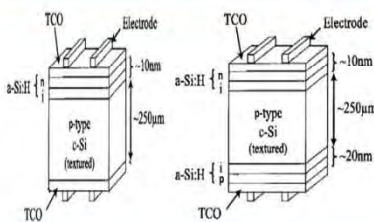
Mono facial HIT Solar cell and bifacial HIT solar cell

Characteristics of Solar Cell
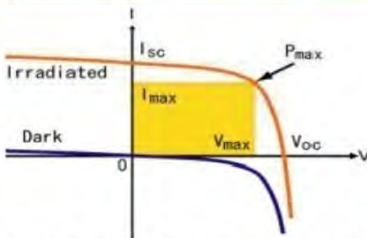
Short circuit current (I_{sc}): Circuit current passes through the solar cell when the voltage across the cell is zero.
Open circuit voltage (V_{oc}): When contacts are open, the potential difference has its maximum value, the open circuit voltage V_{oc}.
Fill Factor (FF): The fill factor is defined as the ratio of the maximum power from the solar cell to the product of V_{oc} and I_{sc}. Graphically, the FF is a measure of the squareness of the solar cell
Efficiency (η): Efficiency is defined as the ratio of the output energy from the solar cell to the input energy from the sun

Understanding Hetero-Junction: the Concept and Device Characteristics
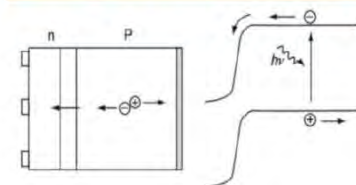
p-n junction solar cell: Spatial representation and energy band diagram.

Loss analysis of HIT solar cell

Crystalline silicon solar cell consist of p-doped, n-doped structure, where the doping materials are diffused at a high temperature. The development of such cells is not cost-efficient. Like any other solar cell, the HIT solar cells developed and fabricated have not been able to reach the very high efficiency values as desired so that they may become commercially viable. There are several factors which contribute to the loss in efficiency in HIT solar cells, which have been studied and reported by Takahiro Mishima et al. It is estimated that about 20% of the output power is lost in the form of the below losses:
(i) Loss by reflection and transmittance accounts for about 1/3rd.
(ii) Light absorption loss in TCO and a-Si:H, and carrier recombination losses accounts for another 1/3rd.
(iii) The remaining 1/3rd losses are because of electrode shade and series resistance.

Chemical Etching: Volume Concentration of HF-HNO3-Diluent
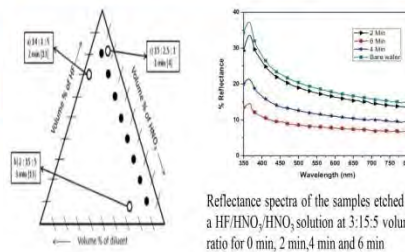
Reflectance spectra of the samples etched in a $HF/HNO_3/HNO_3$ solution at 3:15:5 volume ratio for 0 min, 2 min,4 min and 6 min
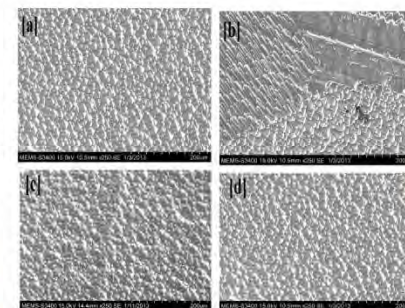
SEM image of textured multi-crystalline silicon wafer

We have observed that before texturing the reflectance was about 30% and after texturing the average reflectance is 8-9%. We have used several recipes for finding the minimum reflectance. The successful recipe is 3:15:5 volume ratios of HF, HNO_3 and CH_3COOH of dip duration 6 minutes. Above figures are showing the SEM image of surface of mc crystalline wafer.

Reaction Involve in this Process,

$$3Si + 4HNO_3 = 3SiO_2 + 4NO + 2H_2O$$

$$SiO_2 + 6HF = H_2SiF_6 + 2H_2O$$
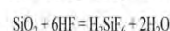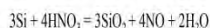
AZO deposition chamber
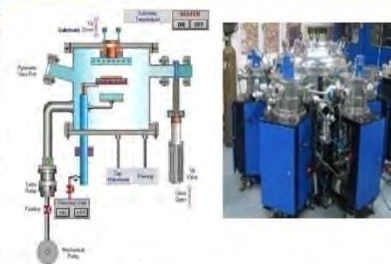
Photographic images of AZO deposition chamber in automated system and integrated system.

AZO (Aluminum Doped Zinc Oxide) layer
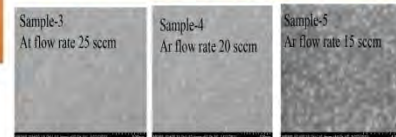
SEM images of different AZO samples with different flow rate
The SEM image shows that zinc is uniformly replaced by Al atoms. There is no indication of Al_2O_3 formation. Hence we can expect for getting uniform conductivity.
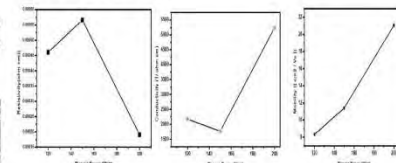
Resistivity and mobility variation with Plasma Power of AZO film on glass substrate at constant working pressure 500 tore.

