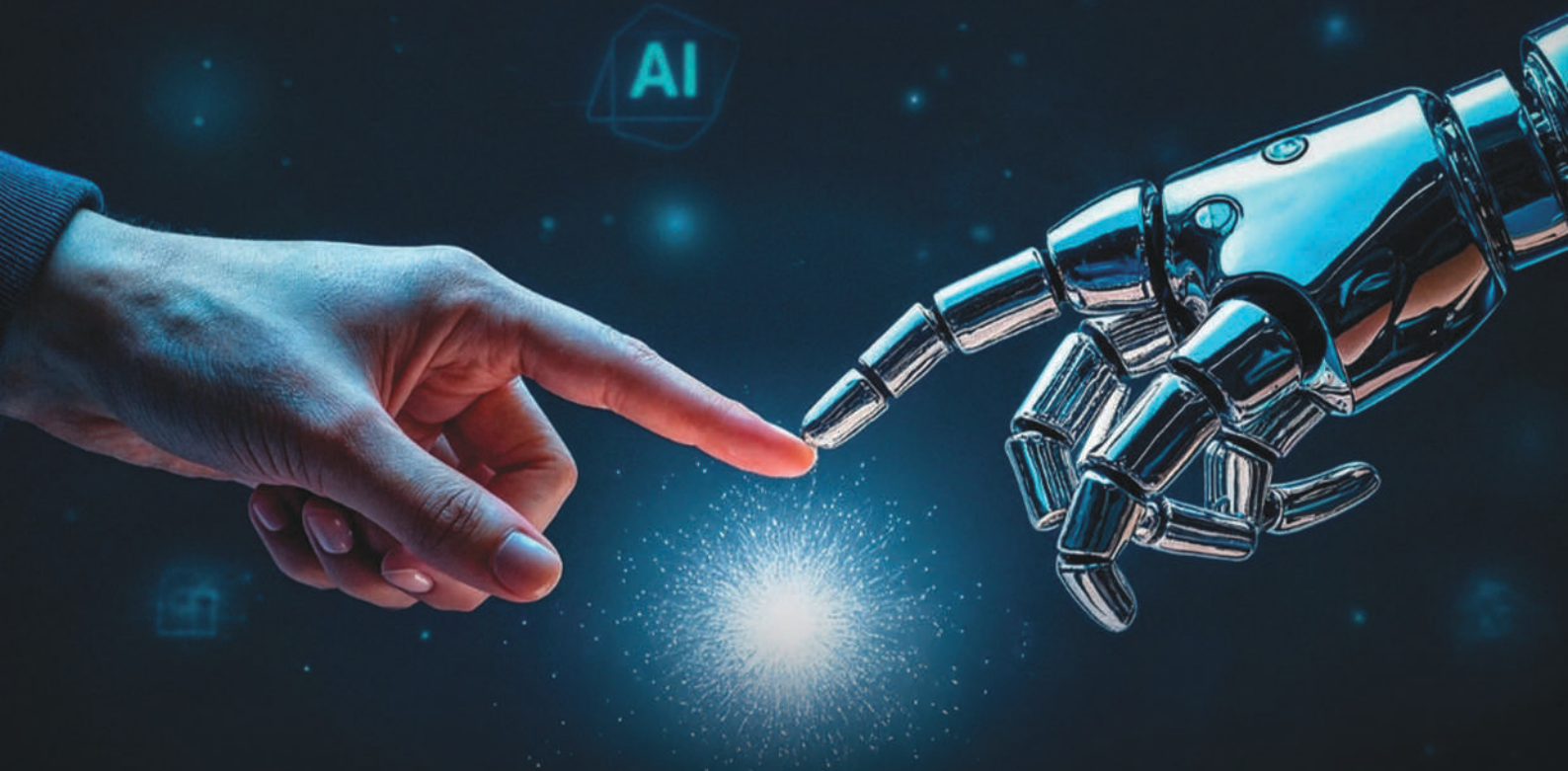




**KALINGA
UNIVERSITY**

VOLUME 5, ISSUE 1 (JANUARY 2026 – JUNE 2026)

MINDROID



**EXPLORING
EXCELLENCE**

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CONSOLIDATED MESSAGES FOR MINDROID



Prof. G. S. Tomar
Chairperson
IEEE MP Section

It is a great honour and privilege to convey my heartfelt congratulations to the IEEE Kalinga University Student Branch on the successful publication of MINDROID–Volume 5, Issue 1. This edition stands as a remarkable reflection of the Student Branch’s unwavering dedication to excellence in academics, innovation, and professional development.

The enthusiasm, hard work, and originality demonstrated by the editorial board and contributors have resulted in a publication that is both informative and inspiring. MINDROID serves as an excellent platform for highlighting the accomplishments, ideas, and creative pursuits of students while promoting the core values of IEEE—technical competence, professionalism, and innovation.

I commend the Student Branch for continually encouraging an environment that nurtures curiosity, collaboration, and continuous learning. Through every issue, the magazine motivates readers to explore emerging technologies, broaden their perspectives, and actively participate in shaping the future of engineering and technology.

This publication exemplifies the talent, determination, and vision of the next generation of innovators. By showcasing student achievements and thought leadership, MINDROID enhances the visibility of the Student Branch and contributes significantly to IEEE’s mission of advancing technology for the benefit of humanity.

I extend my sincere appreciation to the entire editorial team for their commitment, creativity, and perseverance in bringing this edition to life. Your efforts continue to elevate the standards of student-driven publications and inspire a culture of leadership and innovation.

I wish the IEEE Kalinga University Student Branch continued growth, greater accomplishments, and many more successful editions of MINDROID in the years to come.

With best wishes and warm regards,
Chairperson
IEEE Madhya Pradesh Section



Praveen Kumar Pemmasani
Senior Systems Programmer
City of Dallas, USA

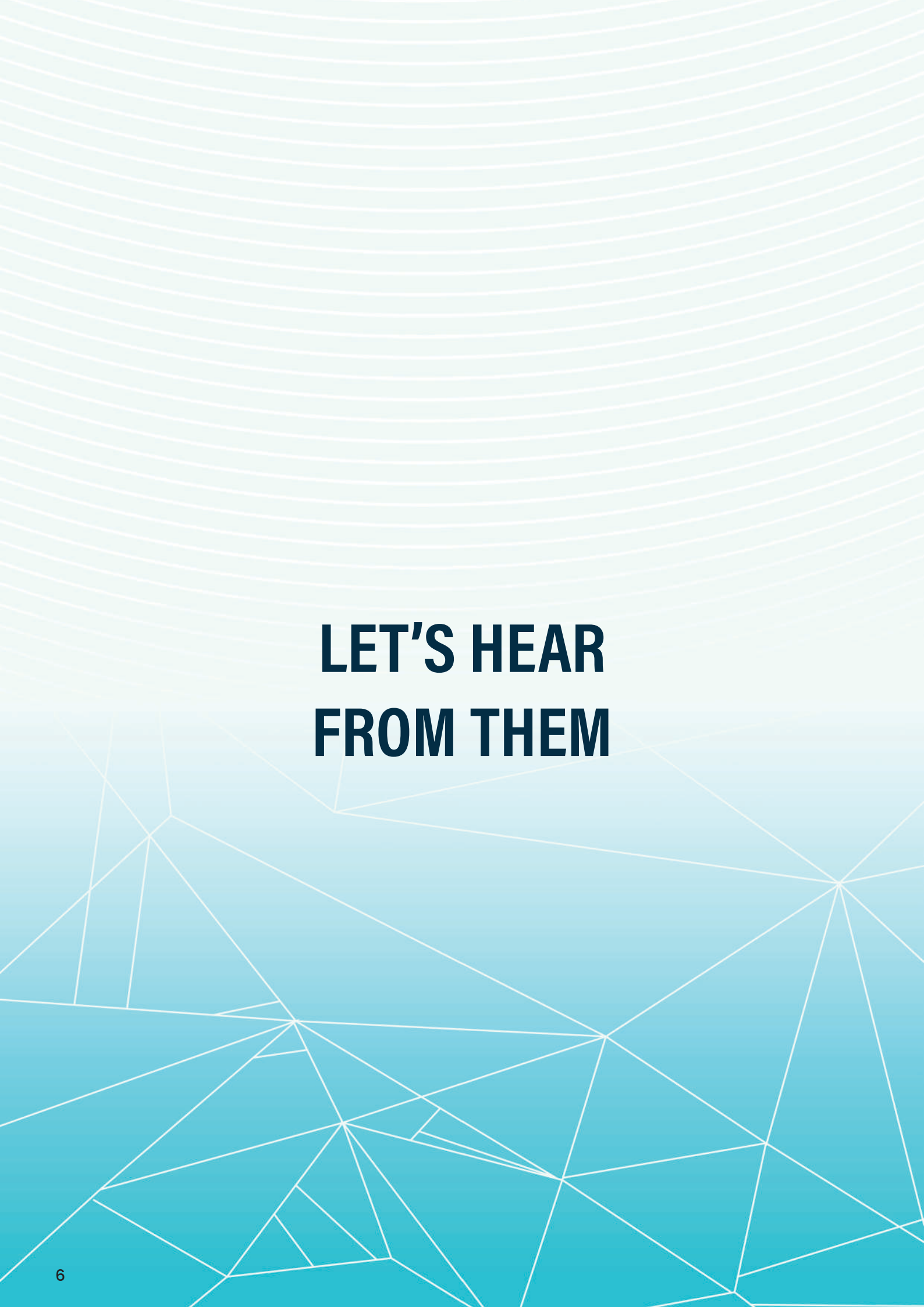
It is my pleasure to extend my best wishes to the IEEE Kalinga University Student Branch on the upcoming release of **MINDROID - Volume 5, Issue 1**. I am delighted to know that the student branch continues its tradition of fostering innovation, technical excellence, and creativity through this remarkable publication. MINDROID serves as a valuable platform where students can share their knowledge, showcase their ideas, and contribute to the ever-evolving world of science, engineering, and technology.

In today's rapidly advancing technological landscape, initiatives like MINDROID play a significant role in nurturing curiosity, encouraging research, and inspiring students to think beyond conventional boundaries. By providing opportunities to publish technical articles, innovative projects, and creative insights, the magazine not only highlights the talent within the IEEE Kalinga University Student Branch but also promotes a culture of continuous learning, collaboration, and professional growth.

I sincerely appreciate the dedication and hard work of the editorial board, faculty mentors, contributors, reviewers, and volunteers who have invested their time and effort in bringing this edition to life. Their commitment to maintaining high standards of quality and knowledge sharing reflects the true spirit of IEEE and its mission of advancing technology for the benefit of humanity.

I am confident that **MINDROID - Volume 5, Issue 1** will inspire readers, encourage meaningful discussions, and motivate aspiring engineers and innovators to pursue excellence in their academic and professional journeys. I extend my heartfelt best wishes to the entire IEEE Kalinga University Student Branch for the successful release of this edition and for many more milestones in the years ahead. May MINDROID continue to grow as a beacon of knowledge, innovation, and inspiration for students and the broader engineering community.

Best Wishes,



LET'S HEAR FROM THEM



Dr. Rajeev Kumar
Chairman
Kalinga University

It is with great pleasure that I extend my sincere congratulations to the IEEE Kalinga University Student Branch on the publication of **MINDROID, Volume 5, Issue 1**. This achievement reflects the enthusiasm, commitment, and collective efforts of the students who have worked diligently to make this edition a success.

Over the years, MINDROID has evolved into a distinguished platform that encourages the exchange of ideas, fosters intellectual engagement, and showcases innovative thinking. The articles and contributions featured in this issue demonstrate the academic excellence, technical competence, and creative mindset of the student community while offering valuable perspectives on contemporary technological developments and scientific progress.

The successful release of this edition is a result of the dedication, teamwork, and determination of the editorial board and contributors. Their efforts have ensured that MINDROID continues to serve as a source of inspiration, learning, and meaningful discourse for readers across academic and professional domains.

I am confident that this magazine will further strengthen the culture of research, innovation, and knowledge sharing within the IEEE community and beyond. Such initiatives play a vital role in nurturing future leaders, thinkers, and innovators who will contribute significantly to society through technology. I once again congratulate the IEEE Kalinga University Student Branch on this commendable accomplishment and convey my best wishes for continued growth, excellence, and success in all its future endeavours.



Dr. Sandeep Arora
Chancellor
Kalinga University

It gives me great pleasure to extend my warm congratulations to the IEEE Kalinga University Student Branch on the successful release of **MINDROID, Volume 5, Issue 1**. This publication stands as a remarkable representation of the passion, creativity, and dedication demonstrated by the students in advancing knowledge and innovation.

MINDROID has established itself as a respected forum for the exchange of ideas, technological insights, and scholarly contributions. With each edition, it continues to promote a culture of learning and exploration, and this issue is no exception. The diverse and engaging content featured herein reflects the ever-evolving landscape of science, technology, and engineering while showcasing the remarkable potential of young minds.

I highly appreciate the collective efforts, perseverance, and vision of the editorial team and contributors whose commitment has made this publication possible. Their work not only celebrates academic and technical achievements but also encourages critical thinking, innovation, and professional growth among students.

This accomplishment is a testament to the strength of collaboration and the pursuit of excellence that defines the IEEE community. Through initiatives such as MINDROID, students are empowered to share knowledge, inspire others, and contribute meaningfully to technological advancement. I extend my sincere best wishes to the editorial board, authors, and the entire IEEE Kalinga University Student Branch for this commendable achievement. May MINDROID continue to flourish as a beacon of knowledge, creativity, and innovation, inspiring future generations and making a lasting impact within and beyond the IEEE community.



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

MINDROID has consistently evolved into a distinguished platform for presenting innovative ideas, impactful research, and emerging technological trends within the IEEE community. The newly published **Volume 5, Issue 1** offers an engaging compilation of technical articles, IEEE activities, member accomplishments, and insightful features that showcase the intellectual excellence and creativity of our student members.

The release of this edition reflects our shared commitment to promoting knowledge, encouraging innovation, and supporting the continuous advancement of science and technology. Each issue highlights the capabilities of its contributors while strengthening the collaborative values that define the IEEE spirit.

I extend my sincere congratulation to the IEEE Kalinga University Student Branch for their dedication and success in bringing this edition to publication. May MINDROID continue to educate, inspire, and set new standards for student-led excellence and innovation throughout the IEEE community.



Dr. Sandeep Gandhi
Registrar
Kalinga University

I wholeheartedly commend the IEEE Kalinga University Student Branch for their dedication and perseverance in producing MINDROID. The enthusiasm, innovation, and collaborative spirit demonstrated by the editorial team and contributors deserve special recognition. Their efforts have culminated in a publication that exemplifies academic excellence, creative expression, and the forward-thinking values upheld by the IEEE community.

I encourage students, faculty members, and the wider academic fraternity to explore MINDROID, contribute their insights, and benefit from the diverse ideas and knowledge it presents. The magazine continues to be an inspiring platform that promotes learning, stimulates intellectual curiosity, and showcases the significant impact of technology on modern society.

On behalf of the institution, I extend my sincere congratulations and best wishes on the release of **MINDROID, Volume 5, Issue 1**. May it continue to thrive as a catalyst for innovation, education, and meaningful exchange of ideas for many years ahead.



Dr. Vijayalaxmi, SMIEEE

Treasurer and WIE AG Chair,
IEEE MP Section

Branch Counsellor, IEEE KU SB

Director IQAC, Kalinga University

MINDROID remains an inspiring platform that enables aspiring engineers, innovators, and researchers to share their perspectives, present creative work, and contribute to the growing world of science and technology. Every edition reflects the dedication, ingenuity, and academic passion of our students, supported by the guidance and encouragement of their mentors.

This distinguished publication, developed through the collective efforts of the IEEE Kalinga University Student Branch, exemplifies the values of innovation, collaboration, and scholarly excellence that our institution proudly upholds. It stands as a testament to what can be achieved when talent, determination, and a common vision come together in pursuit of progress.

I extend my heartfelt congratulations to the editorial board, contributors, and all members of the IEEE Kalinga University Student Branch on the successful publication of **MINDROID, Volume 5, Issue 1**. Your dedication enriches our academic environment and motivates a broader community of learners and innovators. As we mark this achievement, let us celebrate the hard work behind it and appreciate the knowledge and inspiration it brings. May MINDROID continue to inform, motivate, and foster excellence for years to come.



IEEE KU SB ACTIVITIES

JANUARY 2026 - JUNE 2026

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SL NO.	Name of the Events	Date
1.	ATAL Online Faculty Development Program (FDP)	05 th January 2026 – 10 th January 2026
2.	STEM Stall at Adarsh International School for "Sci-Art Utsav 2025 Science & Art Exhibition – Anand Mela"	10 th January 2026
3.	Success Celebration of IEEE Kalinga University Student Branch	21 st January 2026
4.	Bootcamp on Data empowerment for local innovation and Entrepreneurship	27 th January 2026 – 31 st January 2026
5.	IEEE MGA Award Ceremony	05 th February 2026
6.	IEEE Awareness Session	24 th February 2026
7.	IEEE Awareness Session	25 th February 2026
8.	We Smriti 3.0 – Magazine Launch	08 th March 2026
9.	9-Day STEM Summer Camp on AI & Robotics	09 th March 2026 – 20 th March 2026
10.	STEM Champion Webinar	11 th March 2026
11.	STEM Demonstration at Bangur Public School, SRCP	28 th March 2026
12.	Celebration of Four Successful Years of IEEE Kalinga University Student Branch	04 th April 2026
13.	Training Program on Robotics & STEM Education	04 th April 2026 – 14 th April 2026
14.	Summer Camp on Robotics, AI & STEM Education	23 rd April 2026 – 05 th May 2026
15.	Physics and Chemistry Fun Factory	19 th May 2026 – 20 th May 2026
16.	Waste to Wow Science	21 st May 2026 – 22 nd May 2026
17.	18 th IEEE International Conference on Computational Intelligence and Network Technologies	11 th June 2026 – 14 th June 2026

ATAL Online Faculty Development Program on Advanced Functional Materials for Societal Applications

- **Start Time:** 05th January 2026 06:00 P.M. IST
- **End Time:** 10th January 2026 09:00 P.M. IST

MINDROID remains an inspiring platform that enables aspiring engineers, innovators, and researchers to share their perspectives, present creative work, and contribute to the growing world of science and technology. Every edition reflects the dedication, ingenuity, and academic passion of our students, supported by the guidance and encouragement of their mentors.

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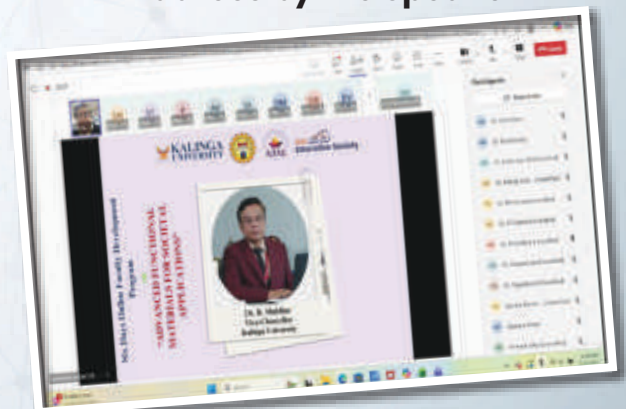
Poster of the Event



During the Event



Address by the Speaker



STEM Stall at Adarsh International School for “Sci-Art Utsav 2025 Science & Art Exhibition - Anand Mela”

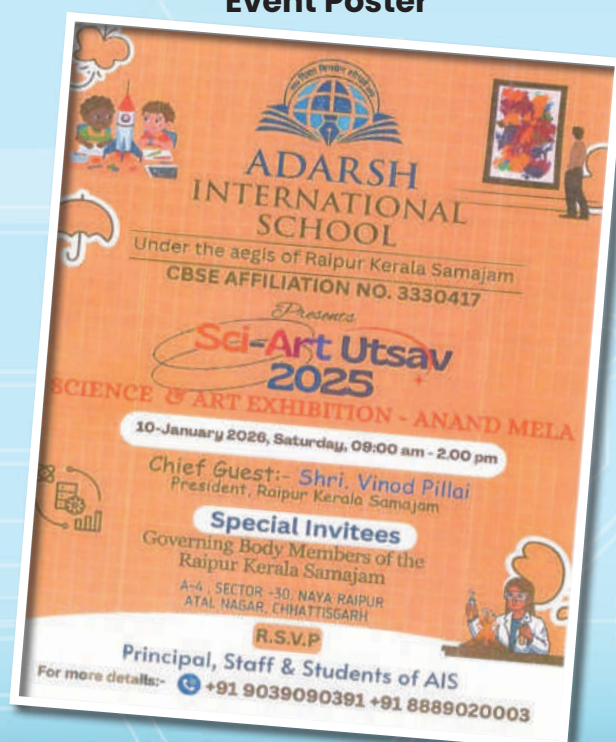
- **Start Time:** 10th January 2026 09:00 A.M. IST
- **End Time:** 10th January 2026 02:00 P.M. IST
- **Venue:** Adarsh International School, Naya Raipur, Chhattisgarh

Kalinga University organised a STEM Stall at Adarsh International School during the “Sci-Art Utsav 2025 Science & Art Exhibition – Anand Mela.” The stall was set up by Mr. Pushpraj Gendre, Mr. Ashwan Kumar Sahu, Mr. Piyush, and Mr. Priyanshu to promote STEM education and introduce students to emerging technologies through interactive learning experiences.

