



**KALINGA  
UNIVERSITY**



**NAAC**  
**GRADE B+**  
Accredited University

**nirf**  
**RANKING**  
2023

Ranked in  
Top 101-150  
Universities



# MINDROID

**Exploring Excellence**

Volume 2, Issue II (July 2023 - December 2023)





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# MESSAGE FROM PROF. G. S. TOMAR

**Chairperson  
IEEE MP Section**



As the Chairperson of the IEEE Madhya Pradesh Section, I am delighted to extend my warmest wishes to all of you involved in the creation and readership of the IEEE Kalinga University Student Branch Magazine “Mindroid”. It brings me great pleasure to witness the vibrant energy and enthusiasm that the Student Branch continually invests in fostering innovation, knowledge sharing, and professional development.

Your commitment to producing a high-quality magazine that showcases the brilliant ideas, achievements, and initiatives of talented student members is truly commendable. The articles and features in each edition reflect not only the technical prowess but also the passion and dedication of our budding engineers.

I encourage all contributors to continue exploring new horizons, pushing boundaries, and sharing their valuable insights with the wider IEEE community. The Mindroid plays a pivotal role in disseminating knowledge, inspiring future leaders, and creating a platform for collaboration.

May this edition of the magazine be a testament to the exceptional talent of the Student Branch, and may it serve as a source of inspiration for others to follow suit. I am confident that the stories within its pages will not only highlight the remarkable achievements of IEEE members but also underscore the impact of IEEE in shaping the future of technology.

I extend my heartfelt gratitude to the editorial team for their hard work and dedication in curating yet another insightful edition. Your efforts contribute significantly to the success and reputation of our IEEE MP Section.

Wishing you all continued success, innovation, and a rewarding journey ahead.  
Best Regards

# MESSAGE FROM MR. PUNEET KUMAR MISHRA

**Head, Satellite Antenna Characterization  
Test & Design - U R Rao Satellite Centre, ISRO  
Secretary, IEEE Bangalore Section**



As we bid farewell to another year, I am thrilled to extend my warmest congratulations to each of you for the incredible achievements that have defined the IEEE journey in your student branch together. Your passion for technology & commitment towards shaping Mindroid (the IEEE KU SB Magazine) have set a standard of excellence. It is inspiring to witness the diverse talents and contributions that each member brings to our community.

This past year, your collective efforts have not only elevated the IEEE standard but have also created a supportive environment where ideas flourish, innovation thrives, and friendships are forged. From successful events to impactful projects, every accomplishment reflects the dedication and hard work of your members. This magazine is not only an achievement of your student branch but also an inspiring factor for other student branches.

As we celebrate these achievements, let's also acknowledge the invaluable friendships and connections that make our IEEE family so special. Together, we have built a community that values knowledge, creativity, and the pursuit of excellence.

Congratulations once again on your outstanding accomplishments.

# MESSAGE

## FROM PROF. Y. PADMA SAI

**Professor ECE & Dean Students Progression  
Vallurupalli Nageswara Rao Vignana Jyothi Institute of  
Engineering and Technology, Hyderabad  
Vice-Chair, SPS IEEE Hyderabad Section  
Member, IEEE WiSP Subcommittees Diversity and  
Inclusion-Benefits and Services 2023-24**



As the Vice-Chair of the SPS IEEE Hyderabad Section, I am absolutely thrilled to join in the celebration of Mindroid! It's truly exhilarating to witness the vibrant energy of the Kalinga University Student Branch, where a strong commitment to fostering innovation, knowledge sharing, and overall development is not just evident but also inspiring. The commendable effort put into creating this high-quality magazine that showcases the incredible talent of students deserves applause.

I encourage everyone to keep exploring, pushing boundaries, and sharing valuable insights, as Mindroid stands as a vital platform for inspiration and collaboration. In this edition, we find a testament to the exceptional talent within the IEEE community, shedding light on the profound impact IEEE has on shaping the future of technology. My heartfelt kudos go to the dedicated editorial team whose tireless efforts contribute significantly to the success of the IEEE MP Section.

To the entire Mindroid team, I extend my best wishes for continued success, innovation, and a rewarding journey ahead. May each edition be a stepping stone towards even greater achievements, further solidifying the role of IEEE in advancing technology and fostering a spirit of collaboration among aspiring minds.

Best Wishes

# ABOUT IEEE

IEEE is the world's largest technical professional organisation dedicated to advancing technology for the benefit of humanity. IEEE and its members inspire a global community through its highly cited publications, conferences, technology standards, and professional and educational activities.



## ABOUT IEEE Kalinga University Student Branch (IEEE KU SB)

The IEEE Student Branch of Kalinga University was established on 04<sup>th</sup> April 2022. The IEEE Student Branch of Kalinga university is a part of the IEEE Madhya Pradesh Section. The Objective of IEEE KU SB is to enhance the learning experience of the student community and develop a research environment among Faculty members. The Student Branch focuses on conducting social and technical activities for students and also encourages the students to take full advantage of the benefits of IEEE membership, including scholarships, competitions, and conference grants. The Student Branch also intends to provide opportunities for students to network with peers in other institutes, academicians, professionals, engineers, and scientists through the on-campus IEEE Student Branch and the Local IEEE Section, thereby encouraging students to be a part of the global IEEE community.

# LET'S HEAR FROM THEM

I am delighted to extend my warm greetings to each one of you on the occasion of the launch of "MINDROID" Volume 2, Issue II, by our dedicated IEEE KALINGA UNIVERSITY STUDENT BRANCH. This magazine serves as a testament to the relentless pursuit of knowledge, innovation, and excellence by our brilliant students.

"MINDROID" has become a platform for showcasing the intellectual prowess of our budding engineers, researchers, and innovators. In its second volume, the second issue continues to unravel the latest advancements, cutting-edge technologies, and insightful research articles that reflect the dynamism of the field. I appreciate the teamwork and coordination that went into producing this magazine and wish them all the best.



**Dr. Rajeev Kumar**  
Chairman  
Kalinga University



**Dr. Sandeep Arora**  
Chancellor  
Kalinga University

I am pleased to extend my warmest greetings to the IEEE KALINGA UNIVERSITY STUDENT BRANCH on the occasion of the launch of "MINDROID" Volume 2, Issue II. It gives me great pleasure to witness the remarkable progress and accomplishments of our IEEE Student Branch, particularly in the production of this insightful and thought-provoking magazine "MINDROID", with its innovative content and commitment to excellence, stands as a testament to the dedication and intellectual prowess of the students involved in its creation. As we unveil the second issue of this magazine, I am confident that it will continue to serve as a platform for the exchange of ideas, the dissemination of knowledge, and the exploration of cutting-edge technologies. Congratulations to the IEEE Student Branch on this momentous occasion, and my best wishes for the continued success of MINDROID.

I commend the IEEE KALINGA UNIVERSITY STUDENT BRANCH for their unwavering commitment to excellence in producing "MINDROID". The dedication, creativity, and hard work of the editorial team and contributors are truly commendable. I believe that this magazine will continue to inspire and foster a culture of innovation among our student body. I encourage all members of our academic community to actively engage with "MINDROID", contribute their ideas, and embrace the wealth of knowledge it offers. Let this magazine be a source of inspiration, sparking curiosity and encouraging a deeper understanding of the transformative power of technology. On behalf of the entire institution, I extend my best wishes for the success of MINDROID Volume 2, Issue II.



**Dr. R. Shridhar**  
Vice-Chancellor  
Kalinga University



# LET'S HEAR FROM THEM

"MINDROID" has been a platform for sharing innovative ideas, research findings, and technological advancements within the IEEE community. The upcoming Volume 2, Issue II promises to be an exciting compilation of articles, IEEE activities, recognitions, and features that showcase the intellectual prowess of our IEEE members. I wish the team at IEEE KU SB all the best for this issue of the "MINDROID" magazine.



**Dr. Sandeep Gandhi**  
Registrar  
Kalinga University



**Dr. Vijaylaxmi Biradar**  
Director, IQAC  
IEEE KU SB Mentor  
Kalinga University

"MINDROID" has consistently been a beacon of knowledge, innovation, and collaboration within our community. As we embark on the journey into Vol 2, Issue II, I am confident that the passion and dedication of our student members will once again shine through its pages. This magazine stands as a testament to the incredible work and achievements of our IEEE KU Student Branch. It serves as a platform for showcasing the remarkable projects, research, and ideas that have emerged from talented minds. The diversity of topics covered, from cutting-edge technologies to insightful articles, reflects the dynamic nature of our IEEE KU Student Branch community. I want to express my gratitude to the editorial team, writers, contributors, and everyone involved in bringing this magazine to life. Your hard work and dedication have undoubtedly contributed to the success of MINDROID, making it a valuable resource for our members and the broader academic community. I am excited to see the continued success and evolution of MINDROID under the capable leadership of our IEEE KU Student Branch.

I am thrilled to extend my warmest greetings to each of you as the IEEE SB Counsellor for our esteemed institution. It gives me immense pleasure to announce the launch of Volume 2, Issue II of our magazine, "MINDROID" of IEEE KU SB. The magazine has been a remarkable platform that showcases the intellectual prowess and innovative spirit of our Student Branch. In this latest edition, you will find a diverse range of articles; research works, and features that highlight the latest developments in the fields of technology, engineering, and beyond. I extend my gratitude to the IEEE Student Branch for their continued commitment to fostering a culture of learning, innovation, and knowledge-sharing. Your collective efforts contribute significantly to the growth and success of IEEE KU SB.



**Mr. Anup Kumar Jana**  
IEEE KU SB Counsellor  
Kalinga University

# IEEE ACTIVITIES

## 1. World Conference on Communication & Computing 2023 (WCONF 2023)

Date: 14<sup>th</sup> - 16<sup>th</sup> July 2023

World Conference on Communication & Computing (WCONF) 2023 was hosted by IEEE Kalinga University Student Branch, Naya Raipur, and technically co-sponsored by IEEE Madhya Pradesh Section from 14<sup>th</sup> to 16<sup>th</sup> July 2023. It targeted the state-of-the-art as well as emerging topics pertaining to Engineering & Technology and effective strategies for its implementation on Intelligent Systems. The objective of this world conference was to provide opportunities for Researchers, Academicians, Industry persons and students to interact and exchange ideas, experience and expertise in the current trends and strategies in Engineering & Technology. WCONF-2023 received a total of 1436 paper submissions. These papers were reviewed by the Program Committee members and Area Chairs. The authors of each paper finally received two to five reviews. The review process was of very high quality and, in the end, 280+ regular papers were selected (acceptance rate: Above 19.5%) for presentation and publication in IEEE Xplore.



**Welcoming Keynote Speaker**



**Proceedings Release (WCONF 2023)**



**Guest Felicitation**



**Guest Interaction with Participants**

## 2. Talk on “Funding Opportunities on Humanitarian Projects to Meet SDG's through IEEE” to IEEE Vizag Section

Date: 04<sup>th</sup> August 2023

Dr. Vijayalaxmi, Mentor, IEEE KU SB, was invited to deliver a talk on the funding opportunities for Humanitarian Projects to meet SDGs through IEEE. During her talk, she explained different opportunities which a faculty or student can avail through IEEE. She explained the importance of receiving small funding to get motivated towards working in Humanitarian Projects.



Online Session



### 3. IEEE WIE ILS 2023, Raipur

Date: 25<sup>th</sup> & 26<sup>th</sup> August 2023

IEEE Women in Engineering (WIE) International Leadership Summit (ILS) 2023, Raipur, was organised at Hotel Babylon Capital, Raipur on 25<sup>th</sup> & 26<sup>th</sup> August 2023 on a grand scale. Dr. Vijayalaxmi, the Program Chair of this event, received the opportunity to host this event at one of the 8 venues throughout the world. Such an event has happened for the first time in Chhattisgarh. This event focused on four tracks, namely:

- i. Innovations & Entrepreneurship
- ii. Climate Change & Sustainability
- iii. Humanitarian
- iv. Women in Space

More than 45 Speakers from these tracks and guests from Industries and academia were present during the event. More than 200 participants have registered for the event and attended in person at the venue.