Conclusion

It is inferred from the study that the surface treatments of wafers, doping density, and properties of TCO are crucial in affecting the performance of solar cells.
Adequate amount of doping and thinning of the thickness of layers are needed to ensure that the layers of wafers are effective in building the solar cell efficiency.

Acknowledgment

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Role of Agromet Advisories in combating the adverse effect of Covid 19

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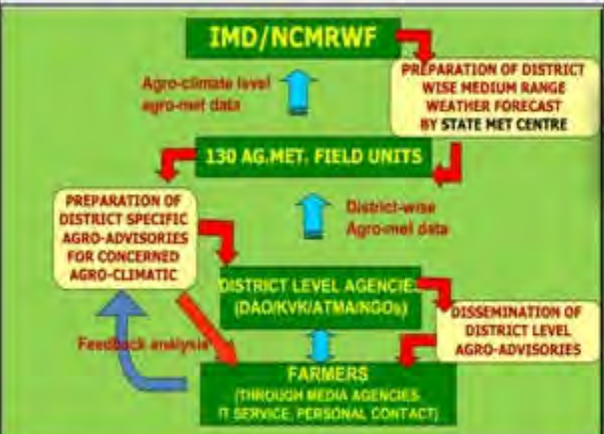
ICAR

INTRODUCTION

Krishi vigyan Kendras are the extension functionaries of Indian Council of Agriculture Research(ICAR), which are meant to provide training to the farmers and extension workers learn the skills developed by agricultural scientist at research stations and maximize the farm income by efficiently utilizing the resources. Under this Covid 19 pandemic KVKs are come out as leading agency to know the problem of farmers and provide timely solutions. Krishi Vigyan Kendra, Chittorgarh is working with same motto, here even before the lock down farmers were connected through whatsapp groups where they were provided weather forecast and farm advisories twice in a week: on Tuesday and friday under DAMU project of IMD (India Meteorological department). They were open to share their problems including insect-pest, seed quality and best management practices. Under lock down condition agricultural scientists were not able to visit their fields but they were contacted through video calling to know the exact position of their field. .

Methodology

WORKING MODEL-DAMU

IMD/NCMRWF

Agro-climate level agro-met data

PREPARATION OF DISTRICT WISE MEDIUM RANGE WEATHER FORECAST BY STATE MET CENTRE

130 AG.MET. FIELD UNITS

PREPARATION OF DISTRICT SPECIFIC AGRO-ADVISORIES FOR CONCERNED AGRO-CLIMATIC

District-wise Agro-met data

DISTRICT LEVEL AGENCIE (DAO/KVK/ATMA/NGOs)

DISSEMINATION OF DISTRICT LEVEL AGRO-ADVISORIES

Feedback analysis

FARMERS
(THROUGH MEDIA AGENCIES, IT SERVICE, PERSONAL CONTACT)

ROLE DURING COVID 19

Contacting farmers to know their various problems queries

Discuss with various experts

Making final advisories for farmers

Dissemination of Advisories through whatsapp, AIR, Local news papers

Registered farmers will get information through the apps of Ministry of Agriculture

M Kisan

Results:

❖More than 100 advisories were issued to farmers regarding upcoming weather, disease, insect-pest, harvesting operations. Which results into saving the farmers from all unfavorable situations.

❖Around 2.5 lacs farmers are getting benefitted

❖ Around 200 rose growers sun drying the fresh rose petals under open condition to overcome marketing problem of fresh flowers,

❖ Recovery of dry petals ranges from 10 -14 % and dry petals will sold at whole sale price 250 -300/kg.

Conclusion: KVK all around the nation played a significant role during this critical point of time. Farmers are contacted on daily basis, they are being contacted through video calling, telephony etc to know their actual status.

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RNA-DEPENDENT CHAPERONE FACILITATED BUILDING OF FERRITIN BASED CORONAVIRUS NANOPARTICLES

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TYPES OF DYNAMICALLY MODELED WIND TURBINE SYSTEMS

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Introduction: Wind energy system now a day's a one of the most effective and zero carbon emission renewable source of energy. This research presents the four types of wind turbine systems according to its control action over the wind speed variations.

Classifications: According to control action and wind speed operation these are classified into four types. Wind speed variation is rapid in case of wind energy conversion system. This cause faults and unwanted transients in the wind turbine system when it is integrated with grid. The details explained below.