Visitors were engaged through live demonstrations of educational robots such as Codey Rocky, mBot, CyberPi, and Avishkar Robot. The team explained basic concepts of robotics, sensors, automation, and block-based coding using M-Block 5 software. Interactive activities, including a buzzer game and VR headset experience, further enhanced student participation and interest.

The stall received an enthusiastic response from students, parents, and guests throughout the event. The team also shared information about Kalinga University’s STEM Education Summer Camps and other learning initiatives. The program concluded with interactive discussions and feedback sessions, successfully promoting hands-on learning and technological awareness among young learners.

Event Poster



The Stall



Visitors During the Event



Success Celebration of IEEE Kalinga University Student Branch

- **Start Time:** 21st January 2026 11:00 A.M. IST
- **End Time:** 21st January 2026 12:30 P.M. IST
- **Venue:** Main Building, Kalinga University, Naya Raipur

The IEEE Kalinga University Student Branch organised a Success Celebration to celebrate its remarkable achievement of receiving the **IEEE India Council Outstanding Student Branch Award** and the **IEEE Region 10 Exemplary Student Branch Award**. The event recognised the dedication, active participation, and collective efforts of student members, faculty advisors, and branch officials whose contributions led to this prestigious accomplishment.

The program began with a warm welcome to dignitaries, faculty members, and IEEE student members, followed by an address highlighting the significance of the awards. A presentation showcased the branch's major technical professional and outreach activities conducted throughout the year, emphasising their impact on student development and community engagement. Faculty advisors and branch representatives also shared words of appreciation, acknowledging the commitment and teamwork demonstrated by the members.

Organised by the IEEE Kalinga University Student Branch in collaboration with IEEE WIE AG, IEEE AESS Chapter, and IEEE Computer Society Chapter, the celebration concluded with a vote of thanks and expressions of gratitude to the Faculty Advisors, Branch Counsellor, student volunteers, and members. The event served as a moment of pride and motivation, inspiring the branch to continue its journey of excellence under the motto, "Advancing Technology for Humanity."

Poster of the Event



Address by Dr. Vijayalaxmi



The Team Cake-Cutting Ceremony



Bootcamp on Data Empowerment for Local Innovation and Entrepreneurship

- **Start Time:** 27th January 2026 10:00 A.M. IST
- **End Time:** 31st January 2026 03:00 P.M. IST
- **Venue:** Seminar Hall, Kalinga University, Naya Raipur

The Boot Camp on "Data Empowerment for Local Innovation and Entrepreneurship" was organised by the Internal Quality Assurance Cell (IQAC), Kalinga University, in collaboration with Unnat Bharat Abhiyan (UBA), IIIT Hyderabad, and the Institution's Innovation Council (IIC). The five-day offline program was conducted at the Seminar Hall, 2nd Floor, Kalinga University, Naya Raipur.

The primary objective of the bootcamp was to create awareness about the importance of data in solving local problems, promoting innovation, and encouraging entrepreneurial thinking among students and faculty members. The event focused on the role of data-driven decision-making in achieving sustainable development and community empowerment.

The boot camp featured a series of expert lectures and interactive sessions delivered by distinguished speakers from Kalinga University and industry. Some of the notable speakers included Dr. Vijayalaxmi Biradar, Dr. Anupa Sinha, Dr. Kamlesh Kumar Yadav, Ms. Aakansha Soy, Mr. Moti Ranjan Tandi, Ms. Rohee Khan, Dr. Ayaz Ahmed Faridi, Ms. Anjali Kadao, Dr. Satvik Jain, Dr. Nishtha Sharma, Dr. Kanchan Thakur, and Mr. Manav Gupta. Their sessions covered topics related to data analytics, innovation, entrepreneurship, research methodologies, and community development. Overall, the boot camp proved to be a valuable learning experience that enhanced participants' knowledge of data empowerment, innovation, and entrepreneurship while inspiring them to contribute to local and national development.

Event Poster



Inauguration of the Event



Address by Guest of Honour



Inauguration of the Event



IEEE MGA Award Ceremony

- **Start Time:** 05th February 2026 07:30 P.M. IST
- **End Time:** 05th February 2026 08:30 P.M. IST

The IEEE Kalinga University Student Branch achieved a remarkable milestone by receiving the IEEE Exemplary Student Branch Award 2025, a prestigious recognition presented by the IEEE Member and Geographic Activities (MGA) Student Activities Committee. The award honours Student Branches that demonstrate excellence in technical activities, professional development, leadership, membership engagement, and community impact. In recognition of the branch's outstanding achievements, the IEEE Kalinga University Student Branch was invited to participate in the live recording ceremony of the IEEE MGA Student Activities Awards 2025 Virtual Ceremony, held on 5 February 2026. Notably, it was the only Student Branch from India selected to present its accomplishments during the ceremony before a global IEEE audience.

Representing the Student Branch, Piyush Srivastava, Chairperson of IEEE Kalinga University Student Branch, attended the live recording ceremony and showcased the branch's key initiatives, achievements, and contributions. The presentation highlighted the branch's efforts in organising technical programs, leadership activities, professional development events, and community-focused initiatives that have created meaningful opportunities for students. The recognition reflects the dedication and collective efforts of the Student Branch officers, volunteers, members, faculty advisors, and university administration. Receiving the IEEE Exemplary Student Branch Award and representing India at the international ceremony stands as a proud achievement for the IEEE Kalinga University Student Branch and reinforces its commitment to advancing technology, fostering leadership, and serving the community through IEEE.

IEEE MGA Award Ceremony



IEEE Awareness Session

- **Start Time:** 24th February 2026 10:30 A.M. IST
- **End Time:** 24th February 2026 12:00 P.M. IST
- **Venue:** SJM Institute of Technology (SJMIT), Chitradurga, Karnataka

The IEEE Awareness Session was successfully conducted at SJM Institute of Technology with the objective of familiarising students with the opportunities, resources, and professional benefits offered by IEEE. The session was led by Dr. Vijayalaxmi, who provided valuable insights into IEEE's global presence and its significant role in advancing technology and supporting the professional growth of students and young engineers.

The program began with a welcome address and an introduction to IEEE, followed by an informative presentation on the advantages of IEEE membership. Dr. Vijayalaxmi highlighted various opportunities available to students, including scholarships, awards, access to global research resources, technical publications, and professional networking platforms. She also emphasised the importance of IEEE in fostering technical excellence, innovation, and career development.

The session witnessed active participation from students, who engaged enthusiastically in the interactive discussions and question-and-answer segment. Participants gained a deeper understanding of how IEEE can contribute to their academic journey, skill development, and professional aspirations. The event concluded with a vote of thanks, expressing gratitude to the speaker and attendees. Overall, the session proved to be highly informative and motivating, encouraging students to actively explore IEEE initiatives and leverage its resources for learning, collaboration, and career advancement.

Address by Resource Person



IEEE Awareness Session

- **Start Time:** 25th February 2026 10:30 A.M. IST
- **End Time:** 25th February 2026 12:00 P.M. IST
- **Venue:** Nagarjuna College of Engineering & Technology, Bangalore, Karnataka

The IEEE Membership Awareness and Benefits Session was successfully conducted at Nagarjuna College of Engineering & Technology, Bangalore, with the participation of 80 students. The program was organised to provide students with a comprehensive understanding of IEEE, its global reach, and the various opportunities it offers to support academic excellence, technical learning, and professional development. The session introduced participants to the significance of IEEE in connecting students with a worldwide network of technology professionals and researchers.

During the session, students were informed about the numerous advantages of IEEE membership, including access to technical publications, research databases, conferences, workshops, scholarships, awards, and professional networking opportunities. The speaker also highlighted how active involvement in IEEE activities can help students enhance their technical expertise, leadership capabilities, and industry exposure. Real-world examples and insights were shared to demonstrate the positive impact of IEEE on career growth and lifelong learning.

The event witnessed enthusiastic participation from the attendees, who actively engaged in discussions and interacted during the question-and-answer segment. Students gained valuable knowledge about the resources and platforms available through IEEE and how they can utilise them to achieve their academic and career goals. The session concluded with a vote of thanks, leaving participants motivated to explore IEEE membership and take advantage of its diverse opportunities for learning, innovation, and professional advancement.

Group Photograph



Participants during the Event



We स्मृति 3.0 - Magazine Launch

- StartTime: 08th March 2026 10:00 A.M. IST
- EndTime: 08th March 2026 12:00 P.M. IST

The online launch of We स्मृति 3.0 was organised to commemorate International Women's Day bringing together students, faculty members, contributors, and guests to honour women's achievements and creativity. The event began with an address by Piyush Srivastava, Chairperson of the Student Branch, Kalinga University, who spoke about the importance of celebrating women's accomplishments and acknowledged the contributions of IEEE, IEEE Women in Engineering (WIE), and the IEEE Madhya Pradesh Section in promoting equality, diversity, and empowerment. The session also provided an overview of We स्मृति as a platform dedicated to sharing ideas, experiences, and creative works. Participants were introduced to the journey of the publication and its previous editions, which focused on themes related to positivity, wellness, stress management, and self-development.

Simpi Kumari, Chairperson of WIE Affinity Group, IEEE Kalinga University Student Branch, further addressed the audience, highlighting the role of inclusive and encouraging communities in fostering confidence, leadership, and personal expression. A key moment of the program was the official unveiling of We स्मृति 3.0 in a digital flipbook format. The edition showcased 214 articles, including contributions from authors across different countries, covering topics such as empowerment, well-being, and personal development. The event concluded with a vote of thanks, recognising the support of Dr. Vijayalaxmi and appreciating the efforts of the editorial board, volunteers, and organising team. Overall, the launch was a meaningful celebration that encouraged creativity, recognised diverse voices, and promoted the values of inclusion and women's empowerment.

Poster of the Event



The Editorial Team



Speech by Ms. Simpi Kumari



Attendees of the Event



9-Day STEM Summer Camp on AI & Robotics

- **Start Time:** 09th March 2026 09:50 A.M. IST
- **End Time:** 20th March 2026 11:15 A.M. IST
- **Venue:** MM School, Nakti, Raipur

The 9-Day STEM Summer Camp on AI & Robotics was successfully organised by the IEEE Kalinga University Student Branch in collaboration with BDS Education at MM School, Nakti, Raipur. The camp was designed to introduce school students to the fundamentals of robotics, coding, and artificial intelligence through an engaging and hands-on learning approach. Throughout the program, participants were encouraged to explore emerging technologies and develop essential problem-solving and computational thinking skills.

The camp commenced with introductory sessions on STEM concepts and sprite programming, which helped students build a strong foundation in coding. As the program progressed, participants gained practical experience with educational robotics platforms such as Codey Rocky and mBot, enabling them to understand the real-world applications of programming and automation. Interactive activities and guided exercises kept students actively engaged throughout the learning process.

Advanced sessions focused on algorithm design, sequencing, pattern recognition, and decision trees, introducing students to key concepts of artificial intelligence. Participants also learned about data handling, classification techniques, and logical decision-making processes, enhancing their analytical and critical-thinking abilities. The structured progression of topics ensured a smooth transition from basic coding concepts to more advanced AI-related applications.

The camp concluded with assessments and feedback sessions that evaluated participants' understanding and learning outcomes. A valedictory ceremony was organised to recognise the efforts and achievements of the students, marking the successful completion of the program. The STEM Summer Camp served as an enriching platform for nurturing technological curiosity and inspiring young learners to explore the fields of artificial intelligence and robotics.

Event Poster



Students Exploring Codey Rocky



Students Exploring mBot



Group Photograph



Attendees of the Event



STEM Champion Webinar

- **Start Time:** 11th March 2026 06:30 A.M. IST
- **End Time:** 11th March 2026 08:00 P.M. IST

IEEE Kalinga University Student Branch proudly presented its activity, "Block Coding Bootcamp: Hands-on Training Workshop for Young Coders," at the STEM Champion Webinar held on 11 March 2026. The presentation showcased the successful implementation of the bootcamp conducted at Bharat Mata Senior Secondary School, Naya Raipur, where school students were introduced to block-based programming, robotics, and computational thinking through engaging hands-on STEM activities. The session highlighted the objectives of the workshop, its planning, and implementation

approach, emphasising the role of experiential learning in making STEM education more interactive, accessible, and effective for young learners.

The presentation also highlighted the key learning outcomes of the bootcamp, demonstrating how practical exposure to coding and robotics can foster creativity, logical reasoning, problem-solving abilities, and innovation among students. The webinar provided an excellent opportunity to share the impact of the initiative with the global STEM Champion community and exchange ideas on advancing STEM education. The recognition and opportunity to present this activity reflected IEEE Kalinga University Student Branch's continued commitment to inspiring young minds and promoting technology-driven learning experiences.

Introduction to the Program by Specialist Lynn Bowlby



Showcase of the Bootcamp by IEEE KU SB



Attendees of the Event



STEM Demonstration at Bangur Public School, SRCP

- **Start Time:** 28th March 2026 10:30 A.M. IST
- **End Time:** 28th March 2026 12:00 P.M. IST
- **Venue:** Bangur Public School, SRCP, Bharuwadih, Baloda Bazar

A demonstration visit was successfully conducted at Bangur Public School, SRCP, Bharuwadih, Baloda Bazar, with the objective of introducing the concept and benefits of establishing a STEM Laboratory and organising a STEM Summer Camp. The program aimed to promote experiential and technology-driven learning by exposing students and educators to innovative teaching methodologies that integrate Science, Technology, Engineering, and Mathematics. The visit highlighted the growing importance of STEM education in preparing young learners for future academic and professional challenges.

This session featured engaging demonstrations of hands-on STEM activities, robotics, and coding-based applications designed to foster creativity, critical thinking, and problem-solving skills among students. Participants actively interacted with the demonstrations and gained practical insights into the real-world applications of STEM concepts. The interactive learning experiences encouraged curiosity and innovation, showcasing how modern educational tools can enhance classroom learning and student engagement.

In addition to the demonstrations, guidance was provided on the essential infrastructure and resources required for establishing a structured STEM Laboratory within the school. Discussions were also held on effectively planning and implementing a STEM Summer Camp to maximise student participation and learning outcomes. The program concluded with an interactive feedback session, allowing participants to share their thoughts and clarify queries. Overall, the initiative served as a significant step toward strengthening STEM education and fostering a culture of innovation among young learners.

Session at School



Participants of the Event



Celebration of Four Successful Years of IEEE Kalinga University Student Branch

- **Start Time:** 04th April 2026 10:00 A.M. IST
- **End Time:** 04th April 2026 12:00 P.M. IST
- **Venue:** Main Building, Kalinga University, Naya Raipur

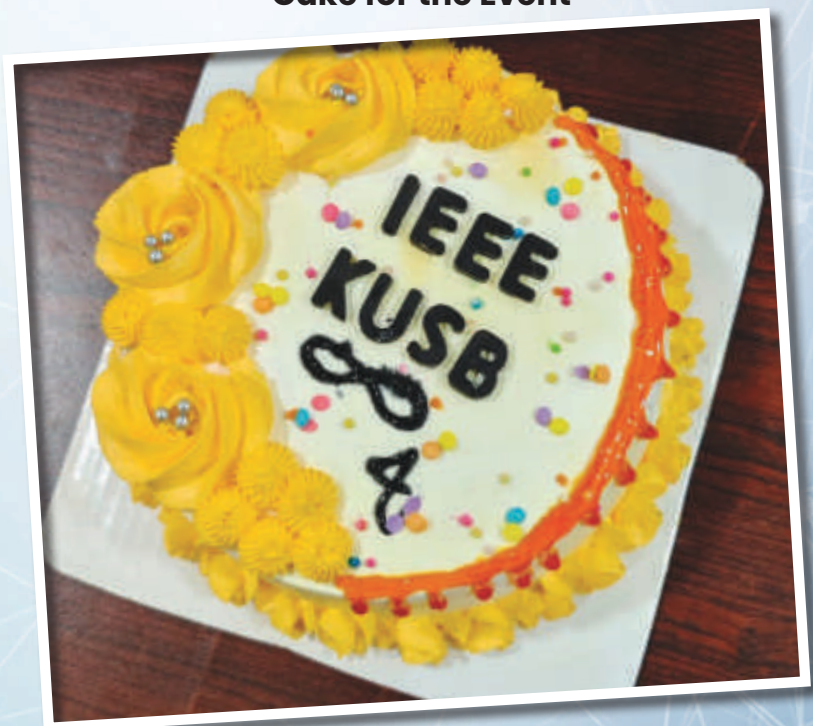
The IEEE Kalinga University Student Branch proudly celebrated its 4th Anniversary, marking four years of excellence, innovation, and active contribution to the advancement of technology and professional development. The celebration, held from 10:00 AM to 12:00 PM, brought together enthusiastic student members and the Branch Counsellor to commemorate this significant milestone in the branch's journey.

The event commenced with a warm welcome and a brief overview of the Student Branch's achievements since its establishment on 04th April 2022. A cake-cutting ceremony followed, symbolising four successful years of growth, collaboration, and accomplishment. The Branch Counsellor addressed the gathering, reflecting on the branch's progress and encouraging students to actively engage in technical activities, develop their skills, and continue upholding the values and vision of IEEE.

The celebration also provided an opportunity for members to interact, share memories of past achievements, and discuss future goals and initiatives. The event concluded on a positive and inspiring note with the expression of gratitude and a renewed commitment to innovation, teamwork, and excellence. The anniversary celebrations served as a reminder of the branch's remarkable journey and its continued dedication to empowering students through technology and professional growth.

Cake for the Event

Event Poster



Event Celebrations



Training Program on Robotics & STEM Education

- **Start Time:** 04th April 2026 10:00 A.M. IST
- **End Time:** 14th April 2026 12:00 P.M. IST
- **Venue:** Sharnbasva Public School, Karnataka

The Training Program on Robotics, Block Coding & STEM Education was organised by the IEEE Kalinga University Student Branch at Sharnbasva Public School in a hybrid mode. The program aimed to introduce students to the fundamentals of robotics, programming, and STEM learning through interactive sessions and practical activities. It provided a valuable platform for young learners to explore emerging technologies and understand their real-world applications.

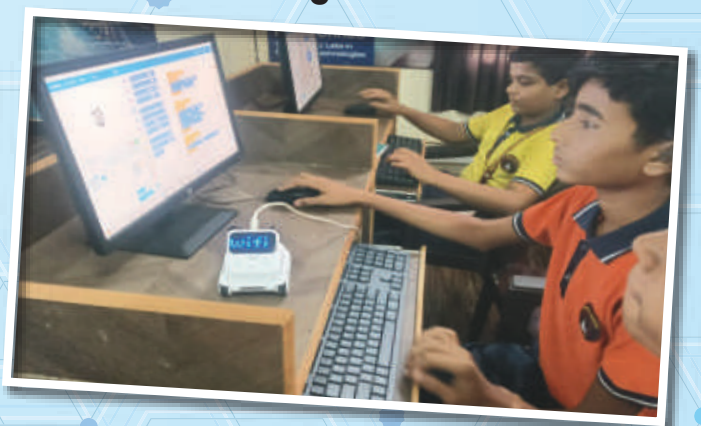
During the training, students explored block-based coding, computational thinking, and the basic principles of robotics. Using educational platforms such as mBot and Codey Rocky, participants learned programming concepts including sequencing, logic, loops, and algorithm development. Hands-on exercises, coding challenges, and robot-control activities helped students gain practical experience while strengthening their understanding of technology and problem-solving.