#### Inauguration:

The event was inaugurated in a grand way in the presence of Smt. Savita Mishra, Secretary, Chhattisgarh Building and other construction workers Welfare Board, Dept. of Labour, Govt. of Chhattisgarh, Dr. Sandeep Arora, Chancellor, Kalinga University, Dr. Reshma Kaur, Vice-Chairperson, Guru Nanak Group of Institutions, Bidar, Dr. Pradeep K. Sinha, Vice-Chancellor & Director, IIIT, Naya Raipur, Dr. Sandeep Gandhi, Registrar, Kalinga University, Shri. Puneet Kumar Mishra, BOG, IEEE AESS, Dr. Sadhana Atavar, Director, VITM, Bangalore & Vice-Chair, Humanitarian Technology Activities, IEEE India Council, Prof. G. S. Tomar, Chairperson, IEEE MP Section. Dr. Celia Shahnaz, 2023-24 IEEE WIE Committee Chair & Dr. Nita K Patel, President, IEEE Computer Society.

Dr. Vijayalaxmi, the Program Chair and Prof. G S Tomar, Chairperson of the IEEE MP Section, stressed the theme of the event “Embracing Equity with Leadership and Sustainability”. IIoT lab of Kalinga University was inaugurated during this event by the Chancellor of the University.



**Inaugural Talk by R10 IEEE WIE Chair Dr. Celia Shahnaz  
Welcoming Chair IEEE WIE MP Section**



The event sponsors like Chhattisgarh Tourism Board, Labor Dept. of Chhattisgarh Govt., Humanitarian Technology Board, AESS Society, IEEE Computer Society, EBLU, IEEE SPS, IEEE PES, Polygon Geospatial, DIVINE, Technoviz Automation, Sambhavi Creations, IEEE CIS Bangalore, IEEE Kalinga University Student Branch, Aerolaunch, IEEE YP MP Section, etc. have extended their support in organising this event. The Section Chair, Prof. G. S. Tomar, and the Program Chair, Dr. Vijayalaxmi, expressed thanks to all the sponsors for supporting the event.

### Key Note Sessions & Sessions:

Followed by the inauguration, there were three keynote sessions delivered by eminent speakers like Dr. Abhilasha Gaur, COO (Officiating CEO), Electronics Sector Skills Council of India, Ministry of Skill Development & Entrepreneurship, Mr. Pravin Kulkarni, Senior GM, R & D and Projects EV, Godawari E Vehicles Pvt. Ltd. Dr. Abhilasha talked about skill development among individuals for making a better tomorrow. She has also inspired women participants to come forward to generate skills among themselves and focus towards entrepreneurship through innovative approaches, whereas Mr. Pravin delivered innovations in EV design and development to make a pollution-free climate. After that, there were some sessions handled by Mr. Kapil Khurana from Technoviz Automation, Dr. K Ramakrishna from IEEE PES Governing Board and Dr. Shubhda Chaturvedi from Chhattisgarh Tourism Board who delivered their talks on IIoT for Smart Manufacturing, Women in Power to light the future and Chhattisgarh tourism respectively.



**Getting Ready for Track Presentations**

**Track 1 (Innovation & Entrepreneurship):**

On day one, the first session was headed by Mr. Rahul Pinnamaneni as a speaker. His talk was on the topic "Unleashing the power of Geospatial innovation".

He owns a startup, Polygon Geospatial, which is a smart digital reality solution. During his talk, he focused on various problems in the geospatial industry and also talked about the need for satellite data integration, use of drones for data Collection, target industries, etc.

The speaker was also informative about his products as an entrepreneur. The main takeaway from his talk was the impact of AI on innovation.

The Second session Speaker was Mr. Jignesh Talasila, he is the co-founder of the startup Gedanken VR. He spoke about the "power of less of more". His talk focused on providing a clear vision to all the young people who wish to innovate in the coming future. He explained to the participants to pick one passion and focus deeply on it.

He also opened up about how failure helped him to be strong from his own story as an innovator who failed multiple times, stood strong and turned strongly to prove himself with the new visionary idea. He shared his success mantra as "Fail multiple times and stand strong until you find success". His innovative start-up of blending VR with the educational industry has motivated young minds to explore and innovate for new ideas.

The third session was taken up by Mr. Joginder Tanikella as the speaker He focused on "How to get started". He covered various topics, including entrepreneurship, Mindset of initiative, recognising resources and many more. The most important resource about which he opened up for innovation is passion. He also quoted the famous inspirational stories of Karsanbhai Patel, the founder of Nirma detergent; Dhirubhai Ambani, founder of Reliance; and Sachin Bansal & Binny Bansal, founders of Flipkart. He concluded his session with a growth mindset concept comprising the Bumble Bee principle and jet less nature. At last pointed that "In the Excel sheet of Rejection, the only thing you need is one Yes".

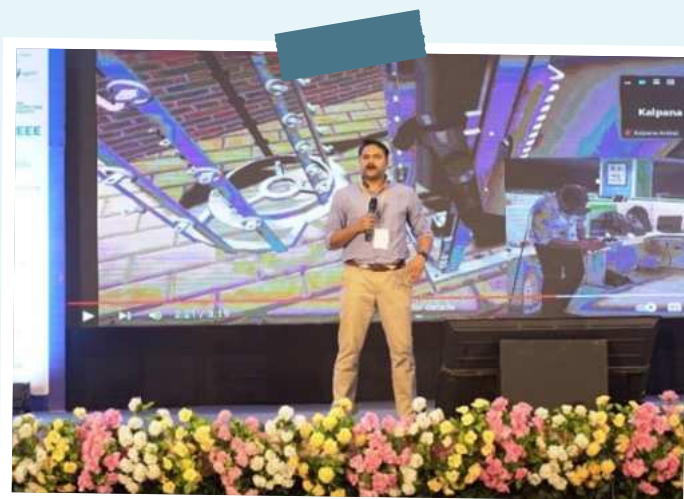
The initial session of day 2, entitled "Fuelling Innovation for Sustainable Growth," was presented by Speaker Vinu Pillai. She delved into the realms of entrepreneurship and social competence, shedding light on the 7 'C's that comprise creative and innovative environments: cultural sensitivity, critical thinking, creativity, collaboration, curiosity, community, and communication. Vinnu Pillai illustrated how these elements could be harnessed to enhance society, citing exemplars like Gpay and Paytm. She also highlighted the "DigitAll" theme observed on Women's Day, emphasising the role of innovation and technology in achieving gender equality. Her captivating presentation concluded with the inspiring notion that even our wildest dreams can be attained through artistic visualisation. With this, the first session of the day came to a close.

The second session, led by Navita Gupta, an energy auditor and certified engineer, explored the theme of "Innovation and Entrepreneurship." She commenced her talk by distinguishing entrepreneurship from startups, underlining the creative transformation of ideas into tangible entities. Gupta drew upon the success story of Vandana Luthra, the founder of VLCC, to

illustrate this transformation. Challenges inherent in entrepreneurship, such as market competition, workforce retention, and brand establishment, were discussed in depth. Gupta stressed that quality service, rather than monetary gain, is the driving force behind business success. Innovative thinking and resilience were presented as solutions to entrepreneurial challenges, and the importance of learning from failures was emphasized. Gupta's expertise in non-destructive testing (NDT) and its applications in medical and industrial diagnostics were also shared. The session concluded with an engaging Q&A session, where Gupta addressed queries from the audience.

The third session, titled "Innovation and Incubation," was presented by Abhishek Ranjan Kumar. He began by highlighting the transformative impact of the Smart India Hackathon, which empowered 88% of its participants with knowledge of product design and a deeper understanding of India's multifaceted challenges. Kumar also discussed the Toy Business League, a hackathon promoting learning, culture, diversity, and Indian history through toy design. He touched upon various hackathons, both national and international, offering young talents platforms to showcase their skills and expand their horizons. Kumar introduced the Institutions Innovation Council (IIC), a massive network spanning thousands of institutions, known for its comprehensive innovation and startup support programs. He detailed the staggering number of activities and innovations recorded within this network. Additionally, he mentioned a new 3-credit course on Intellectual Property Rights (IPR) offered via Swayam from January 2023, emphasising the importance of IP awareness. Kumar concluded by highlighting the Innovation Entrepreneurship Venture Development (IEV) program, offering MBA/PGDM degrees, and India's pioneering launch of a dedicated design thinking course in law. The session ended with a stimulating question-and-answer segment.

With an audience of 45-60 attendees, including Session speakers and coordinator Dr. Nilam Choudhary, this day was a testament to the collaborative spirit of the event. We extend our heartfelt appreciation to the esteemed speakers, engaged participants, and dedicated volunteers whose contributions made this session enlightening and productive. Your active involvement exemplifies the drive and unity that propel our community forward.



## Track Presentations on Innovation & Entrepreneurship



### Track 2 (Women in Space):

The track aimed to highlight the significant contributions of women in the space industry and explore various aspects of space technology and exploration. The first day of the “Women in Space” track was marked by a series of enlightening sessions. Day 1 session started with the panel discussion on “Women in Power-challenges and Opportunities”, followed by keynote speakers from ISRO.

### Panel Discussion on “Women in Power-challenges and Opportunities”:

The session's moderator, Dr. Trapti Jain, commenced by introducing the esteemed panel members. Dr. Ramalatha Marimuthu, an educator, entrepreneur, and IEEE impact creator is deeply committed to humanitarian technology and service learning through projects. Dr. Tripta Thakur serves as the Director General of the National Power Training Institute (NPTI), which is the apex body under the Ministry of Power, Government of India. Additionally, Er. Suraiya S. Khader holds the position of General Manager (Quality) at Bhilai Steel Plant, bringing extensive expertise in quality control processes.



**Ongoing Track  
Presentation  
for Women in Space**

Dr. Ramalatha discussed challenges and opportunities for women. Discussed gender stereotypes, implicit bias and discrimination and how it is affected in the power and energy sector. Dr. Ramalatha also addressed issues related to bias and discrimination faced by women in fieldwork. She emphasised the importance of work-life balance and proposed creating individualised support systems, asserting that everyone deserves happiness and mentorship. She discussed the evolving opportunities enabled by mentorship, networking, and skill development. As an example, even women managing households can be trained to read meters, expanding their skill sets and roles in the sector.

Dr. Tripta Thakur discussed about challenges faced by women in power engineering and given insights of companies like Dr. Reddy Laboratories, Tech Mahindra and Wipro which maintains gender equality index. Drawing from her personal experiences, she stressed the significance of women taking the initiative to pave their paths. Dr. Tripta Thakur discussed the SAR-100 initiative and expressed gratitude towards IEEE for their support in encouraging women to step into leadership roles. She highlighted that around a hundred women were trained through the SAR-100 program online, and there are plans to facilitate their certification by taking them to Bangkok for further training and recognition.

Er. Suraiya S. Khader candidly shared her personal experiences from her professional journey. She acknowledged that bias issues are commonplace for every woman, including herself, and that addressing these challenges is an essential part of the journey. Through the lens of a few case studies, she delved into the numerous challenges faced by women, notably highlighting the confidence gap, gender bias within company practices and structures, the absence of role models, and the intricacies of balancing leadership roles with family responsibilities.



**Speaker: Jayanthi Rajesh, Group Director, SIG**

**Topic: Spacecraft Assembly Integration and Testing (AIT) – Criticalities and Challenges (online)**

Ms. Jayanthi Rajesh provided an insightful overview of the different phases involved in the process of preparing and launching a satellite. Her presentation encompassed various aspects of satellite assembly, integration, testing, and launch operations.