Type I Wind Turbine: These wind turbine system does not have any control over the wind speed variations. These are fixed speed induction generator based.
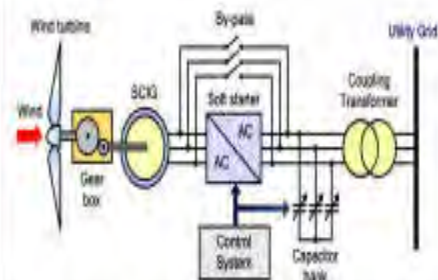
Type II Wind Turbine: These wind turbine system have limited control action over the wind speed variations. These are variable speed induction generator based. Doubly fed induction generator is used in these Type II wind turbine system.
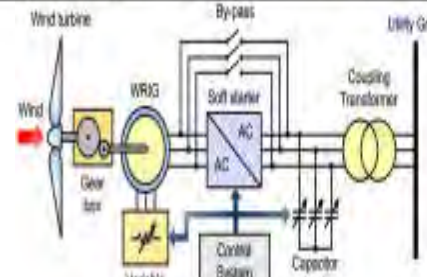
Type III Wind Turbine: These wind turbine system have partial converter control action over the wind speed variations. These are variable speed induction generator based. Doubly fed induction generator and wound rotor IG is used in these Type III wind turbine system.
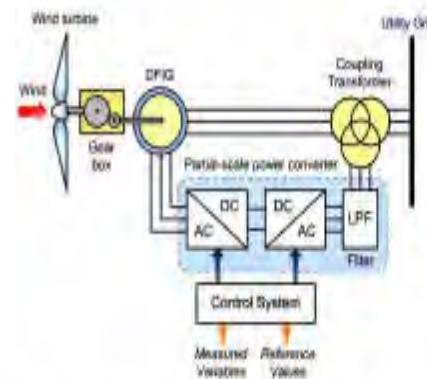
Type IV Wind Turbine: These wind turbine system have fully converter control action over the wind speed variations. These are variable speed induction generator based. Permanent magnet synchronous generator and wound rotor SG and Squirrel Cage SG are used in these Type IV wind turbine system.
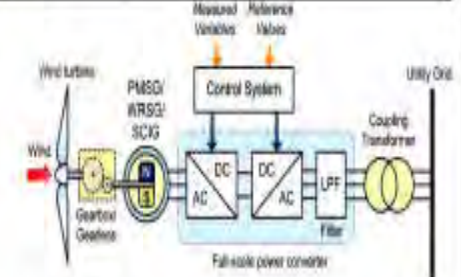
Simulink Results and Comparisons: The wind turbine results are shown below:
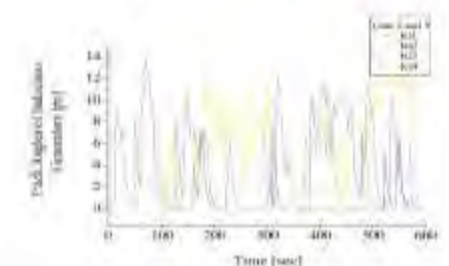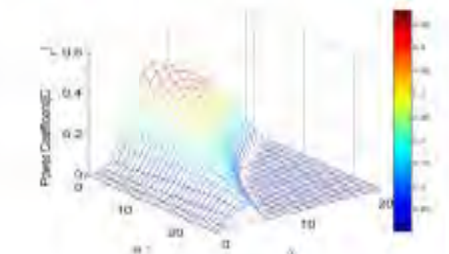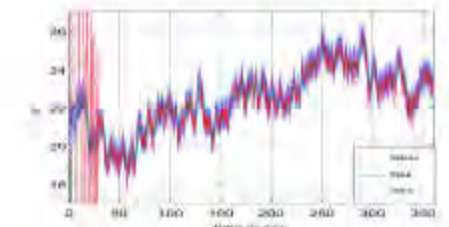
Conclusion: This work represents the four types of induction and synchronous generator based wind turbine system and the modeled results.

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Effect of X-ray dose on Etching Parameters of Lexan Polycarbonate Plastic Detector

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Motivation

Features :

- Robust, Inexpensive and Convenient to use.
- Availability in variety of sizes ranging from very small to very large. (Small detectors for particle fluxes in odd locations and large detectors to record events in cosmic ray studies.
- Permanent record of the phenomenon under investigation.
- Least affected by Temperature, Pressure and Humidity.
- Insensitive to light. The etching process is simple, rapid and does not require dark room.
- Can be used as threshold detectors e.g. certain detectors record fission fragments but not alpha particles.
- The charge and energy discrimination of these detectors has been found to be better than a nuclear emulsion.
- Rapid and automatic technique can be employed with these detectors to count the number of events occurring.

Applications:

- Used to study ternary and quaternary fission of heavy (e.g. Uranium) elements induced by heavy ions such as 84Kr, Xe or 238U of high energy.
- Search for any naturally occurring super heavy elements as also in experiments designed to create them artificially within the island of stability around Z=114.
- Study of extremely rare modes of radioactive decay.
- Identify content of element and its spatial distribution.
- Radiological consequences of inhalation of alpha active particles in dwellings, mines and caves to assess the concentration of radon and its daughter products.
- The deposition and microdistribution of alpha active particles in lungs for estimating radiation dose to various parts of lung.
- Extensively used in Radon Dosimeter.
- To assess the impact of release of actinides (being long lived and are almost invariably alpha emitters) on the aquatic / marine food chain.
- Alpha activity in the fresh blood samples.
- Used to measure lead content and its distribution in teeth and bone and to relate it, if possible, with the age of the person.
- Useful as diagnostic tools in cancer studies and in the investigations of blood circulation disorders.