The program also featured STEM activities, mini-projects, and collaborative learning exercises that encouraged creativity, teamwork, logical reasoning, and analytical thinking. Students actively participated in discussions and project-based tasks, enhancing their confidence and technical skills. Conducted under the theme "*Robotics, Coding & STEM Learning for Future Innovators*," the training successfully inspired students to develop technical competencies and fostered an interest in technology-driven innovation.

Robotics Training Session



Hands-on Coding Practice



Summer camp on Robotics, AI & STEM Education

- **Start Time:** 23rd April 2026 07:30 A.M. IST
- **End Time:** 05th May 2026 08:30 A.M. IST
- **Venue:** Adarsh Vidyalaya, Mowa, Raipur

The Summer Camp on Robotics, AI & STEM Education was organised by the IEEE Kalinga University Student Branch in association with Bharat Drone Systems (BDS) Education at Adarsh Vidyalaya, Mowa, Raipur. The ten-day program aimed to introduce school students to emerging technologies and promote interest in STEM through interactive and hands-on learning experiences.

During the camp, students explored the fundamentals of robotics, programming, computational thinking, and artificial intelligence. Using educational platforms such as Codey Rocky and mBot, participants learned visual programming, robot control, algorithms, sequencing, and logical problem-solving. AI sessions introduced concepts such as pattern recognition, decision trees, and data classification, helping students understand the practical applications of artificial intelligence.

The program included coding challenges, mini-projects, and collaborative activities that fostered creativity, innovation, teamwork, and analytical thinking. The camp concluded with an assessment and valedictory ceremony recognising participants for their active involvement and achievements. With the theme "Exploring Innovation through Robotics, Artificial Intelligence, and STEM Learning," the camp successfully empowered young minds with future-ready technological skills.

During the Event



Students during the Robotics Session



Interactive Session



Physics and Chemistry Fun Factory

- **Start Time:** 19th May 2026 10:00 A.M. IST
- **End Time:** 20th May 2026 01:00 P.M. IST
- **Venue:** Regional Science Centre, Raipur

The Physics & Chemistry Fun Factory camp was organised by the Chhattisgarh Regional Science Centre, Raipur, in association with Kalinga University, Naya Raipur, at the Chhattisgarh Regional Science Centre. Designed to make science engaging and accessible, the two-day camp provided students with an exciting opportunity to explore fundamental concepts of Physics and Chemistry through hands-on experiments and interactive learning experiences. The program encouraged students to develop scientific curiosity while connecting classroom knowledge with practical applications. The camp began with an introduction to its objectives, followed by a series of chemistry-based experiments and demonstrations. Participants performed activities such as electrolysis of water, preparation of natural pH indicators, soap making, and observations of various chemical reactions. Through these experiments, students gained a deeper understanding of scientific principles while enhancing their observation, analytical, and problem-solving skills. Interactive discussions further enriched the learning experience and encouraged active participation.

The second day focused on physics concepts through experiments involving electric circuits, conductors, air pressure, combustion, and balloon-and-bottled demonstrations. Students actively engaged in practical activities that helped them understand the scientific principles behind everyday phenomena. Conducted under the theme "*Learning Science Through Hands-on Experiments and Discovery*," the camp successfully fostered creativity, critical thinking, and experiential learning, truly reflecting its motto of "*Igniting Curiosity and Building Scientific Temperament Through Practical Learning*."

Air Pressure Indicator Model



Project Demonstration



Project Demonstration



Project Demonstration



Waste to Wow Science

- **Start Time:** 21st May 2026 10:00 A.M. IST
- **End Time:** 22nd May 2026 01:00 P.M. IST
- **Venue:** Chhattisgarh Regional Science Centre, Raipur

The “Waste to Wow Science” Summer Camp 2026 was successfully organised by the Chhattisgarh Regional Science Centre, Raipur, in association with Kalinga University, Naya Raipur. The camp was designed to promote environmental awareness, sustainability, and scientific innovation among students by demonstrating the potential of waste materials as valuable resources. Through engaging sessions and practical demonstrations, participants gained insights into recycling, resource conservation, and responsible waste management while understanding the role of science in addressing environmental challenges.

The camp featured a variety of hands-on activities that encouraged students to transform discarded materials into useful scientific models and creative products. Participants designed projects such as water level indicators using recycled materials and explored the principles of electromagnetism through interactive experiments. Creative sessions included making lamps from waste paper, paper hangers, and greeting cards from recyclable materials, allowing students to apply scientific concepts while enhancing their creativity, innovation, and problem-solving skills.

In addition to the practical activities, students actively participated in science games, quizzes, group discussions, and an MCQ-based assessment focused on sustainability and environmental responsibility. These activities promoted teamwork, critical thinking, and awareness of sustainable living practices. The camp concluded with a valedictory session and certificate distribution ceremony, recognising the enthusiasm and achievements of the participants. Overall, the program served as an inspiring platform for fostering scientific curiosity, environmental consciousness, and a commitment to building a cleaner and greener future.

Air Pressure Indicator Model



Waste to Art



Certificate Distribution



18th IEEE International Conference on Computational Intelligence and Network Technologies

- **Start Date:** 11th June 2026 9:00 A.M. PHT
- **End Date:** 14th June 2026 5:00 P.M. PHT
- **Venue:** Philippine Women's University, Manila, Philippines (Hybrid Mode)

The 18th IEEE International Conference on Computational Intelligence and Communication Networks (CICN-2026) was successfully held at the Philippine Women's University, Manila, Philippines. The conference brought together researchers, academicians, industry experts, and students from across the globe to discuss recent advancements in Computational Intelligence, Artificial Intelligence, Machine Learning, and Communication Networks.

Prof. Dr. Vijayalaxmi Biradar from Kalinga University, Naya Raipur, actively participated in the conference as a Plenary Speaker and Session Chair, delivering an expert talk and chairing technical sessions. In recognition of her valuable contribution, she was honoured with a Plaque of Recognition and a Certificate of Appreciation. The conference provided an excellent platform for knowledge sharing, international collaboration, and promoting innovative research in emerging technologies.

On the sidelines of the conference



Members from IEEE MP Section at the conference



Address by Chair IEEE MP Section, Dr. G.S. Tomar

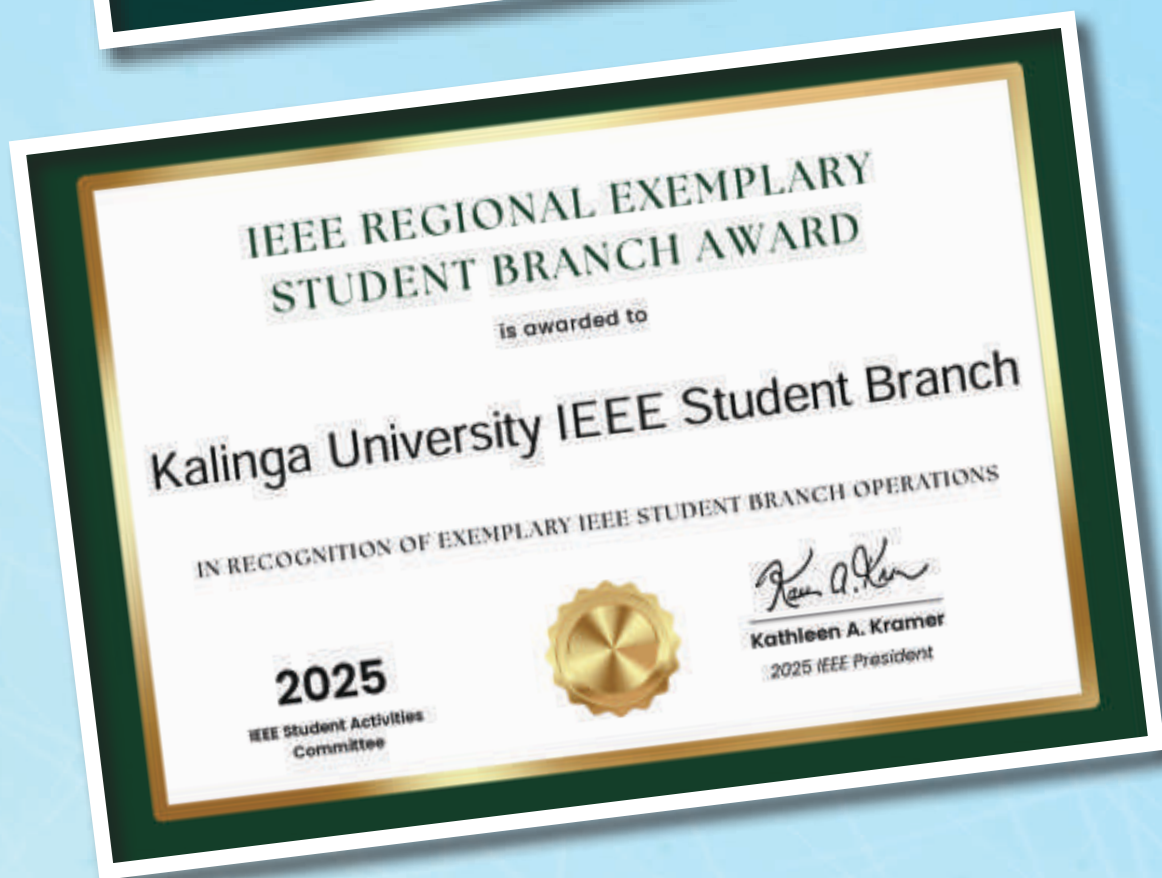


Dr. Vijayalaxmi at the conference





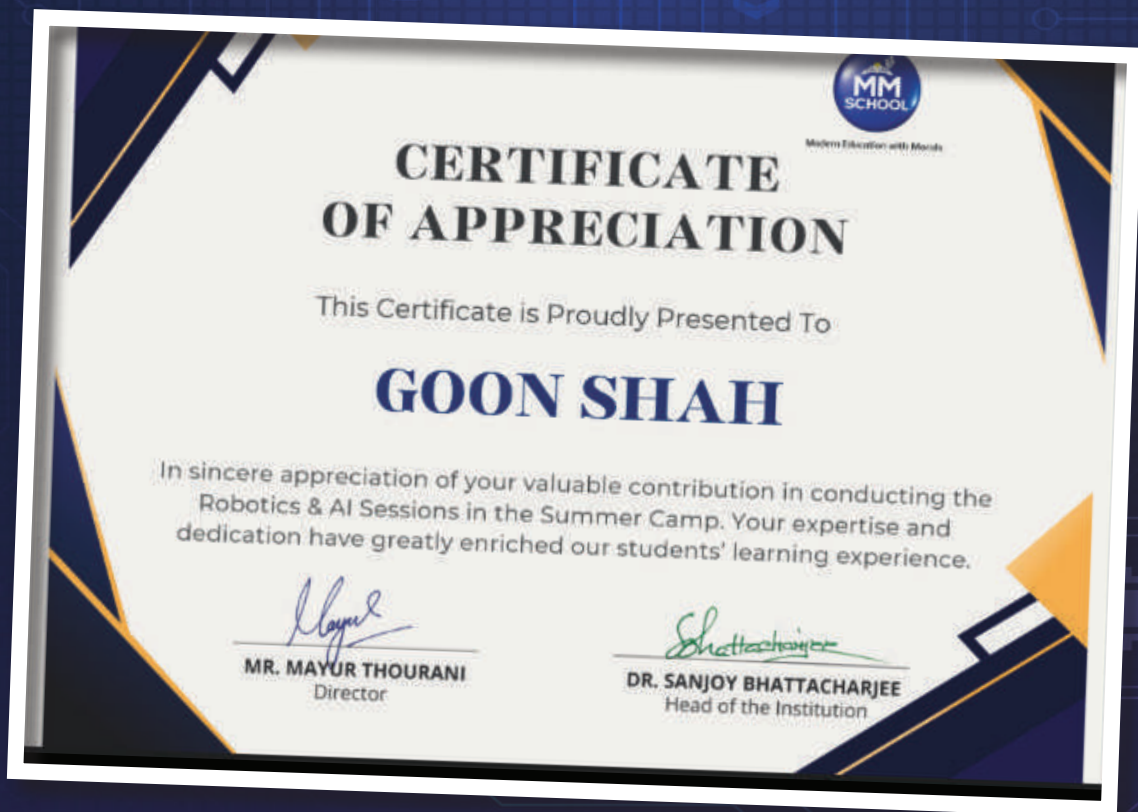
ACHIEVEMENTS



Kalinga University IEEE Student Branch was honoured with the IEEE Regional Exemplary Student Branch Award 2025, recognising its outstanding contributions to student development, technical excellence, and professional activities.









Appreciation Certificates received for 9-Day STEM Summer Camp on AI & Robotics from 9th March 2026 to 20th March 2026 presented by MM School, Nakti, Raipur



Student Activities Committee (SAC) 2026



Tanish Karwekar
Chair
SAC IEEE MP Section



Piyush Srivastava
Vice Chair
Chattisgarh Region



Umang Shukla
Vice Chair
Gwalior Region



Parishī Pahariya
Vice Chair
Bhopal Region



Gaurav Yadav
Secretary
Bhopal Region



Yash Pawar
Secretary
Bhopal Region



Pranjal Rai
Secretary
Indore Region



Sumedha Holkar
Treasurer
Indore Region



Prajval Vyas
Treasurer
Chattisgarh Region



Ritika Choudary
Treasurer
Indore Region



Jisha Salariya
Webmaster
Indore Region



Akshansh Singh
Webmaster
Indore Region

Marking a significant achievement for our Student Branch, Piyush Srivastava and Prajval Vyas have secured positions in the IEEE MP Section SAC 2026. Their accomplishment highlights the talent, leadership, and active engagement nurtured within our IEEE community.



Adding to the branch's achievements, Priyanshu Singh has been elected as Student Chair – Industry Relations in the IEEE MP Section SAC 2026. His appointment highlights the calibre of leadership emerging from our Student Branch and its impact at the section level.



Dr. Vijayalaxmi was invited as a Plenary Speaker at the 18th IEEE International Conference on Computational Intelligence and Communication Networks (CICN 2026) in Manila, Philippines. This prestigious recognition reflects her outstanding contributions to research and elevates our institution's presence on the global IEEE stage.



Proposal for IEEE TryEngineering STEM Grant accepted
under IEEE ECS Juniors



ARTICLES

Game-Based Learning for Quality Education: Promoting Motivation, Participation, and Sustainability



Dr. Saroj Nayyar

Assistant Professor, Faculty of Education
Kalinga University

In today's education, with the requirements of modern education, education should be more meaningful, the teaching method should be more active, and learners should participate. One of these innovative practices is Game-Based Learning (GBL), which is based on the use of educational games to facilitate the learning process. GBL includes learning objectives that are tied to activities, which provide learners with opportunities to learn by exploring, practising, and experiencing instead of passively listening. Increased student motivation is one of the best positive aspects of Game-Based Learning. When learning is presented with challenges, rewards and tasks and requires learners to get involved in classroom activities, they naturally are more interested in doing so. Educational games give instant feedback and help students see how they are doing and what they need to work on. Consequently, students feel more confident and motivated in pursuing their learning objective. Game-Based Learning also promotes collaboration, communication, and problem-solving. They frequently work collaboratively with others to accomplish tasks, exchange ideas and make decisions, which fosters critical social and cognitive skills. The experiences help students to develop a greater appreciation of sustainable development and their contribution to a better future.

Agentic AI: The Rise of Autonomous Digital Assistants



Nikhitha P H

Graduate, Electronics and
Communication Engineering
SJM Institute of Technology

Agentic Artificial Intelligence (AI) represents a significant advancement in the field of intelligent systems. Unlike traditional AI models that respond to individual prompts, Agentic AI can autonomously plan, reason, and execute a sequence of tasks to achieve specific objectives. By integrating large language models with memory, decision-making capabilities, and external tools, these systems function as proactive digital assistants.

Recent developments have demonstrated the potential of Agentic AI in healthcare, education, software development, and business automation. These intelligent agents can analyze information, manage workflows, generate reports, and provide personalised recommendations with minimal human intervention. As a result, productivity is enhanced while professionals can focus on more strategic and creative responsibilities.

Despite its advantages, Agentic AI introduces challenges related to transparency, reliability, and ethical decision-making. Researchers and industry leaders are actively working to develop safeguards that ensure responsible and trustworthy deployment.

As AI technology continues to evolve, Agentic AI is expected to redefine human-computer interaction by enabling autonomous systems to collaborate effectively with people. This innovation marks a transformative step toward a future where intelligent agents become an integral part of everyday life.

The AI Bubble: A Ticking Time Bomb?



Mr. Sandeep Roy
Assistant Professor
Kalinga University

The artificial intelligence industry is experiencing an unprecedented surge in investment, valuation, and hype. Billions of dollars are pouring into AI startups, many of which have yet to generate meaningful revenue. This rapid inflation of the AI sector bears striking similarities to the dot-com bubble of the late 1990s—and the warning signs are hard to ignore.

Tech giants are spending hundreds of billions on AI infrastructure, data centres, and chips, betting everything on a future that may not arrive as quickly as promised. When expectations outpace reality, bubbles burst. Overvalued companies collapse, jobs vanish, and investor confidence evaporates overnight.

The damage, however, could extend far beyond balance sheets. A bursting AI bubble may starve genuinely promising research of funding, setting back medical breakthroughs, climate solutions, and scientific discovery by years. Talented engineers and researchers could lose their positions, scattering expertise built over a decade.

Worse still, the public backlash from a high-profile AI collapse could trigger sweeping regulations that stifle innovation for a generation.

The AI revolution holds real promise—but unchecked hype and reckless investment risk turning a transformative technology into the next cautionary tale of Silicon Valley excess.

Food Technology: Why Research and Innovation Matter More Than Ever



Dr. Subarna Ghosh
Guest Faculty
IGKV, Raipur

Food is the foundation of human survival — and technology is transforming how we grow, process, preserve, and consume it. In a world facing climate change, population growth, and rising hunger, food technology research is no longer optional. It is essential.

Modern food innovation is solving problems that traditional farming simply cannot. From precision fermentation producing lab-grown proteins to AI-driven crop monitoring that maximizes yield, researchers are rewriting the rules of agriculture. These breakthroughs reduce water usage, cut carbon emissions, and lower dependence on pesticides — making food production kinder to the planet.

Food technology also tackles nutrition directly. Fortified foods, bioengineered crops rich in vitamins, and functional ingredients are fighting malnutrition in developing nations while addressing lifestyle diseases like obesity and diabetes in wealthier ones.

Preservation innovation — smarter packaging, cold chain optimisation, and natural preservatives — is slashing food waste, which currently accounts for nearly one-third of all food produced globally.

Perhaps most critically, food tech research builds resilience. When pandemics, droughts, or supply chain shocks strike, innovative food systems recover faster and feed more people.

Investing in food technology today is not just smart economics — it is a moral responsibility toward future generations.

Next Generation Mobility Infrastructure for Smart Cities



Dr. Anjum Nazir Qureshi
Assistant Professor
RCERT, Chandrapur

As smart cities continue to grow, they are becoming more dependent on real-time systems and constant connectivity. Today, connectivity is no longer just a background service; it has become an essential part of city operations. However, existing communication networks often face challenges such as limited cross-border roaming, uneven coverage, and delays in supporting modern mobility solutions.

The next generation of mobility infrastructure will do much more than simply transfer data. It will help automate processes, improve coordination, and increase the reliability of transportation and city services. Future mobility platforms will be designed not only to connect devices but also to ensure that systems work smoothly across different cities, countries, and changing network conditions.

To achieve this, smart cities will need connectivity systems that are flexible, secure, and easy to manage. Important features will include strong security measures, programmable network controls through APIs, real-time monitoring, diagnostic tools, and automatic switching between multiple network providers.