In her discourse, Ms. Jayanthi Rajesh discussed the distinct types of satellites and offered an in-depth exploration of the assembly, integration, and testing procedures specific to INSAT/GSAT satellites. She delved into the challenges associated with aligning mission objectives with spacecraft configuration and the complexities of developing mechanical and electrical ground support equipment.

During Phase 1, Ms. Jayanthi Rajesh outlined the process starting from the spacecraft structure's arrival in a clean room environment. She detailed the installation of propulsion systems, routing of propulsion plumb lines, and assembly of fuel tanks. Additionally, she highlighted the integration of thermal heaters, the fabrication and testing of harnesses, and the comprehensive testing involved in this phase.

In Phase 2, Ms. Jayanthi Rajesh provided insights into transferring equipment onto panels for integration. She discussed the meticulous segregation and routing of harnesses, the placement of equipment panels on the Payload Interface Frame (PIF), and the intricate electrical and mechanical thermal operations before panel closure checks are conducted. This phase also encompasses integrated spacecraft tests and thermovac tests conducted in a controlled environment.

Moving on to Phase 3, Ms. Jayanthi Rajesh explored the assembly of critical components such as solar panels, reflectors, antennas, and propulsion systems like LAM engines. She detailed the alignment process for sensors and actuators and the inclusion of RF sensors. This phase includes a range of rigorous tests, including acoustics and vibration tests.

The final phase, Phase 4, involves activities at the launch pad. Ms. Rajesh explained the essential operations, such as fuel filling and prelaunch preparations, that are undertaken before the satellite's launch.

Ms. Jayanthi Rajesh's presentation offered a comprehensive glimpse into the journey from satellite installation to launching. Her breakdown of the satellite's cycle, from initial assembly to final launch preparations, provided valuable insights into the meticulous processes involved in a successful satellite mission.

**Speaker: Kalpana Arvind, Associate Director, Laboratory for Electro-Optics System, ISRO**  
**Topic: Eyes in the space-Electro Optical Sensors (online)**

Ms. Kalpana Arvind commenced the session with an enlightening introduction to attitude and the close-loop attitude control system. She provided a detailed discourse on attitude representation, emphasising the imperative role of attitude control and the diversity of attitude representations.

In her presentation, Ms. Arvind shared invaluable insights into the motion patterns of satellites and the array of applications where these principles find significance. She offered a holistic view of the sensors, often referred to as the “eyes” of spacecraft, that play a pivotal role in this domain.

Ms. Kalpana Arvind delved into the specifics of various attitude sensors, starting with those focused on the sun, earth, and stars. She elucidated the working principles of sun sensors and provided comprehensive details about different types of sun sensors along with their specifications. Similarly, she explained the workings of earth sensors, delving into their operational specifications. The discussion extended to star sensors, encompassing their working, calibration methodologies, and the specifications associated with various star sensor models and facilities.

Beyond the sun, earth, and stars, Ms. Kalpana Arvind provided detailed insights into other essential sensors, including Magnetometers and fibre optic gyroscopes. She explained their functionalities and significance in satellite systems. Additionally, she highlighted how the choice of sensors depends on the specific application of the satellite.

Ms. Kalpana Arvind wrapped up the session by emphasising collective responsibility for the well-being of our planet and the vast expanse of space.

The “Women in Space” track at WIE ILS 23's first day provided an engaging platform for attendees to delve into the contributions of women in the space industry and the technological advancements driving space exploration. The track even succeeded in fostering a deeper understanding of the Women's challenges and opportunities.

On the second day, Dr. Anuradha S. Prakasha, Associate Project Director, Communications and Navigation Satellites, ISRO, delivered her talk and gave an insight into different mechanisms adopted in rockets to send satellites into space. She also delivered the way of shifting the orbits with the example of the Chandrayaan 3 mission. Different types of fuels required for different operations were also discussed during the session. It was quite an interactive session as many of the participants showed their interest in understanding the background of the recently executed project of ISRO. A hands-on training on making satellites was conducted by the team members Aerolaunch India followed by this. During this session, participants came to know various parts included in the satellite, along with the basic ideas for making this possible to connect this to rockets. They gave an overview of different types of satellites moving around space and also gave a detailed technicality behind working on those. Overall, the women in space left a remarkable impression on the participants as they could hear from eminent personalities.

### Track 3 (Climate Change & Sustainability):

#### Speaker 1: Ms. C. S. Rama Lakshmi IFS

The session started with the Quote by Guy McPherson

"If you really think that environment is less important than the economy, try holding your breath while you count your money."

#### Ø Highlighted the importance of the following

- Environmental change is a change or disturbance of the environment most often caused by human influences and natural ecological processes. Environmental changes include various factors, such as natural disasters, human interference, or animal interaction.
- Global warming refers to the rise in global temperatures due mainly to the increasing concentrations of greenhouse gases in the atmosphere. "Climate change" refers to the increasing changes in the measures of climate over a long period of time – including precipitation, temperature, and wind patterns.
- Climate refers to the long-term regional or global average of temperature, humidity and rainfall patterns over seasons, years or decades.
- While the weather can change in just a few hours,
- Temperatures in India have risen by 0.7 °C (1.3 °F) between 1901 and 2018, thereby changing the climate in India.
- In May 2022, a severe heat wave was recorded in Pakistan and India. The temperature reached 51 °C. Climate change makes such heat waves 100 times more likely

#### Ø Environmental Changes

- Climate change and other changes to the atmosphere
- Land use changes and soil degradation
- Freshwater depletion and contamination
- Biodiversity loss
- Partly or largely unknown!!!
- Threats to human health

#### Ø Change in global scenario in last 20 years.

- Global temperature has risen six-tenths of a degree in those 20 years
- Population has increased by 1.7 billion people
- Sea levels have risen 3 inches
- and extreme weather in the U.S. has increased by 30 percent
- In Greenland and Antarctica, ice sheets have lost 4.9 trillion tons of ice

#### Ø Vulnerable Indians

As per 2019, India is the 7th most affected country and discussed with Statistics

- Malnutrition
- Child stunting

#### Ø How much forest cover has India lost?

#### Ø Ecological restoration - Possible? Can it be reversed?

- Major Land-Use Change or Degradation
- Industrialization
- Mining
- Unsustainable Farming
- Monoculture Plantations

- Logging and Overharvest Have Transformed Many Natural Ecosystems to Highly Degraded States
- Led to Loss of Biodiversity and Water Security, Soil Erosion, Invasion of Alien Species
- Increased The Vulnerability of The Ecosystems
- And Human Communities to Climatic Extremes at A Time of Global Climate Emergency
- Ecological Restoration vs Eco-Conscious Activities
- Agroforestry
- Food Forests
- Tree Plantations
- Organic Farming
- Permaculture
- May Support Human Needs with Less Impact on The Environment
- Do Not Strictly Count as Ecological Restoration
- Passive & Active restoration

#### Ø Ethical role of Politicians/planners/ engineers/ contractors

- Integrity
- Objectivity
- Professional competence and due care
- Confidentiality
- Professional behaviour
- All risks are properly identified, evaluated, and provided through modern management systems to ensure the successful delivery of high-quality infrastructure that delivers value and does not compromise the health, safety and sustainability of our ecology and planet Earth

#### Ø Ways for engineers to contribute to that net-zero goal?

#### Ø Role of engineers in achieving sustainability

#### Ø Reduce the amount of plastic waste sent to landfills

#### Ø Need for engineers to think about equity in their work on climate change - designing systems that protect

#### Ø Role of engineers in achieving sustainability

#### Ø Achieving Sustainability

- Advocating □ citizen's right to a sustainable and healthy future
- Influence government policy-making efforts to promote inclusive and climate-responsive programming
- Strengthening □ service delivery that reflects climate mitigation, adaptation and resilience outcomes
- Empowering □ communities, especially women and children, with the resources they need to advocate for themselves and drive action
- Investing □ in opportunities for convergent program delivery
- Public-private partnerships and financing or funding that will effectively amplify positive inputs and results contributing to climate action and environmental sustainability

Ms Rama Lakshmi's talk was well-received by the audience. Each point has been explained with statistics. Finally, the session closed with a quote by Barack Obama: **“We are the first generation to feel the impact of climate change and the last generation that can do something about it.”**



**Speaker 2: Mr. Nikhil Kaushik**

**Topic: Climate Action- Putting Pollution to Reuse**

Started the session with the 1<sup>st</sup> Industrial Revolution (1765) - an extraordinary jump forward in the story of civilisation.

Mr. Kaushik discussed the following points with Statistics

Ø Air pollution kills about 5 million people globally

Ø We've added 1615 billion tons of CO<sub>2</sub> into the atmosphere in the last 250 years leading to global warming

Ø Mitigation Measures

- Reduce
- Reuse
- Recycle

Ø Carbon-based Economy

- Much of today's economy is based on carbon inputs
- Captured CO<sub>2</sub> is a better source of carbon
- The emerging CO<sub>2</sub> utilisation market is forecast to grow to USD 1 trillion by 2030 and beyond

Ø Fossil Fuels Dependent Today

- High Cost
- Environmental Pollution
- Key Driver of Climate Change

Ø Opportunity

- Make Materials of everyday use for 7 billion people by capturing carbon emissions and putting them to use to reduce dependence on petroleum
- COP 26 - net zero targets
- Demand for non- petroleum-based inputs
- Governments looking beyond petroleum for their energy needs

Ø AIR-INK- World's grade ink created from air pollution and explained various case studies

Ø Discussed the captured Co<sub>2</sub> from various cities

Ø Impact

- To produce these products, such as AIR-INK Fabrics, AIR-INK Flexo and AIR-INK Consumer  
~ 4000 Kgs of Carbon PM<sub>2.5</sub> removed  
~ 700 Tons worth of CO<sub>2</sub> impact.  
~ USD 2.2 M in revenues.

The session concluded that pollution is nothing but the resources we are not harvesting. We allow them to disperse because we've been ignorant of their value by R. Buckminster Fuller. It was an eye-opening session for all the attendees.

**Speaker 3: Dr. Rajasekhar****Topic: Our Changing Climate****Ø What have we heard?**

Understanding of greenhouse effect, global warming and climate change?

Ø What proof do we have that climate change is happening?

Ø Why is it happening?

Ø Climate variability is the “variations in the mean state of the climate on all temporal and spatial scales; in simpler terms, variability is the range of climate compared to its average

Ø Climate change is a shift in climate relative to a given reference time period. Changes in ANY of the climate components, whether internal or external forcing, cause the climate to vary or change.

Ø Why does the climate vary/change?

The climate system changes in response to both its own internal dynamics and the effects of external factors known as forcing.

Ø Discussed the difference between Global Warming and Climate Change

Ø Climate change is... Simple, Serious and Solvable

Ø Due to human activities, there are now 40 more greenhouse gases in the atmosphere than there were a few hundred years ago.

Ø The Earth has already warmed as a consequence of this, and scientists expect that in the next 20 to 100 years, the world will warm a lot more!

Ø Greenhouse Effect: The Earth is surrounded by a thin layer of gasses we call greenhouse gases. These gases are what make up our atmosphere.

Ø Scientific Consensus on Climate Change:

o Carbon dioxide (CO<sub>2</sub>) and other greenhouse gases warm the planet

o Human activities have increased the concentration of the major greenhouse gases since 1950

o Average global temperature has increased since 1906. Warming since the 1950s is very likely (>90% chance) due to human increases in GHG

Ø Glaciers are melting

§ Ice caps on both North and South poles melting

§ Olivares Alfa glacier in Chile has

§ Lost 66 percent of its ice mass since 1953.