Experimental Details

- 15 samples of Lexan, 0.9 mm thick cut in the dimension 1 cm x 1 cm.
- Set I (Five samples) : Fission Fragments (60 min.) Cf-252. (Un- exposed)
- Set II (Five samples) : X-rays (75 min.) + Fission Fragments (60 min.) Cf-252. (Pre-exposed).
- Set III (Five samples) : Fission Fragments (60 min.) Cf-252 + X-rays (75 min.) (Post exposed)
- Fission Fragment source is weak Cf-252 with 6 mm dia.

(Methods)

- X-Ray source used is Fe-55 having activity 10 m Ci (370 M Bq.) and half-life period 999 days.
- The X rays are incident normally to the detectors at a distance of 3 cm from X-ray source.
- The flux rate of X-ray irradiation on Lexan sheet for 75 min is about 5.66×10^9 photons per cm^2.
- The bulk etch rate $(V_B) : V_B = \Delta X / 2\Delta t$.
- The track etch rate $(V_T) : V_T = \Delta L / \Delta t$.
- For Activation energy
  $$V_B = A \exp (E_B / kT)$$
  $$V_T = B \exp (E_T / kT)$$

S.No.		FF	X-Rays +FF	FF+ X-Rays
1	E_B eV	0.90 ± 0.05	0.94 ± 0.02	0.87 ± 0.04
2	E_T eV	0.74 ± 0.01	0.78 ± 0.06	0.72 ± 0.05

Table 1: Variation of Activation energies for Bulk etch rate and track etch rate for FF, X-Rays + FF and FF + X-Rays.

Results
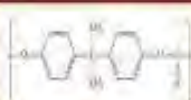
Fig.1: Structure of Lexan Polycarbonate Plastic Detector

Fig.2: Effect of charged particle on polycarbonate detector
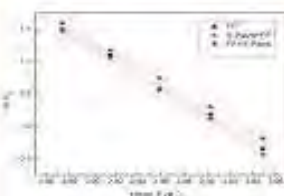
Fig.3: Variation of the bulk etch rate (units) with temperature (K) for Lexan detector.
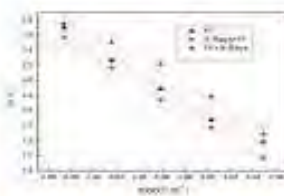
Fig.4: Variation of the track etch rate (units) with temperature (K) for Lexan detector.

Conclusions

- The bulk etch rate and track etch rate decrease with the exposure of X-Rays in case of pre-exposed as compared to un-exposed Lexan detectors. This shows the cross-linking process during the exposure to X-Rays.
- The bulk etch rate and track etch rate increase with the exposure of X-Rays in case of post-exposed as compared to un-exposed Lexan detectors. This shows the chain scission process during the exposure to X-Rays.
- The sensitivity decreases with the exposure of X-Rays in case of pre-exposed as compared to un-exposed Lexan detectors.
- The sensitivity increases with the exposure of X-Rays in case of post-exposed as compared to un-exposed Lexan detector.
- Bulk activation energy increases in case of pre-exposed and decreases in case of post-exposed as compared to un-exposed Lexan detectors.
- Track activation energy increases in case of pre-exposed and decreases in case of post-exposed as compared to un-exposed Lexan detectors.

Acknowledgement

The author is grateful to Physics Dept., BHU for providing irradiation facility of Cf-252 and X – rays facility, etching facility in nuclear physics laboratory.

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ECBI-2020

Nanomaterials: Impact on COVID-19

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Objective

- COVID-19 or coronavirus 2019 is an infectious disease because it spread very rapidly through the air.
- The size of Nanoparticles is equivalent to the size of the pathogen causing microbes.
- We can try to use nano particles in detecting and treating COVID-19 patients.
- In this presentation the impact of nanomaterials is discussed to control and reduce the effects of this uncontrolled inflammation COVID-19.

Nanoparticles on COVID-19

Application on COVID-19

- After surface modification Hydrophilic Nanoparticles transform into hydrophobic nanoparticles.
- The coating of these hydrophobic nanoparticles on clothes act as droplet Precautions and prevent the spread of infection.
- These nanoparticles coated clothes can be replacement of PPE suits.

Hydrophilic Nanoparticle | Hydrophobic Nanoparticle | Coating on Clothes (Replacement of PPE)

Protein Data Bank(PDB)

No.	PDB ID	Structure Title
1.	6LU7	The crystal structure of covid-19 main protease in complex with an inhibitor n3
2.	6LVN	Structure of the 2019-ncov hr2 domain
3.	6LXT	Structure of post fusion core of 2019-ncov s2 sub unit
4.	6VSB	Prefusion 2019-ncov spike glycoprotein with a single receptor-binding domain up

Table 1: Experimentally determined COVID-19 Corona virus-related structures inside Protein Data Bank (PDB) as of March 4, 2020. All the structures were retrieved from the PDB website with a text search covid-19.