In the future, mobility teams will choose connectivity solutions that can meet the growing needs of smart cities and support future innovations. Smart cities of tomorrow will not only have intelligent vehicles but also a connected ecosystem where people, services, and infrastructure work together seamlessly.

AI Based Crime Scene Reconstruction



Samiksha Nayyar

Forensic Professional

Central Forensic Science Lab, Bhopal

The field of forensic science is undergoing a transformation with the advent of Artificial Intelligence (AI) and its ability to provide cutting-edge tools for crime scene reconstruction. AI-based crime scene reconstruction is a technique that uses machine learning, computer vision, and data-driven analysis to reconstruct a crime scene based on the evidence provided. Data from photographs, video, witnesses, physical evidence and spatial measurements is used to create accurate digital representations of crime scenes. AI can process large amounts of information quickly, which increases accuracy while reducing the risk of human oversight. The use of 3D modelling, laser scanning, drones, and virtual reality technologies further enhance the reconstruction process, providing realistic and interactive visualisations. AI can simulate different scenarios and help forensic professionals assess possible explanations and draw conclusions that are based on evidence. Furthermore, digitally recreated crime scenes can be used as valuable visual aids in court, helping judges and juries better understand the complex information. In an era where technology is rapidly evolving and transforming the field of forensic science, AI-powered crime scene reconstruction is becoming a powerful tool for improving investigative accuracy, aiding in decision-making, and ultimately making the justice system more efficient.

Redefining Technical Education Through Interactive Learning



Shreya Rai

Symbiosis University of Applied Sciences
Indore

Technical education has long relied on textbooks, static explanations, and theoretical problem-solving. While these methods provide knowledge, they often fail to keep students actively engaged. Today, modern technology is transforming this traditional approach through interactive learning experiences.

Instead of only reading concepts, students can now understand topics through simulations, real-time visualisation, and responsive digital platforms. Subjects such as algorithms, networking, and operating systems become easier to grasp when learners can observe how systems behave and interact dynamically. This shift makes learning more practical, engaging, and easier to retain.

The integration of AI and modern web technologies is further improving accessibility and personalisation in education. Interactive platforms can now adapt to different learning styles while providing a more user-friendly experience across devices.

The future of education is not just digital; it is interactive. By turning passive learning into active participation, modern learning systems have the potential to make technical education more effective, accessible, and meaningful for future generations.

Neuromorphic Power Electronics: Hardware That Learns Like the Brain



Mr. Anugrah Ashish Kumar

Lecturer, Department of Electrical Engineering

GEMS Polytechnic College, Aurangabad, Bihar

The field of forensic science is undergoing a transformation with the advent of Artificial Intelligence (AI) and its ability to provide cutting-edge tools for crime scene reconstruction. AI-based crime scene reconstruction is a technique that uses machine learning, computer vision, and data-driven analysis to reconstruct a crime scene based on the evidence provided. Data from photographs, video, witnesses, physical evidence and spatial measurements is used to create accurate digital representations of crime scenes. AI can process large amounts of information quickly, which increases accuracy while reducing the risk of human oversight. The use of 3D modelling, laser scanning, drones, and virtual reality technologies further enhance the reconstruction process, providing realistic and interactive visualisations. AI can simulate different scenarios and help forensic professionals assess possible explanations and draw conclusions that are based on evidence. Furthermore, digitally recreated crime scenes can be used as valuable visual aids in court, helping judges and juries better understand the complex information. In an era where technology is rapidly evolving and transforming the field of forensic science, AI-powered crime scene reconstruction is becoming a powerful tool for improving investigative accuracy, aiding in decision-making, and ultimately making the justice system more efficient.

Generative AI: Revolutionising Customer Experience in Business



Sunit Singh M

BBA Student

Guru Nanak First Grade College, Bidar

In the rapidly evolving landscape of modern business, the integration of Generative Artificial Intelligence (AI) stands out as a groundbreaking innovation. Unlike traditional analytics that merely interpret past data, Generative AI actively creates tailored solutions, fundamentally transforming how companies interact with their clientele in Modern

Today, businesses are leveraging this technology to offer hyper-personalised customer experiences. E-commerce platforms and service providers employ AI-driven virtual assistants that understand context, nuance, and sentiment, providing real-time, human-like resolutions to inquiries. This innovation goes beyond customer support; it predicts consumer behaviour, allowing marketing teams to curate dynamic, individualised product recommendations at scale. Furthermore, Generative AI streamlines operational efficiency by automating routine administrative workflows, freeing up human capital to focus on strategic, high-value problem-solving. This symbiotic relationship between human ingenuity and artificial intelligence fosters a highly agile business model.

As we move forward, the competitive edge will inevitably belong to enterprises that seamlessly weave Generative AI into their core strategies. This technological leap is not just a simple operational upgrade; it is a definitive paradigm shift redefining the very nature of value creation and customer satisfaction in the global market.

Generative AI in Education: Revolutionising Smart Learning



Dr. Anupa Sinha

HoD, Faculty of IT and Department of CS
Kalinga University

Generative Artificial Intelligence (AI) is transforming education by making learning more interactive, personalised, and accessible. AI tools such as ChatGPT, virtual tutors, and intelligent content generators help students understand concepts efficiently through real-time assistance and adaptive learning methods.

One major advantage of Generative AI is personalised learning. Students can receive customised notes, quizzes, and explanations according to their learning pace. Teachers can also use AI to prepare presentations, assignments, and study materials, reducing manual effort and improving productivity.

Generative AI supports online education and smart classrooms by enabling automated translation, speech recognition, and digital learning support systems. This technology helps students from different regions access quality education without geographical barriers.

However, responsible use of AI is essential. Overdependence on AI-generated content, misinformation, and plagiarism are important challenges that educational institutions must address through ethical guidelines and awareness.

In conclusion, Generative AI is revolutionising smart learning by enhancing creativity, accessibility, and efficiency in education. With responsible implementation, AI has the potential to shape the future of modern education and empower learners worldwide.

The Role of Space Technology in Our Universe



Sunit Singh M

BBA Student

Guru Nanak First Grade College, Bidar

Space Technology is a Branch of Science and Engineering. Space Technology is Used to Design, Build, and Give Shape to Rockets. Space Technology helps us to explore and study the Moon, Planets, Satellites, Stars, Galaxies, and space stations. Through Space Technology We Can Use Mobile Phones, we can use mobile phones to communicate with people in the world and access the internet. Scientists use Space Technology to Monitor Weather Conditions. In modern life, we use GPS for monitoring maps, etc. And it operates With The Help of Space Technology. The Indian Space Research Organisation uses space technology to detect mineral ores and provide information about them. At present, Space Technology is used for many purposes and has become an essential Part of modern life.

There are many applications related to Space Technology. Space Technology helps with internet services, mobile phones, predicts climate change and storms, and helps people find locations using GPS. And it also helps in scientific study, and space technology is also used in chemistry, like analysis or identifying organic molecules and inorganic compounds present on planets, and also space allows scientists to study how crystals, metals, and chemical compounds form without the effect of gravity. Also, organic chemistry experiments in space help researchers research and understand proteins and molecules, which can lead to better drugs. Space technology also provides a unique environment for studying quantum phenomena, helping to develop quantum computers and advanced technologies. Using space technology, we calculate the distance between one planet and another planet, etc.

Space technology plays the most important role in our life, country, and universe. According to SRO and NASA, the main scope of space technology is to improve human life and explore space. It is used for communication, navigation, and disaster management. In the future, space technology will help humans explore the moon, Mars, the Sun, and other planets. Space technology is widely used in the advancement of science, like Aerospace engineering, and is used to communicate with satellites, launch rockets, and communicate with space stations. It is also used to communicate with astronomers, and space technology is also used to attack with missiles.

Zorawar: India's Indigenous Light Tank for Modern Warfare



Priyanshu Singh

Diploma in Mechanical Engineering
Kalinga University

The Zorawar is an indigenous light tank being developed for the Indian Army to enhance combat capabilities in high-altitude regions such as Ladakh. Jointly developed by Larsen & Toubro (L&T) and the Defence Research and Development Organisation (DRDO) under the Make in India initiative, it represents a major advancement in India's defence technology.

Weighing around 25 tonnes, Zorawar is equipped with a 105 mm gun, advanced fire-control systems, and excellent mobility. Compared to the heavier T-90Bishma, which weighs about 46.5 tonnes, Zorawar is lighter, faster, and easier to deploy in mountainous terrain. While the T-90 offers greater armour and firepower, Zorawar excels in agility and rapid response.

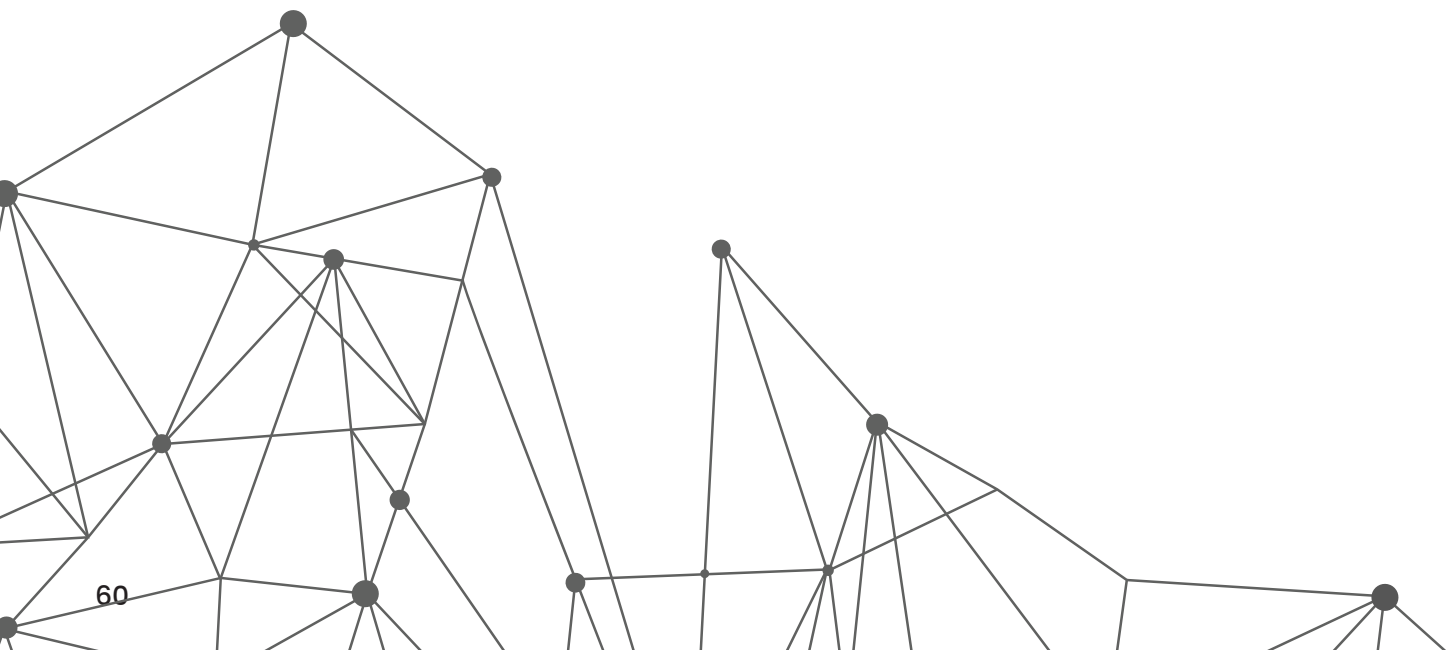
The tank is expected to significantly influence modern warfare, where speed, mobility, and adaptability are crucial. Its lightweight design enables quick deployment, improved manoeuvrability, and reduced logistical challenges. Zorawar will strengthen India's border security, enhance operational readiness, and promote self-reliance in defence manufacturing, making it a vital asset for the future battlefield.

Molecular Dynamics Simulation in Civil Engineering: Recent Innovations



Chandni Patel
Ph.D. Scholar
SAGE University Indore

Molecular dynamics (MD) simulation has emerged as a transformative tool in civil engineering, particularly for understanding cement and concrete behaviour at the nanoscale. Recent research demonstrates how MD methods are being integrated into multiscale studies of concrete composites, enabling engineers to investigate mechanical properties and structural characteristics of hydration products with unprecedented precision.



One notable application involves modelling bitumen and asphalt binder ageing processes. MD simulations now allow researchers to examine how oxidative and thermal ageing affect binder properties at the molecular level, informing the development of more durable pavement materials. Key innovations driving this progress include:

- Machine learning integration — Accelerating simulations and improving force field accuracy
- Multiscale modelling — Bridging atomic-level insights with macroscopic material behaviour
- High-performance computing — Enabling larger, longer simulations of complex cementitious systems

These advances address longstanding challenges in predicting concrete durability, crack propagation, and chemical degradation. As computational power continues to grow, MD simulation is poised to become essential for designing next-generation construction materials with optimised performance and sustainability. By providing unprecedented insights into material behaviour at the atomic scale, molecular dynamics simulation is transforming the way civil engineers understand, design, and optimise construction materials. Its integration with machine learning, multiscale modelling, and high-performance computing is paving the way for more durable, sustainable, and resilient infrastructure systems, ultimately contributing to the development of next-generation civil engineering solutions.

The future of molecular dynamics simulation in civil engineering is highly promising. As computational resources continue to advance and AI-driven simulation techniques mature, MD is expected to become a standard tool for material design and performance optimisation. Emerging research areas include self-healing concrete, smart materials, carbon-neutral cement systems, 3D-printed construction materials, and nano-engineered infrastructure components.

Carbon Footprint Reduction Using Sustainable Construction Materials



Chandni Patel
Ph.D. Scholar
SAGE University Indore

The construction industry contributes approximately 39% of global carbon emissions, necessitating urgent adoption of sustainable building materials. This article explains the carbon reduction potential of alternative construction materials compared to conventional options.

Recent developments in sustainable materials demonstrate significant emission reductions. Cross-laminated timber (CLT) stores carbon while replacing steel and concrete, reducing embodied carbon by up to 75% in mid-rise structures. Geopolymer concrete, utilising industrial waste products like fly ash, achieves 80% lower emissions than Portland cement while maintaining comparable strength characteristics. Recycled steel reduces energy consumption by 74% compared to virgin steel production.

Bio-based materials show particular promise. Hempcrete provides carbon-negative construction through atmospheric CO₂ sequestration during plant growth, while mycelium-based composites offer biodegradable alternatives for insulation and structural components. Bamboo, with its rapid growth cycle and tensile strength exceeding steel, presents opportunities for structural applications in seismically active regions.

Artificial Intelligence (AI) and Machine Learning (ML) are revolutionising sustainable concrete design. Predictive algorithms help optimise material proportions while minimising embodied carbon. AI-assisted design reduces the need for extensive laboratory testing, saving both resources and energy. Implementation challenges include higher initial costs, limited supply chains, and regulatory barriers. However, lifecycle assessments reveal cost parity within 7–10 years through reduced operational emissions. Policy interventions, including carbon pricing and green building certifications, accelerate adoption rates.

Future research should focus on optimising material combinations, developing standardised testing protocols, and quantifying long-term carbon sequestration potential in bio-based materials. Recent innovations in carbon footprint reduction are reshaping the future of concrete construction. The integration of low-carbon binders, geopolymers, carbon capture systems, nano-materials, molecular dynamics simulation, artificial intelligence, and smart construction practices offers substantial opportunities for reducing greenhouse gas emissions. These advancements not only improve sustainability but also enhance the durability, performance, and economic viability of modern infrastructure. As research continues to evolve, the construction industry is moving closer to achieving net-zero and carbon-neutral concrete systems that support global climate goals and sustainable development.

Enhancing Power Quality Through Artificial Intelligence and Machine Learning



Dr. Arsh Khan

Asst. Controller of Examinations, Exam Cell
Assistant Professor, Department of
Electrical Engineering
Kalinga University

Power quality has emerged as a significant concern in modern electrical power systems due to the widespread integration of renewable energy sources, power electronic converters, and sensitive electronic equipment. Issues such as harmonics, voltage sags, swells, flicker, and transient disturbances can adversely affect system reliability and operational efficiency.

Artificial Intelligence (AI) and Machine Learning (ML) are revolutionising power quality monitoring and improvement by enabling intelligent analysis of large volumes of real-time data. Advanced ML algorithms, including Artificial Neural Networks (ANN), Support Vector Machines (SVM), and Deep Learning models, can accurately detect, classify, and predict power quality disturbances. These techniques facilitate faster fault diagnosis and support proactive maintenance strategies.

AI-based control systems also enhance the performance of mitigation devices such as Active Power Filters (APFs), STATCOMs, and Unified Power Quality Conditioners (UPQCs). By continuously adapting to changing system conditions, these intelligent controllers effectively reduce harmonics and improve voltage regulation.

The integration of AI and ML with smart grid technologies is paving the way for self-healing and adaptive power systems. As electrical networks become increasingly complex, intelligent solutions will play a crucial role in ensuring superior power quality, reliability, and energy efficiency.

Women's Ways and Writing in English Literature and Its Evolution Over Time



Mr. Snehashish Sarkar

Assistant Professor

Maharaja Agrasen International College,
Raipur

Women's writing in English literature has undergone a remarkable transformation from the medieval period to the contemporary era, reflecting changing social, cultural, and political realities. Early women writers such as Julian of Norwich and Margery Kempe expressed their experiences primarily through religious and autobiographical narratives, often constrained by patriarchal norms. The eighteenth century witnessed the emergence of women novelists like Fanny Burney and Jane Austen, who explored domestic life, gender expectations, and social relationships with subtle critique. During the nineteenth century, writers such as Charlotte Brontë, Emily Brontë, Elizabeth Gaskell, and George Eliot expanded literary themes by portraying women's inner lives, education, and struggles for autonomy. The twentieth century marked a significant shift with Virginia Woolf's call for intellectual freedom and a "room of one's own," while writers like Doris Lessing, Toni Morrison, and Angela Carter challenged traditional narratives and addressed issues of identity, race, class, and sexuality. Contemporary women writers, including Zadie Smith, Hilary Mantel, and Bernardine Evaristo, employ diverse narrative techniques and global perspectives to examine intersectional experiences. Over time, women's writing has evolved from marginal and restricted expression to a powerful literary force that reshapes canon formation, questions social inequalities, and enriches English literature through diverse voices, innovative forms, and critical engagement with human experience.

Smart Agriculture and IoT: Revolutionising Farming Through Data and Connectivity



Dr. Amita Gautam
Research Assistant
Kalinga University

Agriculture is the backbone of many economies, yet farmers today face significant challenges, including climate change, water scarcity, rising production costs, and increasing food demand. To address these issues, Smart Agriculture powered by the Internet of Things (IoT) is transforming traditional farming into a more efficient, data-driven, and sustainable practice.

IoT refers to a network of interconnected devices that collect and exchange data in real time. In agriculture, sensors placed in fields monitor soil moisture, temperature, humidity, nutrient levels, and weather conditions. Farmers can access this information through mobile applications, enabling them to make informed decisions regarding irrigation, fertilisation, and crop protection. One of the most impactful applications of IoT is smart irrigation. According to Lorenzo and Abenavoli et al. (2004), precision irrigation technologies can significantly improve water-use efficiency by delivering water according to crop requirements. More recently, a 2026 study published in *Sustainable Computing: Informatics and Systems* reported that IoT-based irrigation systems achieved up to 45% water savings while improving crop management efficiency. This is particularly important because the Food and Agriculture Organisation (FAO) reports

that agriculture accounts for nearly 70% of global freshwater consumption. By supplying water only when crops need it, smart irrigation reduces wastage and conserves valuable resources.

Several successful implementations demonstrate the potential of IoT in agriculture. In India, the ICAR–National Research Centre for Banana (NRCB) has introduced sensor-based irrigation and smartphone-enabled monitoring systems that help banana farmers optimise water use and identify diseases at an early stage. Similarly, farmers in states such as Punjab and Haryana are increasingly adopting drone technology to monitor crop health, detect pest infestations, and assess nutrient deficiencies before visible damage occurs.