Ø Animals & Ecosystems

o Moving northward and to a higher elevation

o Mismatched timing between animals and food sources

o Increasing vulnerability to invasive species & extinction

o Global decline in coral reefs

Ø Health

• Worsening air quality

• More heat-related illnesses

• Longer, stronger allergy seasons

• Increasing risk of insect and food-borne diseases



**Dr. Rajasekhar,  
During his session**

#### Ø Food & Farming

- Stress from increased weather extremes (droughts & floods)
- Shifting planting zones

#### Ø Increased crop diseases and pests

#### Climate Change from Space

#### Ø International Cooperation on Climate Change: ESA NASA

#### Strategic Partnership in Earth Sciences

- Sentinel6 Michael Freilich
- IceBridge/CryoVEx
- CRYO2ICE
- IMBIE
- Multi-mission Algorithm and Analysis Platform
- Cristal (Sentinel 9)
- Next Generation Gravity Mission

Mr. Rajasekhar discussed graphs and true pictures. All the participants appreciated the session and got many clarifications.

#### Track 4 (Humanitarian):

The first session was 'Technology for disaster management' by Dr. Sadhana Attavar, Director, VITM Bangalore. She spoke about various disasters and how to be prepared to overcome such things. HRM radio can work a lot towards this; drones can do aerial mapping of flooded areas and supply food packets & medicines. Big Data is another way to keep track of people surviving natural calamities. ISRO Satellites can trace the exact position of the landslide and the floods of Kerala in 2018, and then AI can do the predictive analysis when the cyclone is likely to happen and evacuate that area. Snake robots can go where humans cannot go to find people inside the debris of an earthquake.

The second session was on the topic "Generational Effect of Retention of Women Engineers in Industry" Ms. Neerja Singh. Author of four books. She started her session by Saluting Dr. Ritu Karidhal, Rocket Women of India, by breaking the ceiling. She explains things differently, starting from the traditional, Millennials and Generation X. A woman can achieve better heights with the help of in-laws, male mentors and domestic help. We have a few demons in our society, like Bias, opposition and Antagonism.



**Humanitarian  
Track Group Photo**

The third session was on "Humanitarian Projects for Women" by Dr. Vydeki Vijaykumar, VIT, Chennai. She is a Member of the HTB Madras Section. She asked the students what they do if asked to submit a project; an average student will obviously Google, and then select the title, and then start working on it. Various trucks have been overloaded, and due to that, they tumbled down, so students can do a project on overload sensors with the given dimensions of the truck. Following UN sustainability goals. In 2021, 600 volunteers participated in funded projects and around 20000 people got benefitted by HTB activities.

Session Coordinator Prof. Shravani Mathur felicitated all three speakers, and participants would benefit in the near future.

### Cultural Event & Networking:

During the cultural event, participants from 17 different states of India and 4 other countries represented their culture by their dance, songs and play. Truly, the level of performance shown by the performers justified the international platform. Being the host state, two batches of solo and group performers represented Chhattisgarh. Participants from Karnataka, Andhra Pradesh, Madhya Pradesh, Bihar, West Bengal, Odisha, Tamil Nadu, etc., have brought their state's cultures into the limelight. Delegates from Nepal, Nigeria, and South Sudan also performed during the event. During this session, participants of different cultures could meet with each other and had a fruitful networking. Speakers, guests and other delegates were also involved in the networking session and exchanged their thoughts.



### Cultural Night Events

#### Valedictory:

During the valedictory, Dr. K Ramakrishna, IEEE PES Governing body, REP Asia Pacific 2023-24, S. S. Bajaj (Retd. IFS), Director General, CGCOST, Raipur, Chhattisgarh, Tejaswani Ananth Kumar, Managing Director, Adama Chetana, Dr. Rajesh Ingle, Dean Academics, IIIT Naya Raipur were present and graced the occasion. Overall, the event received appreciation from all the speakers and participants who shared their experiences during the event. All the sponsors and volunteers were appreciated at the end for their contribution to making this event successful. All the guests invited for the valedictory were felicitated at the end.

All the sponsors like Chhattisgarh Tourism Board, Chhattisgarh Govt. Labor Dept, IEEE AESS, PES, CIS Societies, EBLU, Polygon geospatial, etc., were acknowledged for their support in making the event successful.



### Valedictory Function

This event brought together leaders from various domains, guests who hold excellent positions in their fields, participants from different cultures, and volunteers with enthusiasm and skills. Finally, the IEEE WIE ILS 2023, Raipur, have created a remarkable impact on society and women in engineering.



## Glimpses of IEEE WIE ILS 2023, Raipur

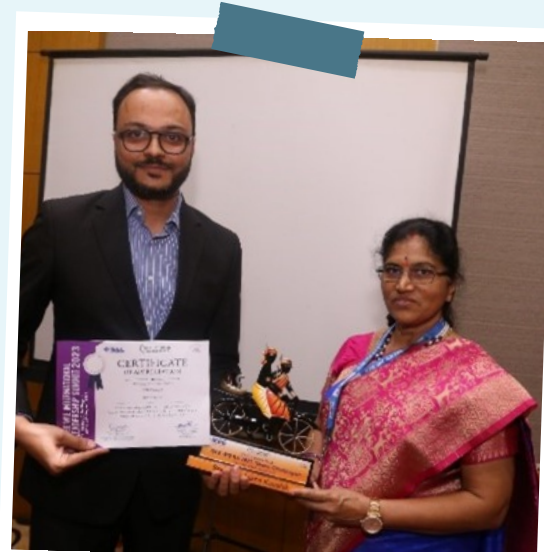


## Welcoming of Guest

## Glimpses of IEEE WIE ILS 2023, Raipur



**Speaker Felicitation**



**Speaker Felicitation**



**Sponsor Felicitation**



**Speaker Felicitation**



**Guest Interaction  
during Valedictory**



**Speaker Felicitation**



## Glimpses of IEEE WIE ILS 2023, Raipur

Day 1 Group Photograph



Day 2 Group Photograph



Volunteers Appreciation



Panel Discussion



IEEE WIE ILS Attendees



OUR SPONSORS

## 4. Unlocking Potential Opportunities & Benefits in WIE

Date: 11<sup>th</sup> September 2023

The IEEE Madras Section organised a talk on “Unlocking Potential Opportunities & Benefits in WIE”. Dr. Vijayalaxmi Biradar, Director IQAC at Kalinga University, Raipur, and Chairperson of IEEE WIE AG Madhya Pradesh Section 2023, delivered a talk as an invited speaker in this event.



Event Brochure



Token of Gratitude  
Received by Speaker



## 5. Smart Garbage Monitoring System

Date: 03<sup>rd</sup> to 07<sup>th</sup> October 2023

The IEEE SB of Kalinga University received funding of USD 1000 IEEE SPS/HAC for preparing the project on smart dustbins under the applied proposal. Under the project completion, a smart dustbin had been completed and implemented along with a workshop in 5 schools of adopted 4 villages. Implementing a smart garbage monitoring system in government schools can have several benefits and impacts, leading to improved hygiene, sustainability, and cost-efficiency. With real-time monitoring and alerts, the system can ensure that garbage bins are emptied promptly, reducing the risk of litter and unhygienic conditions. Keeping this in consideration, a visit was scheduled from 3<sup>rd</sup> October 2023 to 7<sup>th</sup> October 2023 in various Government Schools.



**Presentation at Government School, Kuhera**



**Presentation at  
Government School, Parsada**



**Presentation at  
Government School, Kotni**



## Presentation at



## Demonstration at

### Funding of USD 1000 Received From:





## 6. Inauguration of IEEE ICBDS 2023

Date: 7<sup>th</sup> October 2023

The inauguration of IEEE ICBDS 2023 took place at IIIT, Naya Raipur, Chhattisgarh. Dr. S V Gade, Distinguished Scientist and Director General (ACE), DRDO, was invited as the Chief Guest. Dr. Surekha Deshmukh, Chairperson of IEEE Pune section, and Dr. P K Sinha, Director and VC of IIIT NR, were also present as one of the guests. A few delegates attended in online mode, like Dr. Takako Hasimoto, Jyotika Athawale, Dr. Saifur Rahman, Dr. Lance Fung, IEEE R10 Director.



Inauguration of IEEE ICBDS 2023 at IIIT Naya Raipur, CG



## 7. An Invited talk on “Hydrogen Fuel Cell Vehicle (HFCV): Revolution in Transportation” on the eve of IEEE Day

Date: : 09<sup>th</sup> October 2023

The IEEE Kalinga University Student Branch, in association with IEEE Women in Engineering AG Madhya Pradesh Section, organised an invited talk entitled "Hydrogen Fuel Cell Vehicle (HFCV): Revolution in Transportation" on 09<sup>th</sup> October 2023 in online mode (Google Meet) on the eve of IEEE day 2023. The webinar was hosted by Mr. Anup Kumar Jana, IEEE Kalinga University Student Branch Counsellor, Kalinga University. First of all, the event host gave a warm welcome and briefed the profile of the resource person Dr. S M Hussaini, Director, NSAKCET & Plastech Engineering, Hyderabad. Dr. Hussaini started his talk with two categories of vehicles used globally: ICE Vehicles (using petrol as fuel) and E-Vehicles (using batteries as fuel supply). The webinar projected the pros and cons of both category of vehicles.



Event Brochure

## 8. Returning Mothers Conference 2023

Date: 27<sup>th</sup> October 2023

Dr. Vijayalaxmi Biradar, Director of the IQAC Kalinga University, Naya Raipur, was invited as a keynote speaker at the conference. She involved in Panel Discussion on the topic “Role of professional bodies and women communities in shaping the sustainable economies”. The other panel members were: Dr. Prerana Gaur Chair-Elect IEEE India Council, Navaneetha Krishnan EAC Chair IEEE Madras Section, Dr. Rashmi Agrawal Chair IEEE WIE Delhi Section and Moderator Dr. Rushali Thakkar Chair IEEE WIE Bombay Section.



**Panel Discussion**



**Group Photo**



## 9. SCIENTIFIC TOY WORKSHOP

Date: 28<sup>th</sup> to 30<sup>th</sup> November 2023

A batch of 40 students from Class 6<sup>th</sup> to 8<sup>th</sup> were targeted for the workshop. The workshop was organised for the preparation of STEM toys. The STEM toys involve Science, Technology, Engineering, and Mathematics educational toys for the development of growing minds. STEM-related toys and products are important to help kids develop useful skills in areas in which the career industry is continually seeing growth.

A good STEM toy triggers both sides of the brain when children engage with them. The left, logical, and reasoning side of the brain is activated when the experience instils concepts of science, technology, engineering or math. Whereas, the right side of the brain, or the emotional side is sparked when there's fun and creativity involved.

The resource persons of the workshop were Dr. Vijayalaxmi Biradar & Dr. Sanyogita Shahi from Kalinga University.



**Preparation of STEM toys with resource persons**



**Preparation of STEM toys with resource persons**



**Preparation of STEM toys with resource persons**



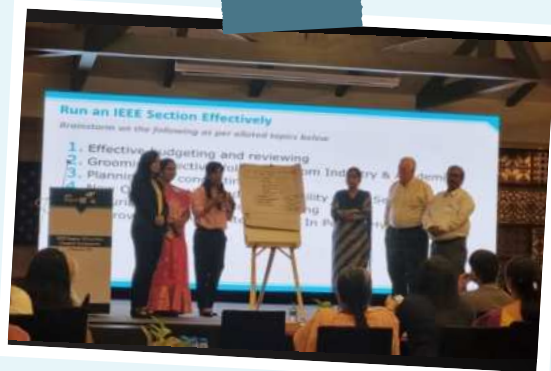
**Preparation of STEM toys with resource persons**



## 10. 2023 R10 Section Chapter Symposium

Date: 01<sup>st</sup> to 03<sup>rd</sup> December 2023

The 2023 R10 Section Chapter Symposium was organised at Goa from 01<sup>st</sup> to 03<sup>rd</sup> December 2023. R10 Director Lance Fung gave a brief overview of R10. He highlighted how many conferences were conducted by each section during 2023. Madras section has organised 135 conferences during 2023. Lance Fung also gave brief insight that from 2024 onwards, there will be a new Region to be added, which is Region 11 (As we have only Region 1 to Region 10). From 2025 onwards, Region 11 will be fully functional. Dr. Vijayalaxmi Biradar, Director IQAC & Chairperson of IEEE WIE AG Madhya Pradesh Section, was invited to be part of this event.