Conclusions

➢ Nanoparticles were reported as promising tool for efficiently and selectively deliver therapeutic moieties (i.e. drugs, vaccines, peptide) to target sites of infection.

➢ They allow monitoring infectious sides.

➢ Using gold nanoparticles we can speed up the process of detection and isolation of those patients.

➢ As COVID-19 is a viral disease hence we can examine its NMR spectrum and use Iron oxide nanoparticle against dangerous pathogens.

➢ Reusable nano filtered face mask can be used

➢ Surface modified Nanoparticles can be coated on the clothes and may be used as the replacement of PPE kit

Acknowledgement

❖ Participants are thankful to JIS University, Kolkata
❖ Participants are thankful to Shobhit University, Meerut for providing stage for presenting their work.

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2. P. Maji, R.B. Choudhary and M. Majhi," Polymeric phase change nanocomposite (PMMA/Fe:ZnO) for electronic packaging application"Applied Physics A. 124(2018) ,70
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Smart Agriculture System Using IoT (Internet of Things)

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Meerut Institute of Engineering and Technology, Meerut

Abstract:

IoT is a new paradigm that has changed the traditional way of living and farming into a high tech life style. Farmers can monitor temperature, humidity and soil moisture and get real time weather forecasting data through Open Weather API to grow good and nutritious crops.

Purpose:

- To connect technology with agriculture for the better growth of yield and helping farmers.

Problem:

- Farmers who are not aware of their land condition might be growing the wrong crop according to their land merits.

Solution:

- With the help of app farmer can about his land's soil moisture, temperature and humidity.

Requirement:

- IOT Application Development.
- IOT Cloud Platform (IBM Watson).
- Open Weather API.
- Node-red and GIT tools.
- Python IDE and Script.

Application:

- Using the IoT concept in the agriculture field will help farmers not only reduce waste but also increase in yield production varying from the quantity of fertilizer utilized to the quality of the production achieved.
- Crop Monitoring: Using IoT technique we can monitor the quality of crop.
- Precision Farming: Precision farming is a farming practice that is more accurate and controlled. It deals with production of crop along with raising livestock.

Advantage:

- Controlling motor from any where with the help of our app will reduce some hard work of farmer.
- Cost efficient.
- Having idea about real time weather can help farmers in effective decision-making about planting of crops.

Conclusion:

It is a good web app which will help farmers in many ways. It helps farmers for good production. It also have drawbacks but fixed by time to time. It's a good start to connect agriculture with IoT technology through IBM cloud.

Block Diagram:

Node-Red Flows:

Web-App UI:

References:

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2. Smart Farming using IoT by Jash Doshi, Tirthkumar Patel and Santosh Kumar Bharti, IEEE-2019

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EDUCATION EMPOWERS

ECBI-2020

Magnetic refrigeration and critical behaviour analysis of perovskite hexagonal polytypes: A review

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[2]Shaheed Rajguru College of Applied Sciences for Women, University of Delhi, Delhi-110096
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ABSTRACT

Studies on the physical and chemical properties of the perovskite hexagonal polytypes have been meticulously investigated by the research community for its versatile applications. This review paper presents the thorough understanding of perovskite oxides as magnetic refrigerant, an alternative to the HFC-134a coolant gas used in conventional refrigerators. The fundamental aspects of magnetic cooling technique and its related magnetocaloric effect (MCE) were discussed. The reliability of magnetic refrigerant is studied using phenomenological universal curves. The analysis of critical behaviour, modified Arrott plots and theoretical analysis of the MCE using Landau theory of phase transition were also reviewed. In addition, review is to provide the compact overview of literature on crystallography of perovskite (ABO$_3$) hexagonal polytypes and their related physical properties. An outline on structural stacking sequence of the oxygen deficient hexagonal perovskite oxides (ABO$_{2.5}$) is briefly discussed. The fundamental aspects of magnetic, electrical transport and dielectric properties involved in hexagonal polytypes are also elaborated. In addition, results of the few perovskite hexagonal polytypes system were also shown. The discussion on magnetic field induced effect such as magnetocaloric effect in perovskite hexagonal polytypes are also elaborated which could be utilized in magnetic refrigeration.

INTRODUCTION
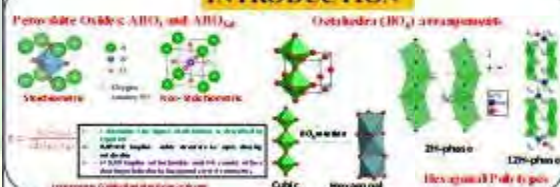
Perovskite Oxides ABO$_3$ and ABO$_{2.5}$ — Octahedra (BO$_6$) arrangements

2H-phase, 12H-phase, Cubic, Hexagonal, Hexagonal Polytypes

EXPERIMENTAL DETAILS

Step 1 — Solution of Starting material
Step 2 — Sol (colloid)
Step 3 — Gel
Step 4 — Precursor (powder)
Step 5 — Precursor Heating
Sample

MAGNETIC REFRIGERATION

Fig. 1: Flowchart of cooling cycle used in magnetic refrigeration.