Research by Wolfert et al. (2017) highlights that smart farming technologies improve decision-making by utilising large-scale agricultural data. These systems enable farmers to predict crop diseases, optimise fertiliser application, and improve overall productivity. Furthermore, IoT-based monitoring reduces unnecessary use of pesticides and fertilisers, making farming more environmentally sustainable. As the global population continues to grow, food security will become an increasingly critical challenge. Smart Agriculture and IoT provide a promising solution by combining traditional farming knowledge with modern technology. Through real-time monitoring, efficient resource utilisation, and data-driven decision-making, these innovations are helping build a more productive, sustainable, and resilient agricultural future.

The Age of Agentic AI: Innovation in 2026



Mrs. Roohee Khan
Assistant Professor
Kalinga University

The year 2026 is shaping up to be a defining moment in technological history, with breakthroughs spanning artificial intelligence, robotics, biotechnology, and clean energy.

The most transformative shift is happening in AI. The biggest change is the move from single-purpose chatbots to **multiagent systems**—autonomous AI capable of executing complex business processes with minimal human input. Enterprises are rapidly adapting, with 80% of leading companies embracing AI-driven innovation tools, fundamentally transforming product development and market expansion.

In **robotics**, the numbers are staggering. Global shipments of humanoid robots are projected to grow by over 700% in 2026, as Physical AI brings intelligence to logistics, manufacturing, and autonomous systems that can adapt dynamically to their environments.

Biotechnology is entering bold new territory. In 2024, baby KJ became the first person to receive a personalised “base editing” treatment that corrected a genetic mutation responsible for his rare disorder—a breakthrough now inspiring a new wave of gene therapies.

Meanwhile, sodium-ion batteries are rolling off production lines and commercial space stations are scheduling their first launches, signalling that 2026 is not just a year of ideas—it’s the year these technologies become irreversible realities.

The future isn’t coming. It’s already here.

AI-Native Security Platforms: The Biggest Cybersecurity Innovation



Ms. Anjali Kadao

Assistant Professor, Dept. of CS&IT
Kalinga University

The most transformative innovation in cybersecurity today is the emergence of AI-native platforms—security systems built from the ground up with AI embedded in every layer, rather than traditional tools retrofitted with AI features. Unlike conventional systems, AI-native platforms learn continuously, automate decision-making, and strengthen threat detection and response at machine speed.

This innovation addresses a critical shift: cybercriminals now leverage Generative AI and Agentic AI to launch sophisticated, automated attacks at unprecedented scale. Attackers conduct roughly 36,000 malicious scans per second, making human security teams unable to track all breached surfaces. AI-native systems counter this by analysing terabytes of network traffic and user behaviour in real-time, surfacing anomalies that rule-based systems miss.

Additional breakthrough innovations include quantum-resistant algorithms designed to protect sensitive data against future quantum decryption capabilities, and confidential computing essential for protecting data moving across clouds and edge devices. Companies are shifting from reactive response to pre-emptive defence, using AI and autonomous agents to neutralise threats before they materialise.

As AI escalates attack speed and scope, defenders must harness AI agents to supercharge security operations—creating an AI-driven battlefield where machine-speed defence is no longer optional but essential.

A New Revolution in the Field of Education



Mrs . Hema Sultanpure

Assistant Professor

Guru Nanak First Grade College, Bidar

Artificial Intelligence (AI)

The present age is an era of science and technology. In this modern world, Artificial Intelligence (AI) has brought remarkable changes to every sphere of human life. Particularly in the field of education, AI has emerged as a new revolution. This technology is playing a significant role in enhancing students' thinking abilities, understanding, and creativity.

Through AI, students receive learning materials according to their interests, abilities, and needs. As a result, the learning process becomes simpler, more engaging, and more effective. Students can find immediate solutions to their queries and understand complex topics with greater ease. Consequently, their confidence and enthusiasm increase, enabling them to perform at their highest potential.

Today, many challenges and complexities in education are becoming easier to overcome with the help of AI. It serves as a reliable companion and guide for students. Just as Lord Krishna guided Arjuna on the right path in the Mahabharata, AI is helping learners gain knowledge, information, and direction, leading them toward progress and success.

AI is not merely a tool for acquiring knowledge; it appears to be a magical wand that brightens the future of students. It connects the younger generation with innovation, creativity, and modern skills, preparing them to compete successfully at the global level.

In conclusion, Artificial Intelligence has initiated a new revolution in the field of education. By improving students' quality of learning, subject understanding, and overall competence, it is guiding them toward a brighter future. Its contribution will continue to play a vital role in making education more advanced, effective, and inclusive in the years to come.

Introduction to DLSS



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D LSS (Deep Learning Super Sampling) is a real-time deep learning and upscaling technology developed by NVIDIA. It is used in modern games for improving the real-time game experience. In this, the game renders in lower resolution (720p, 1080p, 1440p) but is upscaled and reconstructed into high-resolution images (4K) by using AI models. It gives higher frame rates and enhanced image quality with ray tracing. But it only comes in NVIDIA's RTX series GPUs.

The concept of DLSS starts with the GeForce RTX 20 series GPUs. In September 2018, NVIDIA launched the GeForce RTX 20 series and added the DLSS word as a feature. At that time, it came in fewer Games like Battlefield V, Metro Exodus, etc., because the algorithms had to be trained on each game on which it applies, but the results were not as good as expected. In April 2020, NVIDIA released the improved version of DLSS, which is named DLSS 2.0. It is available with a few games like Control, Wolfenstein: Youngblood, etc., and later it comes with more new games and game engines like Unreal Engine and Unity. Over time, NVIDIA releases DLSS 3.0, DLSS 3.5, DLSS 4.0, etc. At present, the latest version of DLSS is DLSS 4.5. It provides dynamic multi-frame generation, which can generate frames up to 6x the amount of GeForce RTX 50 series GPUs.

Digital Transformation: The Cornerstone of Modern Business Success



Renuka Hippalgaonkar

Assistant Professor

Guru Nanak First Grade College, Bidar

Digital transformation is redefining the way businesses operate, compete, and create value in the modern economy. It involves the integration of advanced technologies such as Artificial Intelligence (AI), Cloud Computing, Big Data Analytics, and the Internet of Things (IoT) into business processes to improve efficiency and innovation.

Organisations are increasingly adopting digital solutions to automate routine operations, enhance customer engagement, and support data-driven decision-making. Technologies such as Customer Relationship Management (CRM) systems, digital payment platforms, and e-commerce applications have significantly improved business performance and customer experience. Moreover, data analytics enables companies to identify market trends, understand consumer behaviour, and develop effective business strategies.

Digital transformation also promotes organisational agility by facilitating remote collaboration, faster communication, and continuous innovation. Businesses that embrace digital technologies can quickly adapt to changing market conditions and maintain a competitive advantage.

In conclusion, digital transformation is no longer merely a technological advancement but a strategic necessity for sustainable growth. By leveraging digital technologies, organisations can enhance productivity, improve customer satisfaction, and achieve long-term success in the rapidly evolving digital landscape.

Me Hours: Prioritising Self-Care



Dr. Shamala V. Datta
Principal
GNFGC

In today's fast-paced world, taking time for yourself—Me Hours—is essential. These are moments dedicated solely to relaxation and self-care, helping to reduce stress, boost focus, and improve overall well-being. Simple activities like reading, walking, or meditating can make a big difference. To incorporate Me Hours, start small, schedule them as non-negotiable, and experiment with different activities. Prioritising Me Hours not only enhances productivity but also strengthens self-awareness and relationships. In a world that values constant hustle, remember that self-care is just as important. Make time for yourself—you deserve it!

Organoid Intelligence: When Living Brain Cells Become Computers



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Organoid Intelligence is an emerging field where scientists use lab-grown brain cells to explore a new form of computing. Instead of depending only on silicon chips, researchers grow tiny clusters of neurons called brain organoids and connect them to electronic systems. These living cells can receive signals, gradually adapt and respond to them much like the human brain learns from experience. The next revolution in computing may not be manufactured, but grown.

This innovation matters because modern artificial intelligence requires a huge amount of energy and powerful hardware. Biological neurons are naturally efficient; the human brain performs complex tasks using far less energy than many advanced computers. If scientists can understand and control organoid-based systems, they may help create low-power and adaptive computing models for the future.

Organoid Intelligence can also support medical research by helping scientists study brain diseases, test medicines, and understand learning and memory more deeply. However, it also raises ethical questions. Since these systems use living neural cells, researchers must ensure they are not conscious or capable of suffering.

Today, organoid computers are only beginning. Tomorrow, they may remind us that intelligence is not limited to metal and code, but can also grow from life itself.

Energy Harvesting: Power Hidden in Motion



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Modern industries use sensors to continuously monitor machines and prevent unexpected failures. These monitoring systems improve safety, productivity, and maintenance planning. However, most of them depend on batteries, which require regular replacement and maintenance. As industries become more automated, managing a large number of battery-powered sensors can become costly, time-consuming, and inefficient.

Energy harvesting offers a smarter alternative. Instead of relying only on batteries, small amounts of energy available in the surrounding environment can be converted into useful electrical power. Industrial machines naturally generate vibrations during operation, and this energy can be used to power low-energy monitoring devices.

One promising idea is a self-powered watcher system. A compact module harvests vibration energy and stores it in a supercapacitor. It continuously monitors machine conditions while consuming minimal power. When unusual vibrations are detected, the system can activate detailed monitoring and send alerts when required.

Such innovations can support sustainable Industrial IoT applications, reduce maintenance efforts, and improve efficiency.

Sometimes, the energy needed to protect a machine is already hidden within the machine itself.

AI in Education: Benefits, Risks and Strategies for Equitable Adoption



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IQAC Coordinator & Assistant
Professor, Department of Physics,
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Al is reshaping education by delivering personalised learning, automating grading, and powering adaptive tutoring systems that tailor instruction to each student's space. These tools improved access during the pandemic and continue to support remote and hybrid learning for learners, parents, and educators. Benefits include increased accessibility for students with disabilities, creative expression through generative AI, and time savings for teachers on administrative tasks.

However, rapid AI adoption carries significant risks. Privacy concerns arise as platforms collect sensitive student data, while ethical issues include potential misinformation, overreliance on algorithms, and exposure to biased or harmful content. Inherent biases in training data can perpetuate inequities, and "techno-ableism" may marginalise students who need human support. Socio-economic disparities in device access, connectivity, and high-quality AI tools threaten to widen the digital divide, especially between underserved and well-resourced schools.

Equitable adoption requires deliberate strategies. Policymakers should establish ethical frameworks that prioritise inclusion, ensure transparent AI usage guidelines, and protect student privacy. Schools must invest in comprehensive, ongoing teacher training so educators can confidently integrate AI while maintaining educational integrity amid commercial pressures. Curricula should include AI literacy—teaching students how algorithms work, how to recognise bias, and how to use tools ethically without cheating. Finally, governments and districts should monitor equity gaps, subsidise devices and connectivity for low-income students, and promote culturally responsive AI systems that reflect diverse languages and contexts. By balancing AI's transformative benefits with rigorous safeguards, education can become more inclusive, adaptive and fair for all learners.

AI-Driven Kubernetes: Revolutionising Cloud Infrastructure



Fayaz Basha Shaik
Software Engineer
Cisco

Artificial Intelligence (AI) is transforming Kubernetes into a smarter and more efficient platform for managing cloud-native applications. Traditional Kubernetes automates deployment, scaling, and management of containers, but AI-powered enhancements are taking automation to the next level.

Modern AI-driven Kubernetes platforms can predict resource requirements, automatically optimise workloads, and detect anomalies before they impact applications. By analysing real-time metrics, machine learning models enable predictive scaling, reducing infrastructure costs while maintaining high performance.

Another significant innovation is the use of AI agents for cluster management. These agents can diagnose issues, recommend fixes, and even execute remediation actions without human intervention. Organisations are increasingly adopting AI-assisted operations (AIOps) to improve reliability and reduce downtime in large-scale cloud environments.

The integration of Generative AI with Kubernetes further simplifies infrastructure management by allowing administrators to interact with clusters using natural language commands. As cloud computing evolves, AI-driven Kubernetes is emerging as a key innovation for intelligent, self-managing, and resilient digital infrastructure.

Beyond AI Assistants: The Rise of Collaborative Agentic Platforms



Reyaz Basha Shaik
Lead Software Engineer
VISA

Today, most AI assistants work independently. They answer questions, summarise information, or perform a single task. However, enterprise problems are rarely that simple. Investigating a production issue, for example, often requires data from monitoring tools, logs, incident systems, deployment history, documentation, and cloud infrastructure. No single AI agent has the complete picture.

A more effective approach is to let multiple specialised AI agents collaborate, much like a team of engineers working together. Using the Model Context Protocol (MCP), enterprise tools can be connected and exposed as intelligent agents, each with expertise in a specific domain. A central orchestrator understands the user's request, delegates work to the right agents, and combines their findings into a single response.

To improve trust, every conclusion is independently verified before it reaches the user. Cross-system correlation further connects insights from different enterprise platforms, helping uncover patterns that would otherwise remain hidden.

As AI continues to evolve, the next breakthrough may not come from building smarter individual assistants, but from enabling teams of intelligent agents to collaborate, validate each other's work, and solve complex enterprise problems together.

Disruptive Innovation



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Swarm Robotics



Nandini Siddayya Chickmath

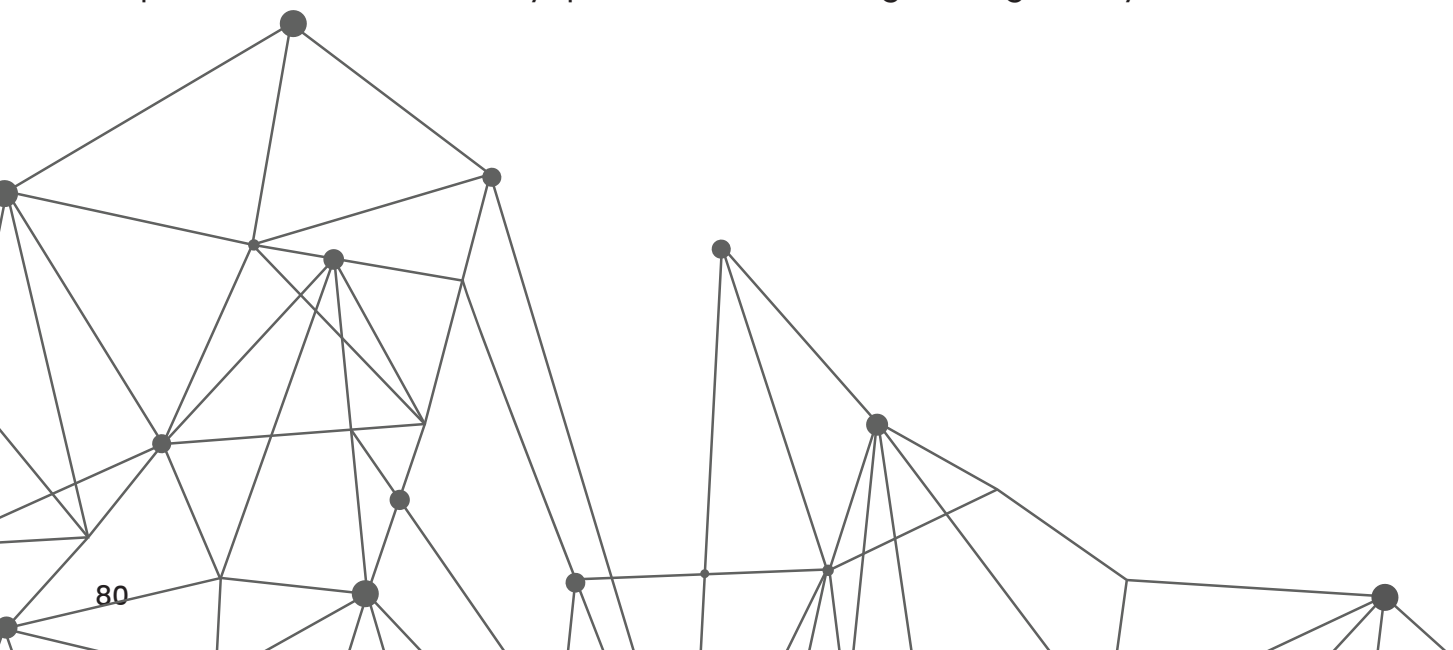
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Swarm robotics is a contemporary branch of robotics that emphasises the collaboration of several robots to accomplish a shared goal. The idea is based on how natural swarms, such as fish, ants, bees, and birds, cooperate well without a central leader. Each robot in a swarm robotics system interacts with other robots in the group while operating autonomously and according to basic commands.

These robots can carry out activities that might be challenging for a single robot to do thanks to their collective behaviour. The system can adjust to changing circumstances and carry on even if certain robots stop operating since the robots communicate and collaborate with one another. Swarm robotics is very robust and dependable because of this feature.

There are several uses for swarm robotics in various industries. It can be used in industrial warehouses to handle materials, in agriculture to monitor crops, in environmental research to gather data, and in disaster management to find survivors. Its application in space missions and military operations is also being investigated by researchers.



Personalised Learning Systems Driven by AI: The Future of Education



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IPS Academy, Indore

By offering personalised learning experiences based on each student's requirements, abilities, and learning style, artificial intelligence (AI) is transforming education. AI-driven learning systems evaluate student performance, pinpoint areas of strength and weakness, and suggest activities and materials that are specifically tailored to each student. By providing intelligent tutoring, adaptive tests, and real-time feedback, these technologies improve the effectiveness and engagement of learning. AI fosters learner-centred education, increases accessibility, and improves academic results by assisting both teachers and students. AI-powered personalised learning is anticipated to have a significant impact on how education develops in the future by making it more adaptable, inclusive, and effective.

Additionally, utilising learning analytics and data-driven insights AI-powered educational systems assist teachers in tracking student progress. Early detection of learning gaps allows teachers to give students who require more help focused support. Teachers are able to focus more on mentoring and skill development thanks to features like virtual tutors, automatic grading, and interactive learning environments. Because of this, AI not only improves educational quality but also provides students with the critical thinking and digital skills necessary for success in the twenty-first century.

Importance of Digital Learning in Modern Education



Mr. Hemant Sahu
Office Assistant
Kalinga University

Digital learning has become an essential part of modern education. With the rapid advancement of technology, students and teachers now have access to a wide range of online resources that make learning more effective, engaging, and accessible. Digital learning includes the use of computers, smartphones, educational apps, online courses, and virtual classrooms to support teaching and learning.

One of the major benefits of digital learning is flexibility. Students can learn at their own pace and access study materials anytime and anywhere. This is especially helpful for learners who may have different learning styles or schedules. Digital tools also provide interactive content such as videos, quizzes, and simulations, which improve understanding and retention of knowledge.

Another important advantage is increased access to education. Students from remote areas can connect with quality educational resources and expert instructors through the internet. Digital learning also helps develop important skills such as critical thinking, problem-solving, communication, and digital literacy, which are essential in today's world.

Furthermore, digital learning encourages collaboration through online discussions, group projects, and virtual meetings. It prepares students for a technology-driven future and supports lifelong learning. Therefore, digital learning plays a vital role in improving the quality, accessibility, and effectiveness of modern education.

Importance of Renewable Energy



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Renewable energy plays a vital role in creating a sustainable and environmentally friendly future. It is energy generated from natural resources such as sunlight, wind, water, and biomass, which are naturally replenished and do not run out over time. Unlike fossil fuels, renewable energy sources produce little to no harmful emissions, making them a cleaner alternative for power generation.

One of the most important benefits of renewable energy is its ability to reduce air pollution and combat climate change. Burning coal, oil, and natural gas releases large amounts of greenhouse gases into the atmosphere, contributing to global warming. Renewable energy helps lower these emissions and protect the environment.

Renewable energy also improves energy security by reducing dependence on imported fuels. Countries can use their own natural resources to generate electricity, leading to greater economic stability and job creation. The renewable energy sector creates employment opportunities in manufacturing, installation, maintenance, and research.

Furthermore, renewable energy sources are becoming more affordable due to technological advancements. Solar panels and wind turbines are now widely used in homes, businesses, and industries.

In conclusion, renewable energy is essential for protecting the environment, supporting economic growth, and ensuring a reliable energy supply for future generations. Investing in renewable energy today will help build a cleaner, healthier, and more sustainable world.