**Panel Discussion**



**Group Photograph of the Event Day-1**



**Attendees at R10 Section Chapter Symposium**



**Group Photograph of the Event Day-2**



## 11. “IEEE WIE AG Mentor-Mentee Event: Benefits of IEEE WIE AG Membership” launched under the R10 WIE Championship Initiative

Date: 04<sup>th</sup> December 2023

IEEE WIE, Kalinga University Student Branch was chosen to mentor IEEE WIE, IIIT Naya Raipur to help in the overall growth of the IEEE IIIT Student branch. This was an initiative launched under the R 10 WIE Championship initiative. This initiative has sparked a wave of innovation through dynamic peer-to-peer mentoring between active and new/dormant WiE Affinity Groups. Dr. Vijayalaxmi, mentor, IEEE KU SB & Chairperson, IEEE WIE AG MP Section, was invited as the resource person to deliver a talk on “Benefits of IEEE WIE AG Membership”. During her talk, she discussed the benefits any IEEE members get in their professional careers. She introduced different affinity groups of IEEE to the participants, too. As IEEE WIE IIIT NR is a new branch, the participants from the branch could find the session very beneficial and informative. The examples and volunteering efforts delivered by Dr. Vijayalaxmi to the society have really inspired the participants a lot. A total of 81 participants attended this event. Many of the participants have shown their interest in joining IEEE WIE AG and contribute to the society.

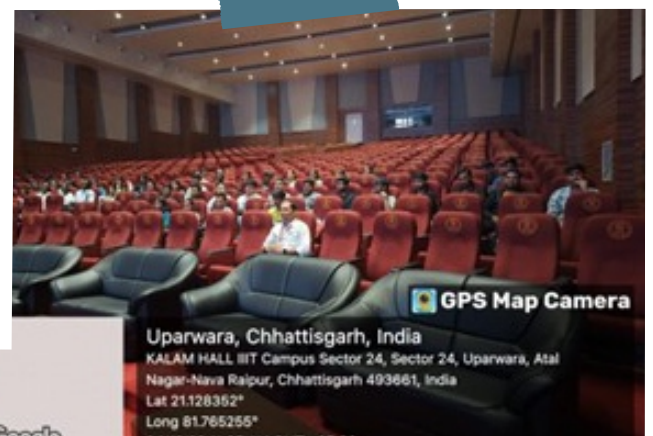


Event Brochure





Ongoing Session @ IIT, Naya Raipur



Attendees @ IIT, Naya Raipur



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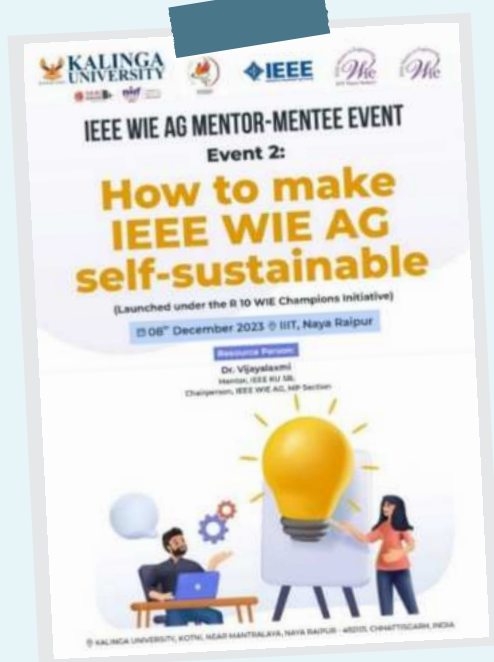
**IEEE**  
Region 10  
Women in Engineering



## 12. “IEEE WIE AG Mentor-Mentee Event: How to make IEEE WIE AG self-sustainable”

Date: 08<sup>th</sup> December 2023

Under the R10 WIE Championship initiative, IEEE WIE KU SB conducted another mentor-mentee program at the Auditorium, IIT Naya Raipur, on 8<sup>th</sup> December 2023. This initiative has sparked a wave of innovation through dynamic peer-to-peer mentoring between active and new/dormant WiE Affinity Groups. Dr. Vijayalaxmi, mentor, IEEE KU SB & Chairperson, IEEE WIE AG MP Section, was invited as the resource person to deliver a talk on “How to make IEEE WIE AG self-sustainable”. During her talk, she discussed about various funding opportunities a student branch can avail through IEEE.



Event Brochure



Speaker Session



Ongoing Session  
@ IIT, Naya Raipur

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**IEEE**  
Region 10  
Women in Engineering

# 13. "Mentoring of HEI's towards Accreditation (NAAC/NBA)"

Date: 22<sup>nd</sup> & 23<sup>rd</sup> December 2023

The "Mentoring of HEI's towards Accreditation (NAAC/NBA)" held on 22<sup>nd</sup> & 23<sup>rd</sup> December 2023, in hybrid mode, was an enlightening and successful event. The program is designed so as to upskill the educators of various institutions regarding the NAAC/NBA filing process and the weightage of each criterion provided in NAAC filing along with do's and don'ts while filing SSR. This event marked a milestone for each and every individual who participated to understand the difference between NAAC and NBA accreditations and its outcome. At the same time, the speakers were resourceful in speaking about the necessary formatting and filing procedures during the team visit for Accreditation. The role and importance of IQAC department in the institution was also explained in a broader manner.



**KALINGA UNIVERSITY**  
CORPORATE TRAINING & CONSULTANCY DIVISION

**MENTORING OF HEI'S TOWARDS ACCREDITATION (NAAC/NBA)**

- Criteria-wise Guidance towards Accreditation Process
- Complete Guidance on Filing
- Promoting Research Ecosystem & Revenue Generation Model
- Role of IQAC to ensure Quality Sustainance with regular inputs and Monitoring

**Resource Persons**

**Dr. R. Shridhar**  
Vice-Chancellor,  
Kalinga University

**Dr. Byju John**  
Director General,  
Kalinga University

**Dr. Vijayalaxmi Biradar**  
Director IQAC,  
Kalinga University

**22<sup>nd</sup> & 23<sup>rd</sup> December 2023**  
**09:30 A.M. - 04:00 P.M.**  
**Kalinga University**

**Participation Fees Offline**

- For Educational Institutions: INR 1880/- (including 18% GST)
- For Educational Institutions having an MoU with Kalinga University: INR 1180/- (including 18% GST)
- Offline charge includes Breakfast, Lunch & High Tea

**Participation Fees Online**

- INR 1180/- (including 18% GST)

**SCAN TO REGISTER**

**+91-7471126830**  
**+91-7024271312**  
**ctcd@kalingauniversity.ac.in**

**NAAC**  
NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

**NBA**  
NATIONAL BOARD OF ACCREDITATION

## Event Brochure



**KALINGA UNIVERSITY**  
CORPORATE TRAINING & CONSULTANCY DIVISION

**A Two Days Workshop**  
On  
**"Mentoring of HEI's towards Accreditation (NAAC/NBA)"**  
**Workshop Schedule**

**Day 1: 22<sup>nd</sup> December 2023**

| S. No. | Event                                                                                                                                  | Time                     |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 1.     | Registration                                                                                                                           |                          |
| 2.     | Lamp Lighting                                                                                                                          | 09:30 A.M. to 10:00 A.M. |
| 3.     | Welcome of Guest & Address by Master of Ceremony                                                                                       | 10:00 A.M. to 10:10 A.M. |
| 4.     | Inaugural Address by Director C&CD, Kalinga University                                                                                 | 10:10 A.M. to 10:15 A.M. |
| 5.     | A Brief insight into Kalinga University's Endeavours By the Registrar, Kalinga University                                              | 10:15 A.M. to 10:25 A.M. |
| 6.     | Breakfast                                                                                                                              | 10:25 A.M. to 10:40 A.M. |
| 7.     | Topic: Building Awareness About Accreditation and its Benefits to the Higher Education Institutions (HEI's) By Dr. Vijayalaxmi Biradar | 10:40 A.M. to 12:00 P.M. |
| 8.     | Session 2 Topic: National Educational Policy (NEP) By Dr. R. Shridhar                                                                  | 12:00 P.M. to 01:30 P.M. |
| 9.     | Lunch                                                                                                                                  | 01:30 P.M. to 02:30 P.M. |
| 10.    | Topic: Criteria-wise Guidance towards Accreditation Process By Dr. Vijayalaxmi Biradar                                                 | 02:30 P.M. to 03:30 P.M. |
| 11.    | Question & Answers Session                                                                                                             | 03:30 P.M. to 04:00 P.M. |

**Day 2: 23<sup>rd</sup> December 2023**

| S. No. | Event                                                                      | Time                     |
|--------|----------------------------------------------------------------------------|--------------------------|
| 1.     | Session 1 Topic: Guidance on the Filing Process By Dr. Byju John           | 10:00 A.M. to 11:00 A.M. |
| 2.     | Breakfast                                                                  | 11:00 A.M. to 11:15 A.M. |
| 3.     | Session 2 Topic: Role of IQAC to Ensure Quality By Dr. Vijayalaxmi Biradar | 11:15 A.M. to 12:15 P.M. |
| 4.     | Hands-on Exercise By Dr. Vijayalaxmi Biradar                               | 12:15 P.M. to 01:30 P.M. |
| 5.     | Question & Answers Session                                                 | 01:30 P.M. to 01:45 P.M. |
| 6.     | Lunch                                                                      | 01:45 P.M. to 02:30 P.M. |
| 7.     | Session 3 Topic: Promoting Research Ecosystem By Dr. Vijayalaxmi Biradar   | 02:30 P.M. to 03:30 P.M. |
| 8.     | Valedictory Function & Certificate Distribution                            | 03:30 P.M. to 04:00 P.M. |
| 9.     | Vote of Thanks                                                             | 04:00 P.M. to 04:10 P.M. |
| 10.    | Feedback Collection                                                        | 04:10 P.M. to 04:20 P.M. |
| 11.    | Group Photo- Day 2                                                         | 04:20 P.M. to 04:30 P.M. |

**Participation Fees Offline**

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- Offline charge includes Breakfast, Lunch & High Tea

**Participation Fees Online**

- INR 1180/- (including 18% GST)