Fig. 2: Schematic of magnetic spin orientation and temperature variation during the magnetic cooling cycle.

Fig. 4 (a) First quadrant isothermal magnetization (b) Temperature dependence of magnetic entropy change obtained using equation 3 for the nanocrystalline BaCo$_x$Mn$_x$O$_{2.5}$ sample.

RESULTS AND DISCUSSION

Number of ABO$_3$/ABO$_{2.5}$ layers	Nomenclature	Stacking sequence (h$_x$c$_y$)
2	2H	hh
3	3C	ccc
4	4H	(chh), (cchh)
5	5H	(hcch), (ccchh)
6	6H	(cch), (chchh)
8	8H	(hhhh), (cch), (chhhhh)
10	10H	(ccch), (chchh)
12	12H	(chhhhh), (ccchh)

Table 1: Number of AO$_3$ layers, nomenclature and stacking sequence for different hexagonal polytypes.

Temperature dependence ZFC and FC magnetization of the perovskite hexagonal polytypes. The results follow structural stacking sequence [S4].

CONCLUSIONS

In summary, fundamentals and overview of magnetic refrigeration technology as an alternative to conventional refrigeration have proved the suitability of perovskite oxides as a working material in magnetic refrigerators. The cheap, simple processing and flexible transition temperature of magnetocaloric perovskite oxides could replace the high cost reported magnetocaloric materials. The characterization techniques of MCE techniques concluded the indirect method could be easily used as efficient and reliable characterization techniques in the laboratories to test the suitability of magnetocaloric materials. In addition, to analyze the reliability of magnetocaloric materials in magnetic refrigeration technology phenomenological universal curves is briefly described. The overview and analysis of critical behaviour and theoretical analysis of the MCE using Landau theory of phase transition have been thoroughly discussed.

ACKNOWLEDGEMENTS

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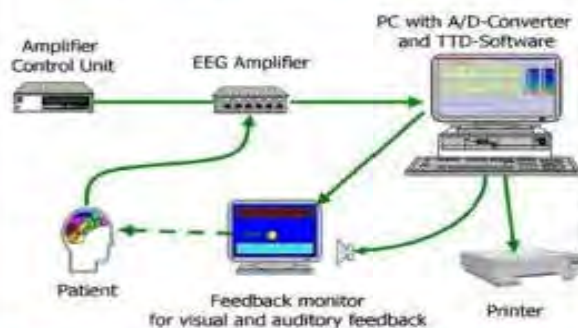# Analysis and Evaluation of Electrical Activity of Brain
EEG – Electroencephalogram

Electroencephalography (EEG) is an electrophysiological monitoring method to record electrical activity of the brain. It typically, measures the voltage fluctuations resulting from ionic current within the neurons of the brain, thereby, tracking and recording brain wave patterns.

Electroencephalogram (EEG)

EEG Signal Generation by Brain Cells

Brainwaves are produced by synchronized electrical pulses from masses of neurons communicating with each other.
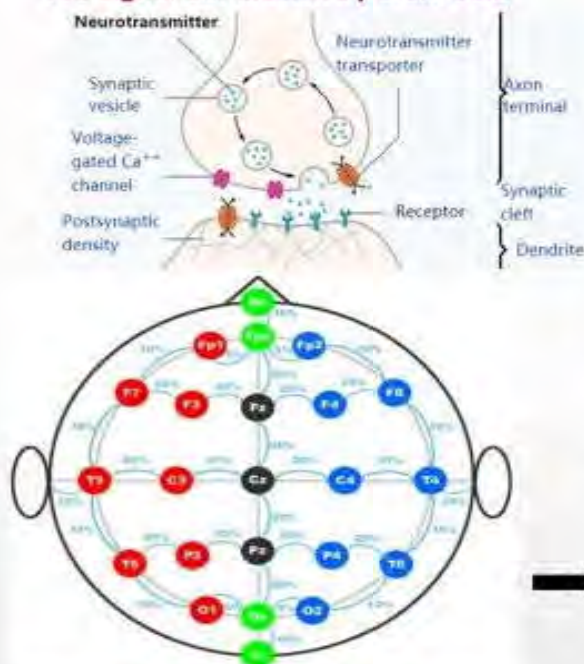
The International 10-20 Electrode Placing System

Electrode	Lobe
F	Frontal
T	Temporal
P	Parietal
O	Occipital
C	Center of Skull

Applications of EEG

- Diagnosing Neurological Disorders
- Psychological Research
- Educational Research and Application
- Occupational Research
- Therapeutic Research
- Neurological Research
- Medical Research