We Used to Hide It, Now We Hire for It



Shreya Bijur
Freelancer

The biggest innovation in psychology isn't an app or a breakthrough theory. *It's a conversation*—one we're finally willing to have out loud.

The way psychology has woven itself into our daily lives is commendable. People have heightened perceptions about mental health now and actively work toward their well-being.

It's praiseworthy that schools have started providing counsellors for kids—creating a safe path to express their feelings, inhibitions, or anything that troubles them. Even pre-primary teachers now help identify issues toddlers face. They inform parents promptly and consult with counsellors to create plans that support the child's future.

Not only schools, but offices today are also rethinking what “*employee wellness*” really means. Mental health days, in-house counsellors, and manager trained to spot burnout are becoming standard. Companies are realising that productivity isn't about pushing harder—it's about people feeling safe enough to do their best work.

Whether it's a 5-year-old with separation anxiety or a 35-year-old facing quiet burnout, the message is the same: *mental health isn't a luxury anymore*. It's infrastructure.

The real innovation here isn't digital. It's that we've finally made space for conversations we should have had all along.

Prompt System and Personas



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Artificial Intelligence has transformed the way people search for information, write content, solve problems, and automate tasks. The quality of AI-generated responses depends on how users communicate with it. This is where prompt systems and personas become important.

A system prompt is an instruction set that defines the AI's behaviour, persona, and constraints. It operates at a higher priority level than user messages and shapes all subsequent interactions.

A persona is the AI's simulated identity, including its communication style, personality traits, and perspective. Personas create interactions.

Prompt systems and personas enhance AI by improving the accuracy and clarity of responses. They save time, increase productivity, support personalised learning, and improve communication across fields such as education, business, and software development.

Prompt systems and personas have applications in education, software development, research, customer support, and content creation. They improve communication and enable users to obtain relevant information efficiently.

In conclusion, Prompt systems and personas are essential for making AI interactions more accurate and effective. They help users communicate their requirements, enabling AI to deliver high-quality results.

Cloud Computing in the Field of Electrical Engineering



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Introduction: In the era of digital transformation, cloud computing has emerged as a game-changer across various industries. Electrical engineering, traditionally rooted in physical systems and hardware, is now rapidly embracing cloud technologies to enhance design, simulation, monitoring, and maintenance processes. Cloud computing enables on-demand access to powerful computing resources, vast storage, and collaborative platforms that can significantly improve efficiency and innovation in electrical engineering applications.

What is Cloud Computing?

Cloud computing refers to the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the internet (the cloud) to offer faster innovation, flexible resources, and economies of scale. Instead of owning their own computing infrastructure or data centres, organisations can rent access to anything from application to storage from a cloud service provider.

Cloud models include:

- Infrastructure as a Service (IaaS) – Renting infrastructure such as virtual machines or storage.
- Platform as a Service (PaaS) – Providing platforms to develop, run, and manage applications.
- Software as a Service (SaaS) – Delivering software applications over the internet

Cloud Service Models

Cloud computing is revolutionising the field of electrical engineering by offering scalable computing resources, advanced analytics, and collaborative tools. From power system management to renewable energy optimisation and simulation, cloud technologies are enhancing the capabilities and scope of engineers. As the world moves towards smarter infrastructure, the role of cloud computing in electrical engineering will only continue to expand, opening up new opportunities for innovation and efficiency.

Federated Learning: Privacy-Preserving AI



Ragland Royal

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In traditional artificial intelligence, training robust models requires gathering vast amounts of user data into a centralised cloud repository. This practice, however, introduces severe risks of data breaches, unauthorised access, and violations of privacy regulations like GDPR (General Data Protection Regulation).

Federated Learning (FL) offers a revolutionary breakthrough by bringing the AI model to the data, rather than the data to the model.

Instead of aggregating raw, sensitive information, FL distributes a base model across millions of decentralised edge devices or localised organisational servers. Each device trains the model locally using its own data. Once the local training is complete, devices send only their encrypted model updates—such as learned weights and gradients—back to a central server. The raw data never leaves its original device.

The central server securely aggregates these updates to refine a global model, which is then sent back to the devices for the next round of learning. By integrating additional privacy techniques like differential privacy and homomorphic encryption, Federated Learning allows highly regulated sectors—such as healthcare, finance, and smart technology—to build powerful, collaborative AI systems while guaranteeing absolute data privacy.

Floatovoltaics (Floating Solar Power Plants): An Emerging Trend in Renewable Energy



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Floatovoltaics, commonly known as Floating Solar Power Plants, are an innovative and emerging trend in renewable energy technology. These systems consist of solar photovoltaic panels mounted on floating platforms installed over water bodies such as lakes, reservoirs, ponds, and dams. Unlike conventional ground-mounted solar plants, floating solar systems utilise unused water surfaces, making them an efficient solution in areas with limited land availability.

One of the key advantages of floating solar power plants is their ability to generate clean energy without occupying valuable land resources. The water beneath the solar panels provides a cooling effect, which improves panel efficiency and increases electricity generation. Additionally, these systems help reduce water evaporation and inhibit algae growth, contributing to better water conservation and quality.

Floating solar plants support sustainable development by reducing dependence on fossil fuels and lowering carbon emissions. They are especially beneficial in densely populated regions where land is scarce and expensive. Governments and energy companies worldwide are increasingly investing in Floatovoltaics projects to meet growing energy demands while promoting environmental sustainability.

As renewable energy adoption continues to grow, floating solar power plants are expected to play a significant role in the future energy landscape. Their environmental, economic, and operational benefits make them a promising technology for achieving a cleaner and more sustainable future.

Solid-State Batteries: An Emerging Trend in Energy Storage



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Solid-state batteries are one of the most promising emerging technologies in the electrical and electronics field. Unlike conventional lithium-ion batteries, which use liquid electrolytes, solid-state batteries utilise solid electrolyte to transfer ions between the anode and cathode. This innovative design significantly improves battery safety by reducing the risks of leakage, overheating, and fire.

A major advantage of solid-state batteries is their high energy density. They can store more energy in a smaller and lighter package, making them highly suitable for electric vehicles (EVs), portable electronic devices, and renewable energy storage systems. Additionally, these batteries offer faster charging times, longer operational life, and improved performance over a wider range of temperatures.

Researchers and leading technology companies are investing heavily in the development of solid-state battery technology. Although challenges such as high manufacturing costs and large-scale production limitations still exist, continuous advancements are making commercial adoption increasingly feasible.

The widespread implementation of solid-state batteries has the potential to transform the energy storage sector by enabling longer-range electric vehicles, more reliable renewable energy systems, and safer consumer electronics. As a result, solid-state batteries are recognised as a key emerging trend that supports the transition toward cleaner, more efficient, and sustainable energy solutions.

Beyond Automation: The Human Touch in a Robotic World



Dr. Mamta Verma

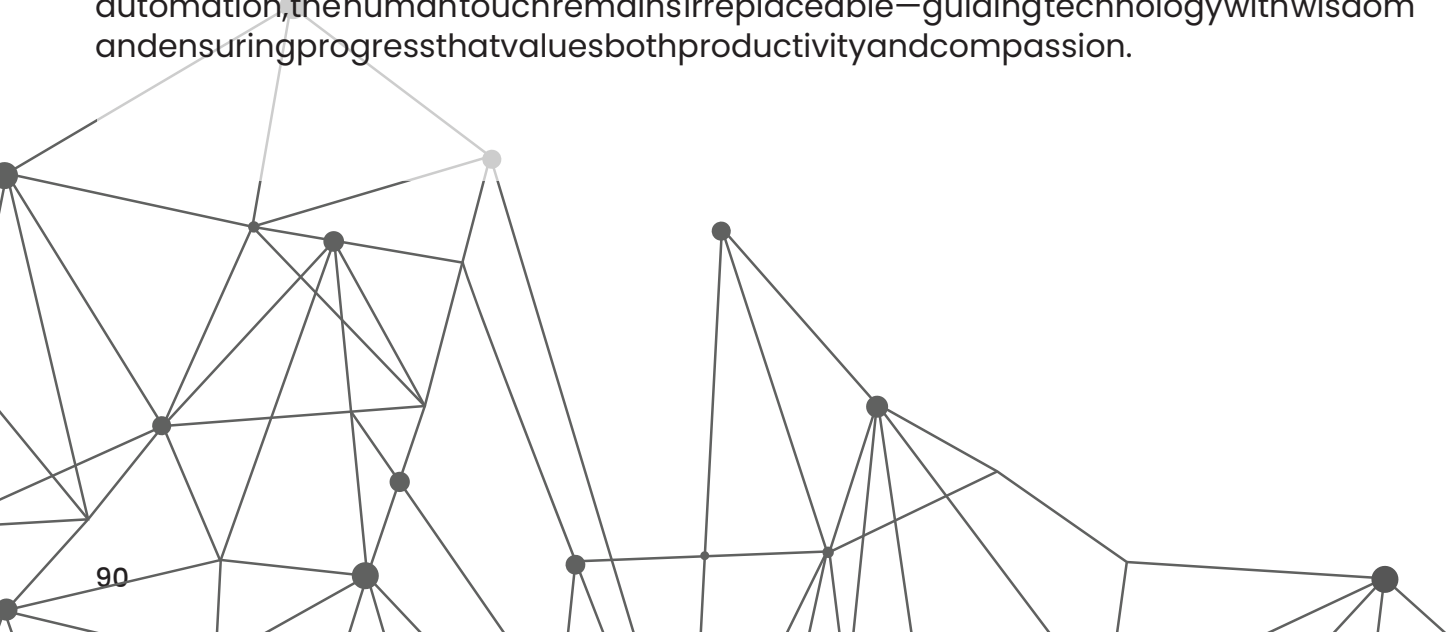
Self-employed

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In today's rapidly evolving technological landscape, robots have become indispensable partners in industries ranging from manufacturing to healthcare. Their precision, speed, and ability to handle repetitive tasks make them ideal for streamlining operations and reducing human error. Yet, despite these remarkable capabilities, robots remain limited by their programming. They cannot replicate the depth of human creativity, empathy, or moral judgment.

Humans bring qualities that machines cannot imitate: imagination, compassion, and the ability to adapt to complex social contexts. A robot may calculate the most efficient solution, but it cannot understand the emotional needs of a patient, the cultural nuances of a community, or the ethical dilemmas of leadership. These uniquely human traits ensure that technology serves society rather than replacing its essence.

The future lies not in choosing between humans and robots, but in fostering collaboration. Robots can manage mechanical precision, while humans provide vision and empathy. Together, they can create a balanced world where efficiency meets humanity. Beyond automation, the human touch remains irreplaceable—guiding technology with wisdom and ensuring progress that values both productivity and compassion.



Multi Micro Grid: A Modern Approach To Smart Energy Management



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Multi-Microgrid Systems are one of the most promising innovations in Electrical and Electronics Engineering. A microgrid is a localised power network capable of generating, distributing, and managing electricity independently or in coordination with the main utility grid. When multiple microgrids are interconnected and operated together, they form a Multi-Microgrid System, improving the overall efficiency and reliability of power delivery.

A key advantage of Multi-Microgrid Systems is enhanced energy security and reliability. If one microgrid experiences a power shortage, equipment failure, or sudden increase in demand, neighbouring microgrids can provide support by sharing available energy resources. This ensures a continuous and stable electricity supply while increasing the resilience of the power network.

These systems are highly effective in integrating renewable energy sources such as solar photovoltaic panels, wind turbines, and battery energy storage systems. Through advanced communication networks, automation, and intelligent control strategies, Multi-Microgrid Systems enable real-time monitoring, energy sharing, and optimal power management. They also reduce transmission losses and improve overall energy efficiency.

Multi-Microgrid Systems are increasingly being adopted in smart cities, industrial parks, university campuses, and remote communities. As global energy demand continues to grow, this technology provides a flexible, sustainable, and cost-effective solution for future power systems. Their ability to support clean energy integration makes them a significant emerging trend.

Wellness Revolution: Redefining Health in the 21st Century



Durgesh Singh Lodhi

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The 21st century has ushered in a profound transformation in how we understand health and fitness. No longer confined to the absence of disease, wellness today is viewed as a holistic balance of physical strength, mental clarity, emotional resilience, and social connection. This shift marks the beginning of a true wellness revolution, where individuals and communities are redefining what it means to live well.

Advances in technology have played a crucial role in this change. Wearable devices, fitness apps, and telemedicine platforms empower people to monitor their health in real time, making prevention and self-care more accessible than ever. At the same time, modern science emphasizes the importance of nutrition, mindfulness, and sustainable lifestyle choices. The focus has moved beyond short-term fitness goals to long-term well-being, encouraging habits that nurture both body and mind.

Equally important is the growing recognition of mental health as a cornerstone of wellness. Stress management, meditation, and emotional awareness are now seen as vital practices, complementing exercise and diet. This integrated approach ensures that health is not just about longevity, but about living with energy, purpose, and joy.

The wellness revolution is redefining health for our era: a dynamic blend of technology, science, and human values. It reminds us that true fitness lies not only in strength and endurance, but in harmony between mind, body, and spirit.

AI-Based Smart Charging Systems: An Emerging Trend in Electric Vehicle Technology



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Artificial Intelligence (AI)-based Smart Charging Systems are revolutionising the way electric vehicles (EVs) are recharged and managed. As the number of EVs on the road continues to increase, efficient charging solutions are becoming essential to reduce energy costs, improve grid stability, and enhance user convenience. AI-powered smart charging systems utilise advanced algorithms, real-time data analysis, and machine learning techniques to optimise the charging process and ensure efficient energy utilisation.

These systems analyse various factors, including electricity demand, battery state of charge, charging schedules, energy prices, and grid conditions, to determine the most effective charging strategy. By scheduling charging during off-peak periods or when renewable energy is readily available, AI helps lower electricity costs and reduces pressure on the power grid.

A major benefit of AI-based smart charging is its ability to balance energy demand and supply automatically. It prevents overloading of charging stations, enhances the integration of renewable energy sources such as solar and wind power, and supports grid reliability. Furthermore, AI can monitor battery health, improve charging efficiency, and extend battery life through intelligent charging control.

Governments, industries, and utility providers are increasingly investing in smart charging infrastructure. As EV adoption continues to grow, AI-based Smart Charging Systems will play a crucial role in developing sustainable, reliable, and environmentally friendly transportation systems worldwide.

Wide Bandgap Semiconductor Devices (SiC and GaN): Revolutionising Modern Power Electronics and Electric Drives



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Wide Bandgap (WBG) semiconductor devices, particularly Silicon Carbide (SiC) and Gallium Nitride (GaN), are emerging as transformative technologies in the field of Power Electronics and Electric Drives. Unlike conventional silicon-based devices, SiC and GaN possess superior electrical and thermal properties, enabling higher switching frequencies, lower power losses, and improved efficiency.

SiC devices are widely used in high-power applications such as electric vehicles, renewable energy systems, industrial motor drives, and smart grids. Their ability to operate at high temperatures and voltages makes them ideal for demanding environments. GaN devices, on the other hand, are known for their extremely fast switching speeds and compact size, making them suitable for high-frequency converters, chargers, and communications systems.

The adoption of WBG devices leads to reduced energy consumption, smaller cooling requirements, and increased power density. In electric drives, they enhance motor performance, improve control accuracy, and contribute to overall system reliability. These advantages support the global demand for energy-efficient and sustainable technologies.

Despite challenges such as higher initial costs and manufacturing complexities, continuous advancements in research and development are accelerating their adoption. As industries move toward electrification and renewable energy integration, SiC and GaN devices are expected to play a crucial role in shaping the future of power electronics and electric drives systems.

Wheels to Watts: The Second Life of EV Batteries



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“Retired from the road, reborn for the grid, EV batteries are driving the clean energy revolution twice.”

The rapid rise of electric vehicles (EVs) is creating both a challenge and an opportunity in managing batteries after their automotive life. Contrary to popular belief, an **EV battery is not “dead”** when it can no longer power a vehicle efficiently. **Even after its capacity drops to around 70–80%**, it remains capable of storing and supplying significant amounts of energy.

This remaining capacity gives EV batteries a valuable second life in renewable energy storage systems. After testing and refurbishment, **retired batteries can be integrated into solar farms, wind energy systems, homes, microgrids, and EV charging stations.** They store excess renewable energy during periods of high generation and release it when demand increases, improving energy reliability and reducing dependence on fossil-fuel-based backup systems.

Recent advancements in artificial intelligence-based battery health monitoring, battery management systems and smart grid technologies have made second-life applications safer and more efficient. Studies suggest that **second-life batteries can reduce energy storage costs by 30–70%** compared to newly manufactured battery systems, making renewable energy solutions more affordable.

Beyond technical and economic benefits, second-life batteries support a circular economy by extending battery lifespan, reducing electronic waste, and minimising the need for new raw materials. This innovative approach transforms **retired EV batteries into valuable energy assets, connecting sustainable mobility with clean energy and powering a greener future.**

Digital Twin Technology in Electrical Systems



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Digital Twin Technology is an emerging innovation that creates a virtual replica of a physical electrical system, enabling real-time monitoring, analysis, and optimisation. By collecting data from sensors installed in equipment such as transformers, motors, generators, and power distribution networks, a digital twin accurately reflects the current condition and performance of its physical counterpart.

The technology allows engineers to simulate operating conditions, predict potential faults, and evaluate system performance without interrupting actual operations. Through advanced data analytics and artificial intelligence, digital twins help identify inefficiencies, reduce maintenance costs, and improve system reliability. They also support predictive maintenance by detecting abnormalities before equipment failures occur.

In modern smart grids and industrial automation systems, digital twins play a vital role in enhancing energy efficiency and operational safety. Utilities and industries can use this technology to optimise power consumption, extend equipment lifespan, and make informed decisions based on real-time insights. As Industry 4.0 continues to evolve, Digital Twin Technology is transforming the way electrical systems are designed, monitored, and maintained, paving the way for smarter and more sustainable energy management.

Keywords: DigitalTwin,ElectricalSystems,SmartGrid,PredictiveMaintenance,Industry 4.0,ArtificialIntelligence,Real-TimeMonitoring,EnergyManagement.

Speech Recognition Enabled CNC Plotter for Smart Automation



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A Voice Controlled CNC Plotter Machine is an innovative automation system that combines speech recognition technology with Computer Numerical Control (CNC) to enable hands-free operation. The system captures voice commands through a microphone and converts them into text using speech recognition software. These commands are then translated into G-code instructions and transmitted to an Arduino-based controller running GRBL firmware.

The controller processes the commands and drives stepper motors to perform precise movements along the X and Y axes. As a result, the plotter can automatically write, draw, or engrave designs based on the user's spoken instructions. This technology eliminates the need for manual input devices and improves operational efficiency.

The project demonstrates the integration of embedded systems, programming, and automation technologies. It enhances accessibility for users with physical limitations and provides a cost-effective solution for educational and industrial applications. Voice-controlled CNC systems represent a significant step toward smarter and more user-friendly automation.

Keywords: CNC Plotter, Voice Control, Arduino, G-code, GRBL, Stepper Motor, Automation, Speech Recognition.

Space Tourism and Commercial Spaceflight: A Dream Turning into Reality



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For centuries, humans have gazed at the stars with curiosity, imagining what lies beyond our planet. Space exploration has always captured our imagination, but for most of history, travelling to space was possible only for a select few astronauts. Today, however, the emergence of space tourism and commercial spaceflight is transforming this dream into reality.