**SCAN TO PAY**

## Event Schedule

## Sponsored by




**KALINGA UNIVERSITY**  
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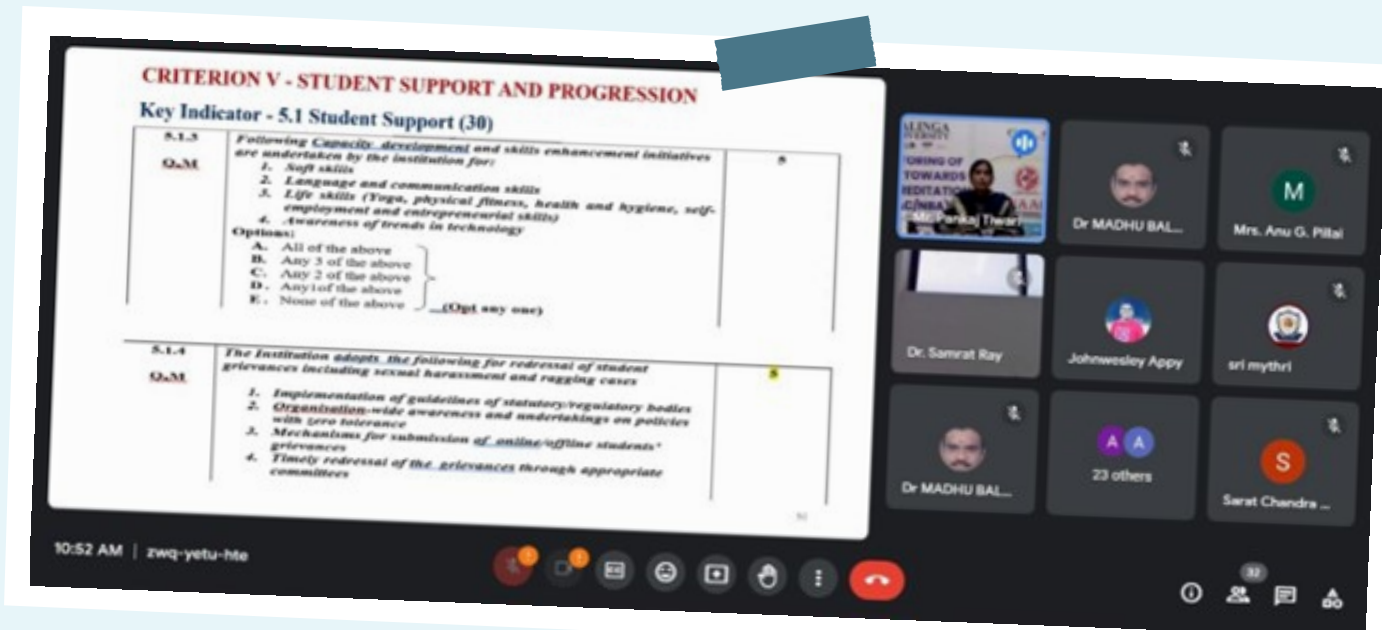
**MENTORING OF HEI'S TOWARDS ACCREDITATION (NAAC/NBA)**

**Dr. Vijayalaxmi Biradar**  
Director, IQAC  
Kalinga University

KALINGA UNIVERSITY, KOTNI, NEAR MANTRALAYA, NAYA RAIPUR - 492101, CHHATTISGARH, INDIA

Participants: Dr. Anita Saha, katapaka yade..., Anup Kumar J..., Anshpreet Kau..., SUK\_R&D Cell, Dr. Vijaya Lax..., Anita Verma, 12 others, Aswan Kumar ...

## Ongoing Online Session



**CRITERION V - STUDENT SUPPORT AND PROGRESSION**

**Key Indicator - 5.1 Student Support (30)**

**5.1.3 Q&M**  
Following Capacity Development and skills enhancement initiatives are undertaken by the institution for:  
1. Soft skills  
2. Language and communication skills  
3. Life skills (Yoga, physical fitness, health and hygiene, self-employment and entrepreneurial skills)  
4. Awareness of trends in technology  
Options:  
A. All of the above  
B. Any 3 of the above  
C. Any 2 of the above  
D. Any 1 of the above  
E. None of the above  
... (Opt any one)

**5.1.4 Q&M**  
The institution adopts the following for redressal of student grievances including sexual harassment and ragging cases:  
1. Implementation of guidelines of statutory/regulatory bodies  
2. Organization-wide awareness and undertakings on policies with zero tolerance  
3. Mechanisms for submission of online/offline students' grievances  
4. Timely redressal of the grievances through appropriate committees

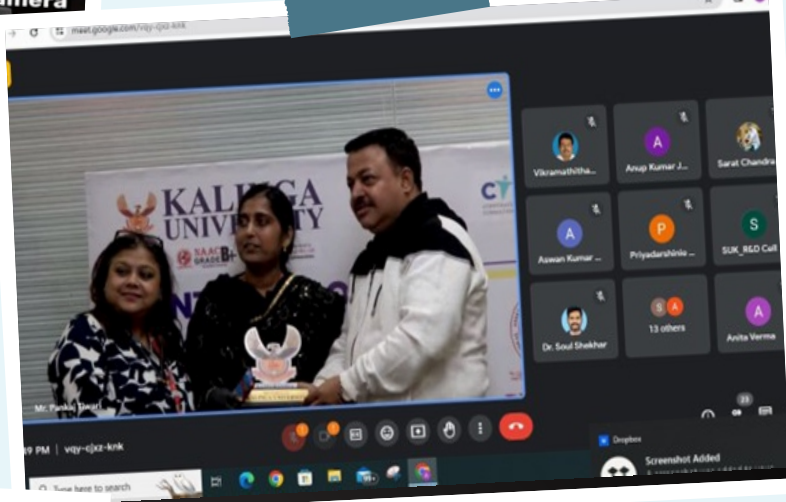
Participants: Dr. MADHU BAL..., Mrs. Anu G. Pillai, Dr. Samrat Ray, Johnwesley Appy, sri mythri, Dr. MADHU BAL..., 23 others, Sarat Chandra ...

## Ongoing Online Session





Ongoing Session



Speaker Felicitation



Ongoing Offline Session



Delivery in Hybrid Mode

## FACULTY ARTICLE

# IMPACT OF CHEMICAL PESTICIDES ON HUMAN HEALTH

Pesticides are chemical compounds that are used to eradicate pests, including insects, rodents, fungi, and unwanted plants (weeds). Worldwide, about a thousand different pesticides are in use. Pesticides are used in agriculture to kill pests that harm crops and in public health to eliminate disease-carrying insects like mosquitoes. Pesticides are potentially toxic to all living organisms, and one must use them safely and dispose of them properly. They rank among the most common reasons for self-poisoning deaths, and this burden is felt disproportionately in low- and middle-income countries. Many of the more traditional, less expensive pesticides, such as DDT and lindane, can remain for years in soil and water. These have undesirable effects on the ecosystem and can cause bioaccumulation. Countries that ratified the Stockholm Convention in 2001 have outlawed these substances. Newborn babies and young children are at higher risk of adverse effects than adults. WHO suggests using a non-chemical process for controlling pests, preventing pests from entering your garden, using proper methods for storing and disposing of pesticides, properly identifying pests, and applying specified pesticides. First, ascertain the true extent of the necessity for pesticide use. Wearing protective clothing and equipment when applying or handling pesticides can reduce direct exposure to pesticides and pesticide poisoning.



**Dr. Nagesh Gunavanthrao Yernale**

Assistant Professor,  
Department of Chemistry,  
Guru Nanak First Grade College,  
Bidar, Karnataka, India

## FACULTY ARTICLE

# UNRAVELING THE WEB OF COMPLEXITY

In today's rapidly evolving and interconnected world, organisations face a myriad of challenges that stem from the ever-increasing complexity of their operations. Complexity assessment has emerged as a crucial tool for businesses seeking to navigate the intricate web of factors that influence their performance. This article explores the significance of complexity assessment, its key components, and the benefits it brings to organisations.

Complexity in the business context refers to the interplay of various factors that impact an organization's functioning. These factors include the internal structure of the organisation, external market dynamics, technological advancements, regulatory changes, and more. The interconnected nature of these elements creates a complex ecosystem that requires careful evaluation. In an era where change is constant and the business landscape is ever-evolving, complexity assessment stands as a vital practice for organisations aiming to thrive. By unravelling the intricate web of factors influencing their operations, businesses can proactively manage risks, enhance efficiency, and make strategic decisions that position them for success in a complex and dynamic environment. As complexity continues to grow, the ability to assess and navigate it will remain a cornerstone of sustainable business practices.



**Dr. Neha Bharani**

Associate Professor,  
ICA, Sage University Indore



## FACULTY ARTICLE

# DETECTING AND RECOGNIZING SIGN LANGUAGE

Provide an image of a signing hand and train a neural network model to identify which letter in the American Sign Language (ASL) alphabet is being signed. A preliminary stage toward developing a potential sign language interpreter that can convert oral and written sign language communications. Many deaf and mute people would find it much easier to communicate with others in daily interactions if there was a translator like this. The sense of loneliness experienced by the deaf community serves as additional motivation for it. The deaf community has greater rates of loneliness and depression, particularly when they are surrounded by hearing people. The communication gap between the deaf and the hearing is the root cause of significant barriers that have a profound impact on life quality. Information deficiency, a lack of social connections, and trouble integrating into society are a few examples.

Examine whether neural networks can identify signed ASL letters from basic hand images captured with a laptop webcam or another personal device. This is consistent with the goal because it would enable the practical application of a real-time ASL-to-oral or written language translator in everyday scenarios in the future. The main goal is to create a model that can identify and detect alphabet gestures used in sign language. The intention is to make it possible for individual alphabet signs to be automatically interpreted through sign language, thereby offering a tool for accessibility, communication, and learning.

**Mr. Fakhruddin Amjherawala**

Assistant Professor,  
School of Computers,  
IPS Academy, Indore

**Ms. Ummulbanin Amjherawala**

Assistant Professor,  
School of Computers,  
IPS Academy, Indore

## FACULTY ARTICLE

# HYBRIDISATION

Data are used to extract information that helps to identify a user's mindset. Therefore, data extraction must be built into a tree structure using hybridisation to identify and access it efficiently. Data can also be stored sequentially in a hierarchical way so that a hybridised structure is formed. This structure is associated so that data can be retrieved sequentially or level by level. Finding a specific piece of data by level order increases its efficiency exponentially compared to previously defined tree mechanisms.

Utilizing binary trees to build tree structures has the drawback of amortized time complexity; on another aspect, binary search trees will take recursive as well as iterative steps to build it. By using hybridisation, the worst-case times for insertion, searching, and deletion are reduced. Additionally, elements in the tree can be accessed with even level-order traversing, in-order, post-order, and pre-order ordering, as well as sequential order. When building a binary tree structure, the position is determined for both data and non-data using the array index position. The task of positioning elements on a binary tree level predetermines the position of the data. Even if a given value is undefined, it nevertheless gains a position in arrays, indicating that the value at that specific location is also undefined. There is no defined value for the specific position.



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## FACULTY ARTICLE

# CREATING ARTIFICIAL INTELLIGENCE AROUND THE WORLD

Technology is one potent element that has greatly influenced the future. It has brought us closer together and increased productivity, among many other ways that it has made our lives better. The developments in artificial intelligence (AI), machine learning (ML), robotics, 5G networks, and robots are transforming our way of life. Technology use by people is changing as a result of AI and ML. Along with driving automation and creating intelligent systems, they are also enabling new applications in sectors like healthcare, banking, and transportation. In the modern era, artificial intelligence (AI) has become ubiquitous. People may carry AI in their pockets and use it from anywhere. It is no longer merely futuristic concepts that we must consider. AI can replace any employment in every field during the next ten to twenty years. We can enhance our offerings in areas like innovation and growth that AI is incapable of, such as starting a business or engaging in entrepreneurship, as AI can solve problems but not invent them. AI can also read our minds therefore it can recommend the feed using machine learning.



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## FACULTY ARTICLE

# EDGE COMPUTING: A SMART REVOLUTION

In the era of rapid technological advancement, edge computing has emerged as a transformative force, reshaping the landscape of data processing. Unlike traditional cloud computing, which centralises data processing in remote servers, edge computing brings the computation closer to the data source, unlocking a new realm of possibilities.

At its core, edge computing addresses the growing demand for real-time processing, a necessity fuelled by the rise of the Internet of Things (IoT). Devices are becoming smarter, and the need for instant decision-making is paramount. Edge computing steps in, minimising latency by processing data locally. This capability is particularly crucial for applications like autonomous vehicles, smart cities, and augmented reality, where split-second responses are essential.

The integration of edge computing with 5G technology further amplifies its potential. The high-speed, low-latency connectivity of 5G networks enhances communication between devices, fostering seamless data transfer between edge devices and centralised cloud servers.