Ramsha Ahmed
B.Tech (BM)

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Evaluation Method for Electrocardiogram

Shrishti Sharma
Department of Biomedical Engineering, School of Biological Engineering and Life Sciences, Shobhit Institute of Engineering and Technology (A Deemed to be University), Meerut

- The **electrocardiogram** (ECG) reflects the electrical activity of the heart and is obtained by placing electrodes on the chest, arms, and legs. With every heartbeat, an impulse travels through the heart which determines its rhythm and rate and which causes the heart muscle to contract and pump blood. The ECG represents a standard clinical procedure for the investigation of heart diseases such as myocardial infarction. The *electrogram* (EG) is an intracardiac recording where the electrodes have been placed directly within the heart; the EG signal is used in implantable devices such as pacemakers and defibrillators.
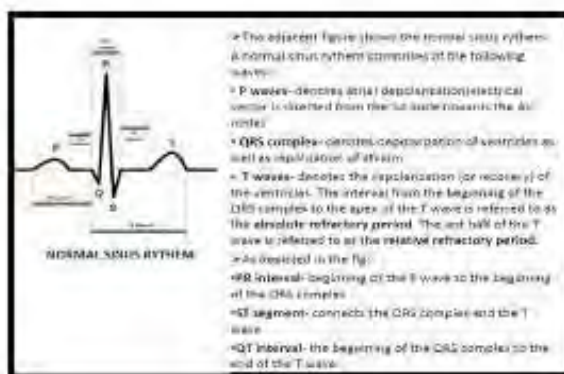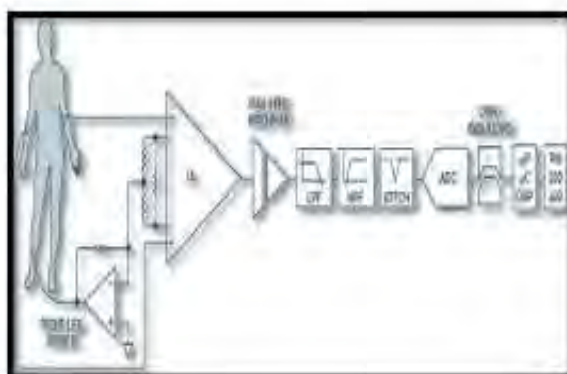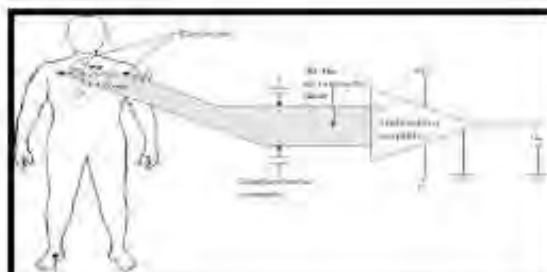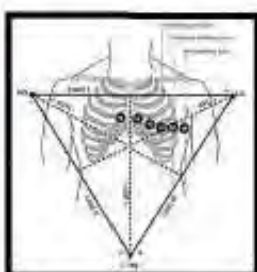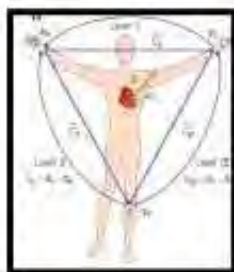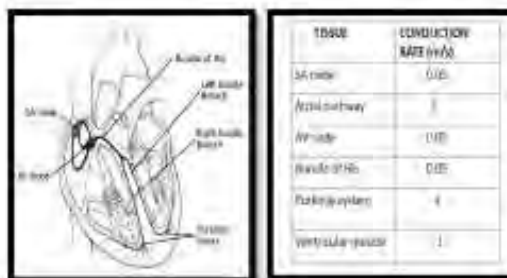
References:

Ross and Wilson Handbook of Anatomy and physiology.

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ELECTRICAL ACTIVITY OF MUSCLES AND ITS APPLICATIONS IN DISEASE IDENTIFICATION.

[Simran B.Tech B.M]

"ELECTROMYOGRAPHY": The discipline that deals with the detection, analysis, and use of the electrical signal that emanates from contracting muscles.

The electro-myogram is the trace of the electrical signal detected by the electrode. Uses electrodes applied on the skin(surface) or implanted into the muscles.