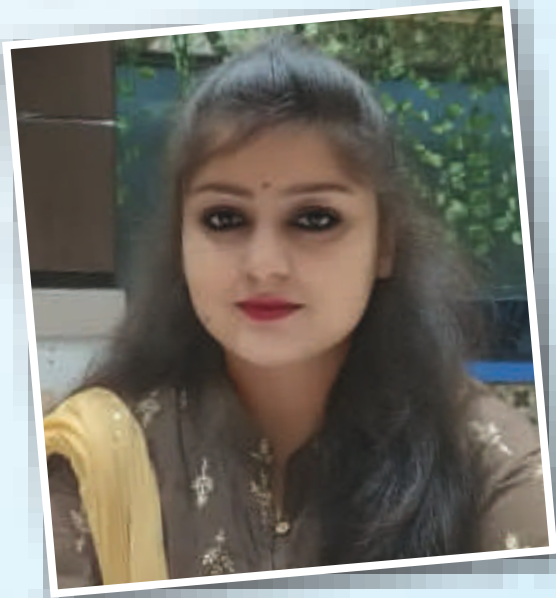
Private aerospace companies have played a major role in this transformation. By developing reusable rockets and innovative spacecraft, they have significantly reduced the cost of space missions. These technological advancements are making space travel more accessible and opening new possibilities for civilians. Tourists can now experience the thrill of leaving Earth's atmosphere, witnessing breathtaking views of our planet, and feeling the sensation of weightlessness—an experience once reserved exclusively for professional astronauts.

The impact of commercial spaceflight extends far beyond tourism. Private companies are supporting scientific research, launching satellites, improving global communication networks, and collaborating with national space agencies on ambitious missions to the Moon and Mars. These partnerships are accelerating innovation and helping humanity push the boundaries of exploration.

Despite its exciting potential, the industry still faces challenges, including safety concerns, environmental impact, and the high cost of tickets. Nevertheless, continuous technological advancements are addressing these issues and paving the way for a more sustainable future.

As commercial spaceflight continues to grow, it promises to inspire future generations, create new economic opportunities, and bring humanity closer to becoming a spacefaring civilisation. What once seemed like science fiction is now becoming one of the most exciting realities of the twenty-first century.

Brain-Computer Interfaces: Connecting Minds and Machines



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Imagine controlling a computer, wheelchair, or even a robotic arm using only your thoughts. What once seemed like science fiction is now becoming reality through Brain-Computer Interfaces (BCIs). These advanced systems create a direct communication link between the human brain and external devices.

BCIs work by detecting electrical signals produced by the brain and converting them into commands that machines can understand. This technology has shown remarkable potential in healthcare, especially for individuals suffering from paralysis, neurological disorders, or severe physical disabilities. Patients can communicate, move prosthetic limbs, and interact with their environment with greater independence.

Beyond medicine, BCIs are expected to transform education, gaming, communication, and workplace productivity. Researchers are exploring ways to enable faster human-computer interaction, making technology more intuitive and accessible than ever before. Companies and research institutions worldwide are investing heavily in this field, accelerating its development.

However, the technology also raises important ethical concerns regarding privacy, data security, and the responsible use of brain-generated information. As innovation continues, clear regulations and safeguards will be essential.

Brain-Computer Interfaces represent a significant step toward merging human intelligence with technology. While still in the early stages of development, they have the potential to revolutionise how humans interact with machines and reshape the future of society.

Small Language Models: The Future of Efficient AI



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The AI industry has an obsession with scale. Meta-Llama 3.1 runs 405 billion parameters, DeepSeek-R1 hits 671 billion, and GPT-5.4 Pro reportedly sits between 3 and 5 trillion. Bigger has always meant better – until Small Language Models started proving otherwise.

SLMs stay under 10 billion parameters, yet handle tasks like summarisation, code generation, and question answering well enough to raise uncomfortable questions about whether those massive models are worth the electricity. Knowledge distillation lets them learn from larger models, improved synthetic data reduces the need for enormous real-world datasets, and quantisation compresses weights without wrecking accuracy as badly as expected. Microsoft's Phi series, Google's Gemma, and Meta's smaller Llama variants lead this space.

The real appeal goes beyond benchmarks, though. An SLM runs on a laptop or phone – no cloud, no API, no shipping sensitive data to external servers. For a hospital in a small town, handling patient records, or a school in an area with unreliable internet, that local capability changes everything.

SLMs still struggle with complex reasoning and multimodal tasks. That gap is real. But on-device hardware keeps getting faster, training methods keep improving, and sub-7B models keep showing up where nobody expected them to compete.

Innovation/नवाचार



Aditya Vivek Verma
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नव-युग का आमंत्रण

लकीर के फकीर बनकर, कभी नया सवेरा नहीं आता, पुरानी सोच के ढेरों पर कोई नया कीर्तिमान नहीं बनता। जंग लगी जंजीरे कभी, उड़ने की आजादी नहीं देतीं, बंधी हुई धाराएँ कभी, समंदर का सुख नहीं लेतीं।

नवाचार वह दिव्य अस्त है, जो हर बाधा को काट देता है, एक छोटा सा मौक्तिक विचार, पूरे युग को बदल देता है। समस्याएँ अगर चट्टान हैं, तो नवाचार हथौड़ा है, इसने ही मानव की सीमाओं को, हर बार आगे मरोड़ा है।

प्रयोगशाला के बंद कमरों से लेकर, खेतों की मिट्टी तक बदलाव की यह मशाल जलनी चाहिए, सृष्टि की अंतिम चिट्ठी तक। असफलता से मत डरना तुम्हें, वह तो सृजन की पहली सीढ़ी है। तेरी आज की इसी जिद पर, टिकी हमारी अगली पीढ़ी है।

जो कतराते हैं जोखिम से, वे इतिहास के पन्नों में खो जाते हैं, जो खेलते हैं तूफानों से वे ही युग परिवर्तक कहलाते हैं। तकनीक और चेतना का मितकर, अब एक नया संसार रचो, सिर्फ अनुकरण मत करो किसी का, खुद का एक अविष्कार रखो।

कल्पना को पंख दो ऐसे, जो छू लें अनंत आसमान को अपनी सोच से चमका दो तुम्हें, इस पूरे हिंदुस्तान को। नया सोचो, नया बदलो, यही आज के समय की सबसे बड़ी पुकार है, ठहरे हुए पानी को दरकिनार कर, बहती लहर का नाम नवाचार है।

उठो, सृजन के महायज्ञ में, अपने विचारों की आहुति दे दो, भविष्य खड़ा है द्वार पर उसे नवाचार की शक्ति दे दो। नित नए विचारों से जो हर मुश्किल को आसान बनाता है, वहीं आधुनिक युग में केवल नवाचार कहलाता है।

रिटायर्ड हूँ टायर्ड नहीं



Sadhana Verma
Teacher
Retired Teacher

जी हाँ, रिटायर्ड हूँ, टायर्ड नहीं ऐसी सोच वाले व्यक्ति जो यह समझते हैं कि मैं सेवानिवृत्त तो ज़रूर हुआ हुई हूँ लेकिन थका हुआ या निराश कतई नहीं हूँ। ऐसे सकारात्मक सोच एवं ऊर्जावान विचार वाले लोगों के पंखों को उड़ान भरने देना चाहिए, उन्हें पिंजरे में कैद करने की गुस्ताखी नहीं करनी चाहिए। अगर वे किसी काम या नौकरी के योग्य हैं तो उन्हें अवसर देकर उनके अनुभव का लाभ उठाना चाहिए। बहुत से रिटायर्ड व्यक्ति ही कई क्षेत्रों में कारगर साबित होते हैं। जीवन में उत्साह और कुछ और करने की ऊर्जा उनमें बाकी रहती है। रिटायर्ड हूँ टायर्ड नहीं, इस ऊर्जावान मानसिकता वाले लोगों की यह सोच होती है कि सेवानिवृत्ति उम्र का पड़ाव है, ऊर्जा का नहीं।

इस प्रकार रिटायर (सेवानिवृत्त) होना बुरा नहीं बल्कि अच्छी बात है कि हमने अपने पूरे कार्यक्षेत्र में भलीभांति अपनी पूर्ण लगन से अपनी सेवा प्रदान की। हमें अपने

जीवन के आखिरी क्षण तक उपयोगी बने रहना चाहिए। हमें टायर्ड (थका हुआ) सेवानिवृत्त व्यक्ति नहीं बनना चाहिए। यदि स्वयं को टायर्ड (थका हुआ) महसूस करता है तो यह उसके लिए अच्छी बात नहीं होती। बल्कि व्यक्ति में यह सोच होनी चाहिए कि मैं न रिटायर्ड हूँ और न ही टायर्ड क्योंकि पढ़े-लिखे व्यक्ति की जीवन-पर्यंत माँग रहती है तथा उनका ज्ञान तथा अनुभव निरंतर फलदायी रहता है। सिद्ध होता है। इस प्रकार सेवानिवृत्ति जीवन का अंत नहीं बल्कि यह एक खुली राह की शुरुआत है।

2 AM – Still Awake



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2AM,lightsoff,syllabuson,
Smileintheday,butthemaskcomesoff,
Theysay“yougotthis”—butdotheyknow,
Howheavyitgetswhenyougotnowheretogo?
Papakesapne,Maakiraatjaagi,
Tohronabhifeelslikeekaurnakami.
Instagrampesabsethain,sabglowkarrahe,
Aurmainhoon—bathroommeinakelerorahe.
JEE,NEET,UPSC—finishlinekahinnahi,
Daudrahehainsab—koirukanahi.
Amlenough?—yehsawaalrozaatahai,
Ranknahimiltitohidentitykhojaati,
Koinahisamjhata—zindagiyahansenahijaati.
Ekpalruk—saanslezara,
Tusirfmarksnahi—tuhaiekpoorajahaan.
Aajraatrolena—kalphirladlena,
Kyunkituabhibbihai—auryahikaafihai.

Importance of Regular Electrical Maintenance



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Regular electrical maintenance is essential for ensuring the safety, efficiency, and reliability of any electrical system. Whether in a home, office, or industrial facility, electrical components can wear out over time due to constant use, environmental factors, and ageing. Routine inspections and maintenance help identify potential issues before they become serious problems.

One of the primary benefits of regular electrical maintenance is improved safety. Faulty wiring, overloaded circuits, and damaged electrical equipment can increase the risk of electrical shocks, short circuits, and fires. By scheduling periodic inspections, these hazards can be detected and corrected promptly, protecting both people and property.

Electrical maintenance also helps improve energy efficiency. Loose connections, outdated equipment, and malfunctioning components can cause unnecessary energy consumption, leading to higher electricity bills. Proper maintenance ensures that electrical systems operate at optimal performance, reducing energy waste and lowering costs.

In addition, regular maintenance minimises unexpected breakdowns and costly repairs. Detecting and resolving minor issues early can prevent major system failures that may disrupt daily activities or business operations. This proactive approach extends the lifespan of electrical equipment and reduces replacement expenses.

Investing in regular electrical maintenance is a smart decision for property owners and businesses alike.

नवाचार का युग



Ashutosh Kumar
Student
Kalinga University

समय की धारा ने फिर रुख बदला है,
क्षितिज के उस पार एक नया सूरज निकला है।
जहाँ कल्पनाएँ कभी कागज़ों में कैद थीं,
वहीं आज वे वास्तविकता के पंखों पर उड़ती हैं।
विचारों की चिंगारी जब जिज्ञासा से मिलती है,
तभी नवाचार की लौ प्रज्वलित होती है।
किसी प्रयोग की अनगिनत असफलताओं में,
किसी सपने की अथक संभावनाओं में,
छिपा होता है भविष्य का वह बीज,
जो एक दिन पूरी दुनिया का स्वरूप बदल देता है।
अब दूरियाँ केवल नक्शों में रह गई हैं,
सूचनाएँ प्रकाश की गति से बह गई हैं।
मशीनों ने गणना सीखी,
और मानव ने सीमाओं से परे सोचना।
हर नया आविष्कार मानो यही कहता है—
“असंभव” केवल प्रयास की प्रतीक्षा करता है।
पर प्रगति का अर्थ केवल तेज़ी नहीं,
ऊँचाइयों का अर्थ केवल इमारतें नहीं।

सच्चा विकास वही कहलाएगा,
जो विज्ञान के साथ संवेदनाएँ भी बढ़ाएगा।
आओ ऐसा कल रचें,
जहाँ तकनीक मानवता का हाथ थामे।
जहाँ नवाचार केवल बाज़ार न बदले,
बल्कि जीवन के हर कोने में आशा के दीप जला दे।
क्योंकि बदलती दुनिया की सबसे बड़ी पहचान,
न मशीनें हैं, न साधन, न विज्ञान—
बल्कि वह साहस है,
जो हर पीढ़ी को नया भविष्य गढ़ने की प्रेरणा देता है।

Stability Analysis of Grid-Connected PV Array Under Maximum Power Point Tracking



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Grid-connected photovoltaic (PV) systems rely on Maximum Power Point Tracking to extract maximum power under varying environmental conditions. MPPT algorithms continuously adjust the operating point of the PV array to achieve optimal efficiency. However, this dynamic adjustment can influence system stability when connected to the grid.

The PV system is interfaced with the grid through a power electronic inverter, which controls voltage, current, and synchronisation. Rapid changes in MPPT, especially under fluctuating irradiance, may introduce oscillations in the DC-link voltage and inverter output. These oscillations can affect power quality and lead to instability in weak grid conditions.

Stability analysis involves modelling the PV system, inverter, and grid interactions using small-signal or state-space techniques. Proper controller tuning, filtering, and damping strategies are essential to ensure stable operation. Additionally, advanced MPPT methods with adaptive control can reduce transient disturbances.

In conclusion, while MPPT improves energy efficiency, careful design of control systems and coordination with grid dynamics are necessary to maintain stability and reliable operation of grid-connected PV systems.

Agentic RAG



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Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), and AI agents are all combined in Agentic RAG (Agentic Retrieval-Augmented Generation), a sophisticated AI framework that enables intelligent information retrieval, reasoning and decision-making.

By including autonomous AI agents that are able to organise, retrieve, evaluate and refine information before producing replies, Agentic RAG improves conventional RAG systems. Agentic RAG dynamically determines what information is required, retrieves data from several sources, verifies relevance and iteratively enhances results, in contrast to conventional RAG, which completes a single retrieval phase. It also improves decision-making, offers current information and boosts productivity in fields like healthcare, education, research and customer service.

Agentic RAG is frequently used to enhance decision-making and information retrieval in a variety of industries. By offering individualised learning resources and responding to academic inquiries, it helps educators and learners. By extracting data from corporate databases, businesses utilise Agentic RAG in customer support systems to provide prompt and accurate responses.

In conclusion, Agentic RAG is a cutting-edge AI technique that blends autonomous agents and retrieval-augmented generation to deliver precise, dependable and context-aware responses.

Artificial Intelligence in Education



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Artificial Intelligence (AI) is transforming the education sector by making learning more personalised, interactive and efficient. AI-based technologies helped educators analyse student performance, identify learning gaps, and provide customised learning experiences according to individual needs. Unlike traditional teaching methods, AI enables adaptive learning systems that adjust the difficulty level and content based on a student's progress and understanding.

AI-powered tools such as intelligent tutoring systems, virtual assistants, chatbots, and automated assessment platforms support both students and teachers. These technologies provide instant feedback, answer queries, and assist in creating engaging learning environments. AI also helps educators automate administrative tasks, including grading, attendance monitoring, and performance analysis, allowing them to focus more on teaching and mentoring.

In higher education, AI facilitates data-driven decision-making by predicting student performance and identifying students at risk of academic failure. Furthermore, AI promotes inclusive education by supporting learners with different abilities through speech recognition, language translation, and accessibility tools.

Despite its numerous benefits, challenges such as data privacy, ethical concerns, and technological infrastructure must be addressed for effective implementation. Overall, Artificial Intelligence has the potential to revolutionise education by enhancing learning outcomes, improving student engagement, and creating a more flexible and learner-centred educational system for the future.

Estimating Time of Death from Blood Stain Colour Using Machine Learning



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Bloodstain colour is a measurable forensic clue: fresh blood is bright red, but oxidation and haemoglobin breakdown turn it brown over hours to days. Machine learning (ML) and deep learning (DL) models now convert this colour change into post-mortem interval (PMI) estimates with far greater consistency than visual judgment alone.

Studies typically photograph bloodstains on a controlled surface—often a standardised white strip—at fixed intervals, extracting RGB and HSV values. Research has shown brightness values decline sharply over the first ~42 hours before stabilising, allowing simple regression-based age predictions.

For higher accuracy, researchers pair hyperspectral imaging with convolutional neural networks (CNNs), which capture delicate spectral changes invisible to standard cameras. Reported results show CNN-based models achieving prediction errors under 7 hours, outperforming partial least squares and extreme learning machine baselines.

A complementary direction uses blood metabolomics with neural networks, extending reliable PMI estimation up to 13 days post-mortem—far beyond the 2–3 day window of standard methods.

Using a standardised white strip as the substrate removes surface-related variability from the readings. Remaining limitations comprise lighting conditions and reliance on limited or animal-derived datasets, pointing to the need for further assessment.

Artificial Intelligence in Healthcare: Transforming Patient Care



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Artificial Intelligence (AI) is one of the most impactful innovations in healthcare today. By analysing large volumes of medical data, AI helps doctors diagnose diseases more accurately and quickly. Machine learning algorithms can detect conditions such as cancer, diabetes, and heart diseases at early stages, improving treatment outcomes and saving lives.

AI-powered tools also support personalised medicine by recommending treatments based on a patient's unique medical history and genetic profile. Virtual health assistants and chatbots provide round-the-clock support, helping patients manage appointments, medications, and health-related queries efficiently.

Another significant advancement is the use of AI in medical imaging. Intelligent systems can analyse X-rays, CT scans, and MRI images with remarkable precision, reducing diagnostic errors. Furthermore, AI enhances hospital management by optimising resource allocation, reducing operational costs, and improving patient care services.

Despite challenges related to data privacy and ethical concerns, AI continues to revolutionise healthcare. As technology advances, AI-driven solutions are expected to make healthcare more accessible, affordable, and effective, ultimately contributing to a healthier and more sustainable future for society.

Quantum Computing: The Future of Intelligent Computing



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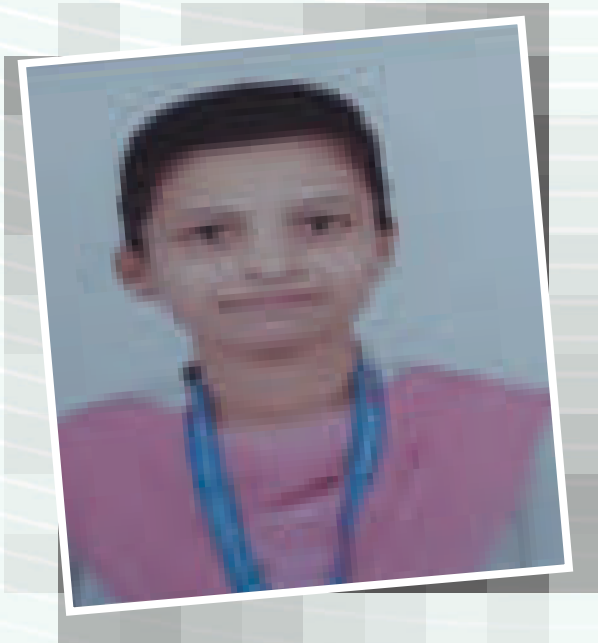
Quantum computing is a new type of technology that could change how computers solved difficult problems. Unlike regular computers that use bits, which are either 0 or 1, quantum computers use qubits. These qubits can be in more than one state at the same time because of something called superposition. This lets quantum computers do certain tasks much faster than normal computers.

This technology could lead to big changes in areas like artificial intelligence, keeping information safe, medicine, finding new drugs, managing money, and understanding the environment. One important use is quantum cryptography, which can make communication very secure. Scientists are also working on new ways to keep data safe from future threats that quantum computers might cause.

India has seen the value of this technology and started the National Quantum Mission to help research and create new ideas in quantum computing and communication. Even though big quantum computers are still being developed, their possible impact is huge.

Quantum computing is the next big step in technology and could change industries just like regular computers did a century ago.

Translating Business Goals into AI Products



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Turning a company's goals into AI products means turning their aims into real AI solutions that can be used in practice. The process starts by figuring out clear business goals, like boosting sales, making customer service better, lowering operating costs, or improving productivity. Once the goals are set, the right data is gathered and studied. High-quality data is important because AI systems use the information given to learn and make decisions. Then the next thing to do is choose the right AI technology, like machine learning, natural language processing, or predictive analytics, to solve the business problem. For instance, if a business aims to enhance its customer service, it might create an AI-powered chatbot that helps respond to customer questions in a fast and effective way.