Data privacy and security are paramount concerns in the digital age, and edge computing excels in addressing these issues. By processing sensitive information locally, it reduces the risks associated with transmitting data over long distances, assuring users of enhanced privacy protection.

Looking forward, edge computing stands as a catalyst for increased efficiency, reduced operational costs, and a more responsive digital infrastructure. From optimising industrial processes to enabling smart homes, edge computing is positioned to redefine our technological experiences, marking a significant shift toward a smarter and more interconnected future. As industries and consumers alike embrace this innovation, the potential for transformative impacts on various facets of our daily lives is nothing short of revolutionary.



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## FACULTY ARTICLE

# JOB SCHEDULING IN CLOUD COMPUTING

Cloud computing describes a method of providing users with online resources on a pay-per-use basis, as and when required. These resources are, in reality, available in cloud service providers' data centres. The cloud user requests the resources; in each request, they specifically state that resources are needed. When a request is made, the cloud service provider schedules it on the server (a physical computer), puts all of the requests into a queue, and then allots resources to them. Cloud providers make these resources available to cloud customers upon request and charge them based on usage time frame and amount. Cloud customers use resources according to their demands. A service level agreement (SLA), which makes certain the quality of service (QoS) that both parties agreed upon, is finalised before cloud services are made available to customers. Because of this, cloud users may concentrate on their intended tasks instead of the resources they are using. With cloud computing on-demand approaches, many corporate enterprises can dynamically scale up their resource requirements without having to make large investments in hardware and software.

Job scheduling is a technique for figuring out how jobs are carried out in the system, including the mapping of resource components and the time at which they should be finished. In cloud computing, scheduling aids to achieve optimal system throughput and high performance. Optimizing speed, efficiency, and resource utilisation is primarily dependent on the scheduling model chosen for the cloud computing environment. Maximum CPU utilisation, Maximum throughput, Minimum turnaround time, Minimum waiting time, and Minimum response time are some of the scheduling criteria.

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## FACULTY ARTICLE

# NAVIGATING THE SEAS OF STARTUP SUCCESS

Fundraising is a crucial aspect of financing for various entities, including nonprofit organisations, political campaigns, and startups. It involves gathering monetary contributions or capital from individuals, institutions, or the public to support a particular cause, project, or business venture. The process of fundraising encompasses a range of activities and strategies aimed at securing financial resources to achieve specific goals.

Embarking on the entrepreneurial journey is an exhilarating yet challenging endeavour, especially for startups seeking to transform innovative ideas into thriving businesses. One of the critical aspects of this journey is fundraising, a process that fuels growth, innovation, and market entry. This article aims to provide a comprehensive guide to fundraising for startups, covering key strategies, sources of capital, and essential considerations for success.

Fundraising for startups is a multifaceted journey that requires a strategic approach, resilience, and adaptability. Understanding the diverse funding options available and tailoring fundraising strategies to align with the startup's stage and goals are critical elements of success. Whether leveraging personal resources, seeking support from friends and family, or engaging with external investors, the key is to articulate a compelling vision, demonstrate market potential, and showcase a viable path to success. By navigating the fundraising landscape with diligence and creativity, startups can secure the capital needed to fuel their growth and innovation.



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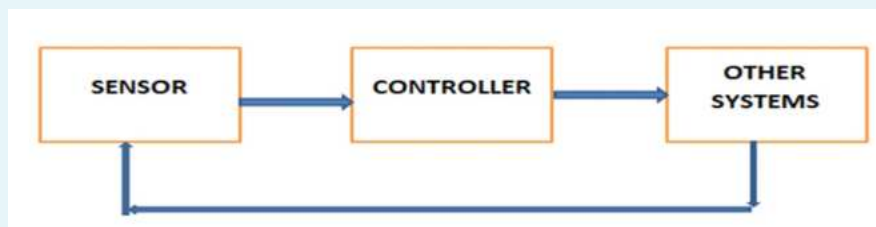


## FACULTY ARTICLE

# CYBERNETICS FOR SAFELY INTERACT WITH THE ANIMALS, BIRDS AND THE MACHINES

Cybernetics is the study of how humans, as well as animals, interact with their respective environments. The information is transmitted, processed, stored and transformed as it flows through a system. Cybernetics is communication and control systems (like the nervous system and brain, mechanical and electrical communication systems), cybernetic means ,sī-bər-'ne-tik. Information flows through systems like brains or groups of animals like flocks of birds to understand how they are able to communicate so effectively. Cybernetic systems are used in robotics to control machines such as aeroplanes and space crafts.

The initial focus of cybernetics was on parallels between regulatory feedback processes in biological and technological systems. Its great technology will help the animals and birds to protect them from environmental hazards such as thunders, earthquakes, tsunamis, etc. Sensors will be deployed in the environmental areas and can be controlled by the movement of animals and birds, then it will be used in the other systems.



The cybernetic system is a set of elements which are interrelated objects, the system which has the capabilities of storing, receiving and processing data and exchanging them. Many examples of cybernetic systems that control automatic control devices in the field of engineering. An automated machine controller that maintains a temperature constant, room computers and the human brain, biological populations, as well as human society.

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## FACULTY ARTICLE

# ANOMALY DETECTION ALGORITHM IN FRAUDULENT ACTIVITY

Frauds in machine learning refer to malicious activities and manipulations aimed to break the security, integrity, effectiveness, or fairness of machine learning models and systems. These fraudulent activities can have significant consequences, ranging from compromising data privacy to influencing decision-making processes.

Anomaly detection methods using unsupervised learning have gained attention. These techniques aim to identify unusual patterns or behaviours that may indicate fraudulent activities without the need for labelled data.

Anomaly detection plays a crucial role in fraud detection by identifying unusual patterns or behaviours that deviate from the norm.

Anomaly detection models are designed to identify patterns that deviate significantly from the norm, detect previously unseen fraud patterns, help in minimising false positives, identify insider threats, use in cybersecurity, incorporate behavioral analysis and many more.

Anomaly detection in fraud detection provides a dynamic and adaptive approach to identifying suspicious activities, making it a valuable tool in combating various forms of fraudulent behaviour.

The scope of anomaly detection in fraud detection continues to expand as industries recognise its effectiveness in identifying evolving and sophisticated fraudulent activities. As technology advances and data analytics capabilities improve, anomaly detection will likely play an increasingly integral role in securing various sectors from fraudulent behaviour.



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## FACULTY ARTICLE

# SHRINKAGE CRACKING ANALYSIS USING SOFTWARE

Analysing shrinkage cracking in concrete using software involves several key steps. First, input material properties like cement type, water-cement ratio, and aggregate details. Specify environmental conditions, including temperature and humidity. Choose a shrinkage model, such as CEB-FIP or ACI 209R-92, based on project requirements. Utilise Finite Element Analysis (FEA) software to model the concrete structure digitally.

Conduct a time-dependent analysis to simulate drying, shrinkage, and other time-related factors. Predict potential cracks using the software, which should highlight susceptible areas. Visualisation tools like contour plots aid in understanding potential crack locations and extents. Analyse results to identify areas at risk of shrinkage cracking.

Consider optimisation and mitigation strategies if high-risk areas are identified. Optimization may involve adjusting mix proportions, while mitigation could include using shrinkage-compensating admixtures or incorporating designed joints. Commercial software tools like ANSYS or Abaqus, along with specialised concrete durability tools, provide comprehensive analysis capabilities. It's crucial to consult the software documentation for specific steps, and collaboration with a structural engineer experienced in concrete analysis is recommended for accurate and reliable results.



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## STUDENT ARTICLE

# NAVIGATING THE COGNITIVE ABYSS: THE CONTRADICTION OF ARTIFICIAL NEURAL NETWORKS AND DEEP LEARNING

In the ever-expanding field of artificial intelligence, an intriguing paradox emerges in the rivalry between Artificial Neural Networks (ANN) and deep learning, unravelling a nuanced contradiction in cognitive architectures.

The core principles of ANN emphasise their role as the foundation of machine learning. As ANN forms the bedrock, the narrative unfolds to confront the paradoxical relationship with deep learning. While deep learning has thrived on intricate neural network layers for data interpretation, the contradiction lies in the recognition that ANN possesses distinctive capabilities beyond these conventional structures.

Exploring this contradiction unveils the struggle between depth and breadth in learning models through the intricate balance of specialised depth in deep learning and the holistic, interconnected learning capacity inherent in ANN.

The examination extends to real-world applications, where the contradiction manifests in the optimal choice for diverse AI scenarios. The narrative aims to provide clarity in understanding the nuanced dynamics between ANN and deep learning, paving the way for a more informed and strategic integration of these technologies in the broader landscape of artificial intelligence.



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## STUDENT ARTICLE

# ROLE OF GIS IN DISASTER MANAGEMENT

Geographic Information Systems (GIS) technology is a critical tool in disaster management, aiding in all phases of the disaster cycle, from mitigation to recovery. GIS, in conjunction with remote sensing and photogrammetry, offers seamless applications to predict, prepare for, respond to, and recover from various disasters.

GIS processes, stores, analyses, and displays data, enabling prediction through vast datasets encompassing population demographics, utility services, and land details. For natural disasters like floods, earthquakes, cyclones, and others, GIS and remote sensing assist in predicting and identifying affected areas, planning evacuation routes, and locating shelters. They aid in monitoring, analysing, and managing disasters like earthquakes, supporting emergency organisations and enabling swift responses.

Technology also plays a vital role in addressing anthropogenic disasters like pollution, terrorist attacks, and accidents. It helps in hotspot identification, route planning for emergency services, and real-time tracking during disasters.

GIS's value extends to biological disasters such as COVID-19, supporting healthcare responses, mapping hotspots, and aiding in efficient resource distribution.

In disaster management, GIS assists in pre-disaster mitigation by land use planning, enforcing building codes, and creating disaster maps. It aids in preparedness by developing emergency operation plans and databases. During post-disaster phases, GIS supports emergency responses, facilitates recovery processes, and monitors rehabilitation efforts.

GIS provides crucial information through forecasts, risk maps, and historical data analysis, empowering decision-making to minimise vulnerabilities and mitigate the impact of disasters. Integration with GPS and 5G enhances response effectiveness. Ultimately, while disasters cannot be prevented, GIS technology significantly reduces their impact and aids in rapid recovery and rebuilding efforts.



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## STUDENT ARTICLE

# DEEP REINFORCEMENT LEARNING: REVOLUTIONIZING ARTIFICIAL INTELLIGENCE

In the field of artificial intelligence, Deep reinforcement learning (DRL) is a revolutionary paradigm that combines the strength of reinforcement learning with the capacity for decision-making of deep learning. Fundamentally, deep reinforcement learning (DRL) mimics how humans learn new skills via trial and error by allowing machines to learn and make decisions through interaction with their surroundings.

In contrast to conventional methods, Deep reinforcement learning (DRL) uses neural networks to process unprocessed sensory data like signals or images, enabling machines to learn directly from their environment. As a result, agents can handle complicated tasks at a higher level of abstraction since predefined features are no longer necessary.

DRL has a noticeable effect in a variety of domains. DRL algorithms have shown superhuman performance in sophisticated simulations and strategic games like Go, demonstrating their advanced understanding of complex decision-making processes. Furthermore, DRL has promising real-world applications in fields where intelligent and adaptive decision-making is essential, such as robotics, finance, and healthcare.

However, challenges still exist. Research on ensuring DRL models' safety in dynamic environments is still centred around the fact that training them frequently requires significant computational resources. Notwithstanding these obstacles, DRL has undeniable transformative potential, and future developments should help it get past its present drawbacks.

Deep Reinforcement Learning is a shining example of innovation that is expanding the field of possible applications for artificial intelligence. As deep reinforcement learning (DRL) advances, its potential to solve intricate puzzles and improve decision-making will reshape the artificial intelligence field.