ORIGIN OF EMG:

1. The EMG signal (as perceived from surface electrodes) is composed of many individual motor unit action potentials (MUAPs).
2. Each MUAP has its own unique firing profile.
3. Muscular efforts usually require the activation of more than 1 motor unit.
4. According to Henneman's size principle, to increase strength, you recruit increasingly large rapidly firing motor units.
5. The result is a curve summation that can be difficult to analyze and interpret.
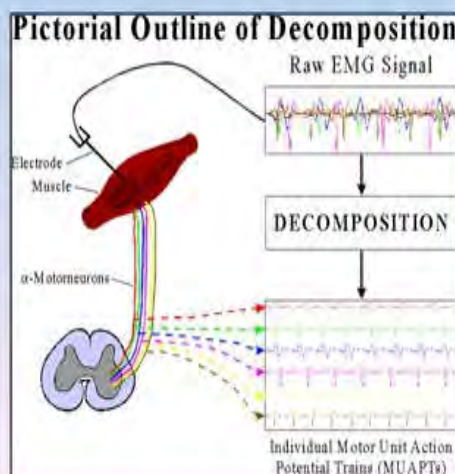
CHARACTERISTICS OF EMG SIGNAL:
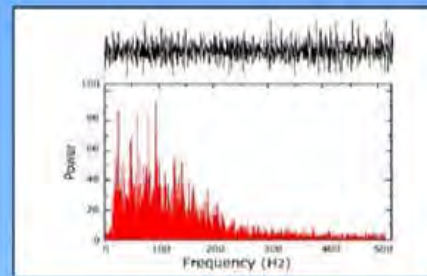
1. Amplitude range: 0– 10 mV (+5 to -5) prior to amplification
2. EMG frequency: Range of 10 -500 Hz
3. Dominant energy: 50 –150 Hz
4. Peak in the neighborhood of 80-100Hz
5. Frequency range of muscle slow twitch motor unit 75-125Hz
6. Fast twitch motor unit 125-250Hz

Pictorial Outline of Decomposition

Raw EMG Signal

Electrode
Muscle

DECOMPOSITION

α-Motorneurons

Individual Motor Unit Action
Potential Trains (MUAPTs)

① Detection of surface EMG
Muscle
Differential Amplifier ②
Anti-aliasing Filter ③
A/D Converter ④
⑤ Computer
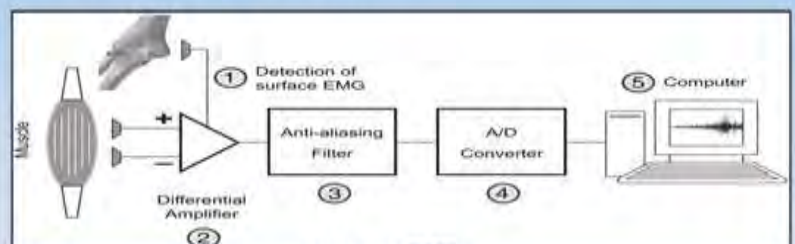
APPLICATIONS:

Electromyography (EMG) is a diagnostic procedure to assess the health of muscles and the nerve cells that control them (motor neurons).

EMG results can reveal nerve dysfunction, muscle dysfunction or problems with nerve-to-muscle signal transmission.

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Dr. Dinesh Kumar, Dr. Abhishek Dabas
Mr. Avinav Pathak,Ms. Shikha Chaudhary,
Dr. Saurabh Tyagi , Er. Gaurav Yadav,
 Mr. Jitendra Jadon, Mr. Rohit Vats,
Mr. Yogesh Vikram, Mr. Prashant Pundir

International e-Conference on
"Bio-Electronics & Informatics in the Present Scenario: ECBI-2020", June 26-27, 2020
Department of Electronics & Communication Engineering
Shobhit Institute of Engineering and Technology (Deemed-to-be-University),Meerut, India

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Agri-Informatics Engineering
Bio-Informatics
Biomedical Engineering
Biotechnology
Electronics & Communication
Mechanical Engineering
Computer Science & Engineering

Specialization
- Cloud Computing
- Internet of Things
- Advanced Computing
- Network and Information Security
- Data Science & Machine Intelligence

M.Tech. (14th Batch)
Agricultural Informatics
Bio-Informatics
Biomedical Engineering
Biotechnology
Communication Engineering
Computer Engineering

Lateral Entry B.Tech. (Diploma to Degree)
Computer Science & Engineering
Electronics & Communication
Mechanical Engineering
Agriculture Technology
Biotechnology
Biomedical Engineering

Computer Applications

MCA ^ (23rd Batch)
BCA (25th Batch)

Agriculture

B.Sc. Agriculture (4 Yrs)

B.Sc. Honors

Biomedical, Biotechnology
Computer Science

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Computer Science, Mathematics

Library Science

BLIS (1 Yr) | **MLIS** (1 Yr)

^ Lateral Entry Available

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Marketing Management
Finance Management
Operations Management
Human Resource Management
International Business Management
MBA Pharmaceutical Management
BBA (25th Batch)

Agri-Business Management

MBA Agri-Business Mgmt (2 Yrs)

Commerce

M.Com.
B.Com. Honors

Business Economics

B.A. Honors Business Economics

Psychology

BA Honors **Psychology**

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B.Com., LL.B. Hons (5 Yrs)
BBA, LL.B. Hons (5 Yrs)
LL.B. (3 Yrs)
LL.M. (2 Yrs) | **LL.M.** (1 Yr)

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MA Education
B.Ed.

Yogic Sciences

PG Diploma in Yoga

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M.Phil. (1 Yr)
Biotechnology
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Psychology, Education
Computer Science
Mathematics
Microbiology
Library Science
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