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## STUDENT ARTICLE

# ARTIFICIAL INTELLIGENT (AI)

Artificial Intelligence (AI) refers to the development of computer systems capable of performing tasks that typically require human intelligence. It involves the creation of algorithms and models that enable machines to learn from data, make decisions, and adapt to new information. Key components of AI include machine learning, natural language processing, computer vision, and expert systems. AI is applied in various domains such as healthcare, finance, autonomous vehicles, and virtual assistants. While it offers immense potential for automation, efficiency, and problem-solving, ethical considerations, transparency, and responsible development are crucial aspects to address in the advancement of AI technologies.

Artificial Intelligence (AI) is a field of computer science that focuses on creating machines that can perform tasks that would otherwise require human intelligence. AI is based on the intellectual processes of humans and can be applied to various domains and tasks. AI is the ability of a computer or robot to perform tasks commonly associated with intelligent beings, such as learning, reasoning, problem-solving, and using language. AI has been demonstrated to carry out very complex tasks such as discovering proofs for mathematical theorems or playing chess with great proficiency. However, despite continuing advances in computer processing speed and memory capacity, there are as yet no programs that can match full human flexibility over wider domains or in tasks requiring much everyday knowledge. AI is found in applications as diverse as medical diagnosis, computer search engines, voice or handwriting recognition, and chatbots.

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## STUDENT ARTICLE

# MICROSTRIP ANTENNA

The microstrip antenna is a single-layer design which contains four parts: patch, ground plane, substrate, and the feeding part. The microstrip antenna produces maximum radiation in the perpendicular direction. The microstrip antenna is a modern innovation. In general, a microstrip antenna contains a radiating patch on one side of the dielectric substrate which has a ground plane on the other side. In general, microstrip antennas are known as “PRINTED ANTENNA”. Microstrip antenna provides better efficiency, larger bandwidth and better radiation. These antennas are easy to fabricate and comfortable on curved surfaces. These antennas are used at microwave frequencies. These antennas usually consist of a metal patch on top of a grounded dielectric substrate.

The patch may be in a variety of shapes, but rectangular and circular are the most common shapes. Microstrip antennas are also used in the fields of radio frequency identification, mobile communication and health care. This antenna offers high gain and a low profile; also, it offers high performance and wide bandwidth. The study of microstrip has made a great process in recent years.



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# STUDENT ARTICLE

## ROBOTICS

With growing development in the field of mechatronics and mathematics modelling, robotics has come a long way. From an iron piece that could move only a few inches, there are now machines capable of jumping from high-rise buildings, detecting land mines, performing operations and troubleshooting.

'Robot' reminds one of the Terminator/cyborgs with their menacing steel bodies and reddened eyes, which are out to destroy the world.

### History of Robotics:

The term 'robot' got prominence way back in the 1950s. When Karl Capek, in his play Rossum's Universal Robots, denoted the birth of a superior race that had intelligence similar to that of humans. Later, Isaac Asimov introduced his laws of robots, and finally, Eric Elengreger, who is considered the father of robotics, introduced real-time robots to the world.

### Meaning of Robotics:

Robotics means the study and application of robot technology. Robotics is a branch of engineering that involves the conception, design, manufacture, and operation of machines assigned for specific high-precision repetitive tasks.

### Definition of Robotics:

A programmable, multifunctional manipulator, designed to move material parts, tools, or specialised devices through various programmed motions for the performance of a variety of tasks.

### Laws of Robotics:

1. A robot must not injure a human being or, through inaction, allow a human being to come to harm
2. A robot must always obey orders given to it by a human being except where it would conflict with
3. A robot must protect its own existence, except where it would conflict with the first or second law

### Types of Robots:

1. Mobile Robot
2. Rolling Robot
3. Walking Robot
4. Stationary Robot
5. Autonomous Robot
6. Remote-Controlled Robot

### Application of Robotics:

1. Rob surgery
2. Robots in danger zones
3. AIBO\_the robot pup
4. Humanoid robots

### Advantages of Robotics:

1. You can send them to very dangerous places
2. You can make them do your job for you
3. Can do jobs 24/7

### Disadvantages of Robotics:

1. They can be very hard to programme

### Conclusion:

Robotics are very useful in many ways. Today, we find most of the robots working for people in industries, factories, warehouses and laboratories.



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## STUDENT ARTICLE

# CYBER SECURITY

Cyber Security refers to protecting our data and computer systems from hackers, theft and any digital damage. It is like safeguarding our data from various suspects and unauthorised access. Cyber Security is very important nowadays because now the use of laptops and computers has increased, and everyone in this era is using the digital world. With the increase in internet and technology Cybercrimes have also been increased. We use AI in cyber security to detect theft really quickly, and Machine Learning is used to identify the pattern from where the cyber-attack has occurred.

By the use of the internet, we do most of our work, so our personal information, such as e-mails, passwords, banking information, etc everything is under threat of cyber-attack. Hackers do it if we click on links or websites which are infected or if someone has mistakenly downloaded them. We need cyber security; it is important because it will prevent these situations and even help from the further blackmailing, leaking, and misuse of information of the person whose data is hacked. It will guard from ransomware attacks, data breaches, malware, spyware, etc. To protect against these attacks, we need to keep strong and unique passwords on each of our accounts and not share them. We need to keep updating our software and antivirus should be installed in our devices so that our data is saved from cyber-attacks and threats. We as citizens should be aware of cyber crimes, and we should keep the people around us aware of it too, and we should keep our data protected by these attacks through cyber security. And we should be aware of the basic knowledge of cyber security and the scams of cyber-attacks.



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## STUDENT ARTICLE

# QUANTUM COMPUTING

Quantum Computing is a multidisciplinary field comprising aspects of computer science, physics and mathematics that utilises quantum mechanics to solve complex problems faster than classical computers. Elements of Quantum Computing are Bits and Qubits. Unlike classical bits, which can exist in a state of either 0 or 1, Quantum bits or Qubits can exist in multiple states simultaneously.

Some key concepts are:

**Superposition:** The ability of a quantum system to be in multiple states at the same time until it is measured.

**Quantum Gates:** quantum gates manipulate Qubits and can perform operations like superposition and entanglement, enabling the creation of Quantum circuits.

**Quantum Parallelism:** quantum computers can explore multiple solutions to a problem simultaneously, taking advantage of parallelism.

**Quantum Speedup:** quantum computers have the potential to solve certain problems exponentially faster than classical computers. Algorithms like Shor's Algorithm for factoring large numbers demonstrate these speedups.

In cryptography Quantum Computing is used, they pose a threat to current cryptographic methods but they also offer the potential for quantum-safe cryptography such as quantum key distribution. Quantum computers excel at solving optimisation problems. Some current challenges are error correction; Quantum Computers are susceptible to errors due to decoherence and noise.

Scalability and building large-scale fault-tolerant Quantum Computers remain a challenge. Quantum software and algorithms, developing practical algorithms and software that exploit the advantages of Quantum Computing for a wide range of problems. As the field progresses, Quantum Computers are expected to tackle increasingly complex problems.



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## STUDENT ARTICLE

# 5G TECHNOLOGY

5G, the fifth generation of cellular networks, is set to transform the way we connect, communicate, and consume content. 5G networks offer faster speeds, lower latency, and increased capacity compared to previous generations. The capabilities of 5G networks enable new applications and services such as remote surgery, self-driving cars, smart cities, and the Internet of Things (IoT). The deployment of 5G networks is expected to have significant economic benefits, including increased productivity, job creation, and economic growth. However, the implementation of 5G networks requires significant investment in infrastructure and may result in higher costs for both network operators and consumers.

5G networks are well-suited for applications such as remote surgery and self-driving cars that require real-time responses. Additionally, 5G networks can support massive numbers of connected devices through the use of network slicing, which allows for the creation of virtual networks with customised resources and performance characteristics tailored to specific applications or services.

The deployment of 5G networks is expected to have significant economic benefits. According to a report by Ericsson, the adoption of 5G technology could result in \$275 billion in global economic output by 2026. Additionally, the report estimates that 5G networks could create up to 22 million new jobs globally by 2030.

The challenge associated with 5G technology is security concerns related to the collection of large amounts of data by these networks. As more devices become connected through IoT applications, there is a growing concern about data privacy and security. Network operators must ensure that they are implementing appropriate security measures to protect user data from unauthorised access or misuse.



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## STUDENT ARTICLE

# 6G MOBILE COMMUNICATION NETWORK

International Telecommunication Union Radiocommunication Sector (ITU-R) envisioned IMT-2020 which represents 5G. ITU-R will probably release IMT-2030, which will summarise the possible requirements of mobile communications in 2030. This will represent 6G. China and the United States were also the first study to 6G technology. These two countries have already established the research basis for 5G and may have some similarities in 6G networks.

Compared with 5G, the advantage of 6G will completely surpass those of 5G in terms of storage capacity, accurate real-time, high synchronisation and reliability. At present, the research direction of 6G mainly includes research on 6G band and bandwidth, AI and 6G communication.

6G will continue to enhance the use cases of 5G services, i.e., enhanced Mobile Broad Band (eMBB), Ultra-Reliable and Low Latency Communication (URLLC) and Massive Machine Type Communication (mMTC). In addition, there will be several new services such as Immersive XR (Extended reality), Mobile Hologram, Virtual Replica, Machine communications, Haptic communication and communication as social infrastructure.

6G has a more diversified and advanced requirement. The technological requirement for 6G implementation will be based on the enhancement of existing technologies and new technologies that were not considered while developing 5G.

A few key enabling technologies for 6G are Artificial Intelligence based Communication, Software Centric Networks, Terahertz Communication, Ultra-Massive MIMO, New Network Topology, and Intelligent Reflecting Surface.



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## STUDENT ARTICLE

# GAMIFICATION MECHANISM

Gamification is adding game mechanics into a non-game environment, like a website, online community, learning management system or business internet to increase participation. The goal of gamification is to engage with consumers, employees, and partners to inspire, collaborate, share and interact. Gamification works by providing the audience with proactive directives and feedback through game mechanics and game dynamics added to online platforms that lead to the accomplishment of business goals and objectives.

A compelling gamification experience taps into a participant's emotions and easily demonstrates the best activities an audience can complete that make an impact on performance and guide the next steps towards new achievement.

Game mechanics are the rules and rewards that appear in programs on digital platforms. For example, they may include points, badges, and progress game mechanics, which are how participants engage with a gamification program and receive the next steps and feedback on accomplishments.

Game dynamics refers to a set of emotions and behaviours found in a game, mechanics that resonant with people, for example, maybe including competition through a leaderboard, a collaboration by competing team machine, commutative with seeing other participants on a news feed collection when earing unique badges and surprises and unlocking new machines and the dynamic car used with a game mechanics to foster engagement and motivate participants.

Gamification, at its core, is about driving engagement to influence business results when people participate and engage with your gamification innovation. They learn the best way to interact with your business, your products, your services and your brand.

The business value of gamification doesn't end with the participant. Engagement with game mechanics provides insightful data that can help influence Marketing Campaigns and Platforms. Every employee or customer interaction gives a better sense of where a participant is spending their time and what activities drive interest.

Gamification is the strategy for influencing and motivating the behaviour of people, which also includes employees. Gamification can be applied across a broad spectrum of situations where individuals need to be motivated to pursue specific actions or activities. Gamification in the workplace can increase employee engagement to drive the company's performance.

Game mechanics make an employee's job more transparent by making goals clear and easy to follow. An employee is able to see progress on performance and receive immediate feedback on accomplishments, collaborations and competitions.

When done strategically, gamification in the workplace can help improve business results in various ways, which include:

- Increasing adoption and use of learning
- Management tools promoting retention and results in employees
- Increasing employee knowledge sharing to improve service levels
- Boosting call centre employees' performance and satisfaction



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