Businesses can also use AI to predict demand, spot fraud, and offer tailored suggestions. Once the AI product is developed, it goes through testing to make sure it works as needed for the business. Its performance is checked all the time, and changes are made whenever needed. In the end, turning business goals into AI products allows companies to address actual issues, work more efficiently, and make smarter choices. A good AI product works well with the company's goals and helps both the business and its customers in a positive way. Translating business goals into AI products is a strategic process that transforms organisational objectives into intelligent and practical solutions. By understanding business needs, collecting quality data, selecting appropriate.

Digital Twins: Bridging the Gap Between the Real and Virtual World



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In the era of rapid technological advancement, innovation is not limited to creating new devices; it is also about finding smarter ways to understand, improve, and manage the world around us. One such groundbreaking innovation is Digital Twin Technology, which is transforming the way industries operate and make decisions.

A Digital Twin is a virtual model of a real-world object, system, or process that uses data, sensors, Artificial Intelligence, and advanced analytics to represent its real-time behaviour. It acts as a digital mirror of physical systems, allowing experts to monitor performance, predict problems, and test improvements before implementing them in the real world.

This technology is creating new possibilities across various sectors. In healthcare, digital twins can help in personalised treatment planning by creating virtual models of patients. In manufacturing, they help industries improve efficiency, reduce failures, and optimise production processes. Smart cities can use digital twins to manage traffic systems, energy usage, and urban development in a more sustainable way.

One of the biggest advantages of Digital Twin technology is predictive analysis. Instead of waiting for problems to occur, organisations can identify potential issues in advance and take preventive actions. This saves time, reduces costs, and improves overall performance.

However, challenges such as data privacy, cybersecurity, and implementation costs must be addressed for wider adoption. With continuous advancements in Artificial Intelligence and the Internet of Things, Digital Twins are expected to become even more powerful.

Digital Twin technology represents a future where the physical and digital worlds work together, creating smarter solutions and shaping a more efficient world.

Enhanced Frequency Response Strategy for PMSG-Based Wind Energy Conversion System Using Ultra Capacitor in Remote Area Power Supply Systems



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Remote areas often face challenges in maintaining a reliable and stable power supply due to the intermittent nature of renewable energy sources. A Permanent Magnet Synchronous Generator (PMSG)-based wind energy conversion system offers an efficient and reliable solution for such applications. However, fluctuations in wind speed can lead to frequency instability, affecting the quality of power delivered to isolated loads.

To address this issue, an enhanced frequency response strategy incorporating an ultra-capacitor is proposed. The ultra-capacitor acts as a fast-response energy storage device, capable of absorbing and supplying power during sudden variations in wind energy. This helps in stabilising system frequency and improving overall power quality.

The control strategy ensures coordinated operation between the PMSG, power converters, and the ultra-capacitor. During excess generation, energy is stored in the ultra-capacitor, while during deficits, stored energy is released to maintain balance. This reduces frequency deviations and enhances system reliability.

The proposed system is particularly suitable for remote area power supply, where grid support is unavailable. It ensures continuous, stable, and high-quality power delivery, making it an effective solution for sustainable rural electrification.

Sentiment Analysis: Understanding Emotions Through Artificial Intelligence



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Everyday, millions of people express their opinions on social media, online reviews, blogs, and discussion forums. Sentiment Analysis, a key application of Artificial Intelligence (AI) and Natural Language Processing (NLP), enables computers to understand whether these opinions are positive, negative, or neutral. It transforms unstructured text into valuable insights that help organisations make informed decisions.

Businesses use sentiment analysis to evaluate customer satisfaction, improve products, and strengthen brand reputation. Healthcare organisations analyse patient feedback to enhance medical services, while governments monitor public opinion to develop effective policies. It is also widely used in finance for market sentiment prediction and in education to understand students' learning experiences.

Recent advances in deep learning and transformer-based models such as BERT and Large Language Models (LLMs) have significantly improved the accuracy of sentiment analysis by understanding context, sarcasm, and emotions more effectively than traditional methods.

As digital communication continues to grow, sentiment analysis is becoming an essential tool for understanding human behaviour and supporting data-driven decision-making. Its ability to bridge the gap between human emotions and intelligent systems makes it one of the most impactful innovations in modern Artificial Intelligence.

Computer Vision For Robotics Using OpenCV



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Computer vision is a branch of artificial intelligence that enables robots to interpret and understand visual information from the surrounding environment. By using cameras and image sensors, robots can capture real-time images and videos, which are then processed to identify objects, recognise patterns, detect obstacles, and make intelligent decisions. The integration of OpenCV with robotic systems enhances automation and enables robots to operate effectively in dynamic and unstructured environments.

In robotic applications, OpenCV serves as a powerful platform for analysing visual data and transforming it into meaningful information that can guide robot actions. The library supports various image processing techniques such as filtering and object recognition, which help robots navigate, inspect objects, and interact with their surroundings. Its flexibility, cross-platform compatibility, and support for multiple programming languages make it a preferred choice for researchers, engineers, and developers. As advancements in artificial intelligence and machine learning continue to evolve, OpenCV remains a key technology in enhancing robotic perception, autonomy, and decision-making capabilities.

Agentic AI: The Next Evolution of Artificial Intelligence



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Artificial Intelligence (AI) is rapidly evolving from systems that simply answer questions to intelligent agents capable of planning, reasoning, and performing complex tasks independently. This new generation, known as Agentic AI, can understand goals, make decisions, use external tools, and adapt its actions with minimal human intervention.

Unlike traditional AI models that respond to individual prompts, Agentic AI can break large problems into smaller tasks, gather information from multiple sources, and continuously improve its performance. This technology is transforming industries by automating research, customer support, healthcare diagnostics, software development, financial analysis, and smart manufacturing.

In education, Agentic AI can serve as a personalised tutor, helping students learn at their own pace. In healthcare, it can assist doctors by analysing medical records and suggesting treatment options. Businesses can use it to automate workflows, improve productivity, and enhance customer experiences.

As Agentic AI becomes more capable, responsible development is essential to ensure transparency, fairness, privacy, and human oversight. By combining intelligence with autonomy, Agentic AI is shaping the future of innovation and creating smarter solutions that will redefine how people interact with technology.

Generative AI and Large Language Models (LLMs): Transforming Education, Research, and Software Development



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Generative Artificial Intelligence (AI) and Large Language Models (LLMs) are reshaping how people learn, innovate, and create. These advanced systems can generate human-like text, answer questions, analyse data, and assist with complex problem-solving, making them valuable tools across multiple sectors.

In education, LLMs provide personalised learning experiences by offering instant explanations, interactive tutoring, and adaptive study materials. Students can access knowledge more efficiently, while educators can streamline content creation and assessment tasks.

Research is also undergoing a significant transformation. AI-powered tools help researchers review vast amounts of literature, identify patterns in data, and accelerate scientific discoveries. By reducing time spent on repetitive tasks, researchers can focus on innovation and critical analysis.

In software development, Generative AI enhances productivity by assisting with code generation, debugging, documentation, and testing. Developers can build applications faster and improve code quality through intelligent suggestions and automation.

Despite these advantages, responsible use of AI remains essential. Issues such as data privacy, bias, and accuracy require careful attention. As technology continues to evolve, Generative AI and LLMs are expected to become powerful partners in education, research, and software development, driving efficiency, creativity, and innovation in the digital age.

Impact of Artificial Intelligence on VLSI Design



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Artificial Intelligence (AI) is transforming the field of Very Large Scale Integration (VLSI) design by improving efficiency, accuracy, and design productivity. As modern integrated circuits become increasingly complex, traditional design methods face challenges related to time, power consumption, and optimisation. AI techniques provide effective solutions to these problems. Machine learning algorithms are used in Electronic Design Automation (EDA) tools to optimise various stages of the VLSI design flow, including placement, routing, timing analysis, and verification. AI helps designers predict design errors, reduce power consumption, and improve chip performance with greater accuracy. In physical design, AI-based optimisation techniques can quickly identify the best layout solutions, reducing design times significantly. During testing and verification, AI assists in fault detection and test pattern generation, minimising human effort and improving reliability. AI also supports automated decision-making, allowing designers to handle complex circuits more efficiently. Companies developing advanced semiconductor technologies increasingly adopt AI-driven EDA tools to accelerate chip development. Despite these advantages, challenges such as high computational requirements and the need for large training datasets remain. Nevertheless, AI continues to revolutionise VLSI design, making chip development faster, smarter, and more cost-effective for future semiconductor technologies.

AI Agents: Redefining the Future of Work



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Technology has always evolved to make human life easier, and today, one of the most fascinating innovations is the rise of AI Agents. Unlike traditional software that only follows specific instructions, AI agents can understand tasks, make decisions, and perform actions with minimal human guidance.

We already interact with AI in our daily lives through virtual assistants, recommendation systems, and chatbots. However, AI agents take this concept a step further. They can plan tasks, analyse information, learn from experiences, and even collaborate with humans to achieve a goal. From helping researchers organise data to assisting businesses in managing operations, these intelligent systems are becoming valuable digital partners.

The growing popularity of AI agents is changing the way people work and learn. Students can use them for research support, professionals can automate repetitive tasks, and organisations can improve productivity without compromising efficiency. By handling routine work, AI agents allow humans to focus on creativity, innovation, and critical thinking.

Despite their advantages, AI agents also raise concerns about privacy, ethics, and responsible usage. As these technologies become more powerful, it is important to ensure that they remain transparent, secure, and beneficial for society.

AI agents are not here to replace human intelligence; they are here to enhance it. As innovation continues to reshape our world, the collaboration between humans and AI agents may become one of the defining achievements of the digital age.

Event-Based Vision and Neuromorphic Sensing



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Event-based vision and neuromorphic sensing are innovative technologies designed by taking inspiration from the human brain and visual system. Unlike conventional cameras that capture full images at regular time intervals, event-based sensors record only changes in brightness. This enables them to process visual information quickly and efficiently. Neuromorphic sensing operates in a manner similar to biological neurons, transmitting information only when significant changes occur. These sensors use very little power and can respond rapidly to environmental changes, making them suitable for real-time applications.

A major advantage of event-based vision is its ability to reduce data processing by capturing only relevant information. It also provides high-speed operation, low latency, and reliable performance under varying lighting conditions. As a result, these systems can detect motion and changes more effectively than traditional imaging methods. The technology is widely used in areas such as robotics, self-driving vehicles, industrial monitoring, security systems, and augmented reality. It enables machines to observe and react to their surroundings with greater speed and accuracy. In summary, event-based vision and neuromorphic sensing are emerging technologies that improve machine perception by imitating natural biological processes. Their efficiency, speed, and low power consumption make them valuable for the development of intelligent and responsive systems.

Hardware Security of Cyber Physical Systems



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Cyber Physical Systems (CPS) combine physical devices with computing and communication technologies to perform intelligent operations. These systems are commonly used in healthcare, transportation, industrial automation, and smart infrastructure. Since CPS interacts directly with the physical environment, maintaining hardware security is very important for safe and reliable operation. Hardware security focuses on protecting components such as processors, sensors, memory units, and communication modules from attacks and unauthorised access. Threats like hardware tampering, data theft, and malicious modifications can affect system performance and compromise sensitive information. In critical applications, such attacks may even lead to safety hazards and system failures.

Various security measures are implemented to protect CPS hardware. Encryption secures data during storage and transmission, while authentication mechanisms ensure that only authorised devices can access the system. Secure hardware design and tamper-resistant components help prevent physical attacks and unauthorised modifications. Regular monitoring and updates further strengthen system security. As Cyber Physical Systems become more widespread, the need for strong hardware security continues to increase. Effective security measures help protect data, maintain system integrity, and ensure reliable operation. Therefore, hardware security plays a vital role in building safe, dependable, and trustworthy Cyber Physical Systems for modern technological applications.

Power-Aware Robotic System



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A power-aware robotic system is designed to optimise energy efficiency while carrying out tasks. These robots actively monitor and regulate their power consumption to extend battery life, enhance performance, and lower operational costs. Power management is particularly crucial for mobile platforms such as drones, autonomous vehicles, and industrial robots that depend on limited energy reserves. The core aim of such systems is to conserve energy without compromising functionality. This is achieved through intelligent strategies like sleep modes, dynamic voltage scaling, energy-conscious path planning, and smart sensor control. By minimising unnecessary energy use, robots can operate longer and accomplish tasks more effectively. Equipped with sensors and advanced control algorithms, power-aware robots track battery status and adjust speed, processing capacity, or operating modes accordingly. Some even integrate renewable sources like solar panels to further extend their runtime.

Applications range from space exploration and military surveillance to healthcare support, warehouse automation, and environmental monitoring—all fields where efficient energy management is vital for sustained and reliable operation.

Rule-Based System V/S Agents



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A Rule-Based System is a system that works using predefined rules written by programmers. It follows an "IF-THEN" approach to make decisions. For example, if the temperature is above 40°C, then the system turns on a cooling fan. Rule-based systems are simple, predictable, and easy to understand, but they cannot adapt well to new situations unless new rules are added.

An Agent is an intelligent entity that can perceive its environment, make decisions, and take actions to achieve specific goals. Agents can learn from experience, adapt to changing conditions, and operate with some level of autonomy. Examples include virtual assistants, self-driving cars, and intelligent robots.

Rule-based systems are effective for straightforward tasks where rules are clearly defined. Agents are more advanced because they can make intelligent decisions, adapt to changes, and work independently in complex environments. Therefore, agents are widely used in modern Artificial Intelligence applications.

MindMeister



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MindMeister is a web-based mind mapping application that helps users arrange ideas and information visually. It is designed to support creativity, planning, and organisation by allowing users to create mind maps that show relationships between different concepts and topics. The tool is widely used in education, business, and personal projects. Students can use it for studying and note-taking, while professionals can use it for brainstorming, project planning, and decision-making. Users can include text, images, links, and notes to make their mind maps more informative and engaging. A key feature of MindMeister is its collaborative environment. Multiple users can edit and contribute to the same mind map in real time, making it useful for group discussions and team projects. The platform also provides various templates and design options to help users create clear and attractive maps.

MindMeister simplifies the process of understanding complex information by presenting ideas in a visual format. It helps improve memory, encourages creative thinking, and supports effective communication among team members. Its cloud-based nature ensures easy access from different devices and locations. In conclusion, MindMeister is an efficient and easy-to-use mind mapping tool that assists users in organising ideas, enhancing collaboration, and improving productivity. It is a valuable resource for both academic and professional purposes.

Brain-Computer Interfaces: Bridging the Human Mind and Machines



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Brain-Computer Interfaces (BCIs) represent a groundbreaking advancement that enables direct communication between the human brain and external devices. By capturing and interpreting neural signals, BCIs create a communication pathway that bypasses conventional muscular or physical interactions, allowing users to control computers, robotics systems, and assistive technologies using their thoughts.

Recent developments in signal processing, machine learning, and neuroengineering have significantly improved the accuracy and reliability of BCI systems. One of the most impactful applications of BCIs is in healthcare, where they assist individuals affected by paralysis, neurological disorders, or limb loss. Through brain-controlled prosthetic limbs and communication devices, patients can regain independence and improve their quality of life.

Beyond healthcare, BCIs are shaping the future of human-machine interaction by enabling hands-free control of smart devices, immersive virtual environments, and advanced robotics systems. As research continues to evolve, BCIs have the potential to transform communication, rehabilitation, and intelligent system design.

By merging neuroscience with engineering, Brain-Computer Interfaces are paving the way toward a future where technology can seamlessly respond to human thought, unlocking new possibilities in healthcare, communication, and intelligent systems.

शिक्षा में नवीनतम नवाचार: भविष्य की दिशा (Latest Innovations in Education: The Future Direction).



Anshuman Vivek Verma
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शिक्षा के क्षेत्र में हो रहे हालिया बदलाव केवल तकनीकी बदलाव नहीं, बल्कि सीखने के तरीके में आया एक गहरा रूपांतरण है। आज की शिक्षा प्रणाली रटने के बजाय समझने और लागू करने पर केंद्रित हो गई है।

इस नवाचार का सबसे मुख्य स्तंभ आर्टिफिशियल इंटेलिजेंस (AI) है। आज एआई आधारित प्लेटफॉर्म व्यक्तिगत छात्र की सीखने की गति को पहचानकर उसके अनुसार पाठ्यक्रम तैयार कर रहे हैं। इससे कमजोर और प्रतिभाशाली छात्रों के बीच का अंतर कम हो रहा है। इसके साथ ही, आभासी वास्तविकता (VR) और ऑगमेंटेड रियलिटी (AR) ने जटिल विषयों को सरल बना दिया है। अब इतिहास की घटनाओं को किताबों के पन्नों में पढ़ने के बजाय छात्र वर्चुअल टूर के माध्यम से उसे घटित होते हुए देख सकते हैं।

व्यावहारिक शिक्षा को बढ़ावा देने के लिए कोडिंग और डिजिटल क्रिएटिविटी को प्राथमिक शिक्षा का अनिवार्य हिस्सा बनाया जा रहा है। स्कूलों में अब केवल प्रयोगशालाएं ही नहीं, बल्कि इनोवेशन हब बन रहे हैं, जहाँ छात्र खुद अपने गैजेट्स और सॉफ्टवेयर विकसित कर रहे हैं।

निष्कर्षतः शिक्षा अब चार दीवारों के बीच सीमित नहीं है। आज की शिक्षा का मुख्य उद्देश्य विद्यार्थी को एक सूचना उपभोक्ता से बदलकर एक समस्या समाधानकर्ता (Problem Solver) बनाना है, ताकि वे 2026 और उसके बाद की वैश्विक चुनौतियों का सामना कर सकें।

AI Agents: The Next Evolution of Artificial Intelligence



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Artificial Intelligence (AI) is growing rapidly and is becoming a part of our daily lives. Today, we use AI while searching on the internet, using virtual assistants, or getting recommendations on apps. One of the latest developments in this field is AI Agents.

AI Agents are smart software programs that can understand information, make decisions, and perform tasks with very little human help. Unlike ordinary AI systems that only respond to questions, AI agents can take action to complete a task. For example, a student can ask an AI agent to prepare a study schedule, set reminders, and suggest useful learning materials.

AI agents are being used in education, healthcare, banking, customer service, and many other fields. They help people save time by handling routine tasks quickly and accurately. Virtual assistants on smartphones are simple examples that many of us already use.

In my opinion, AI agents have the potential to make everyday life easier for students and professionals. As technology continues to improve, these intelligent systems may become reliable digital assistants that help us learn, work, and solve problems more efficiently.

Agile Development



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Agile Development is a software development approach that focuses on adaptability, collaboration, and delivering results in small stages. Instead of completing the entire project at once, the work is divided into short cycles called sprints. This allows teams to develop, test, and improve the software continuously. The Agile method encourages strong communication between developers, customers, and stakeholders. Regular feedback helps the team understand user needs and make necessary changes throughout the project. As a result, the final product is more likely to meet customer expectations.

Agile promotes teamwork, transparency, and continuous improvement. Team members work together to solve problems quickly and ensure that quality standards are maintained. Popular Agile frameworks such as Scrum and Kanban provide structured ways to manage tasks and track progress. One of the key benefits of Agile Development is its flexibility. Changes in requirements can be handled easily without affecting the overall project significantly. Frequent testing and reviews help identify issues early, reducing risks and improving software quality. In conclusion, Agile Development is an effective methodology that supports faster delivery, better customer satisfaction, and improved teamwork. Its flexible nature makes it suitable for modern software projects where requirements may change over time.

Quantum Internet: The Next Frontier in Secure Communication



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As the world becomes increasingly dependent on digital connectivity, ensuring secure communication has become a critical challenge. Quantum Internet is an emerging technology that aims to revolutionise communication by leveraging the principles of quantum mechanics. Unlike the conventional internet, which transmits information using classical bits, the Quantum Internet utilises quantum bits (qubits) and quantum entanglement to exchange information with unprecedented security.

A key advantage of quantum communication is Quantum Key Distribution (QKD), which enables the secure sharing of encryption keys. Any attempt to intercept the transmitted data alters the quantum state of the qubits, instantly detecting unauthorised access. This feature makes quantum networks highly resistant to cyberattacks.

Recent advancements in quantum repeaters, quantum memories, and single-photon communication have accelerated the development of large-scale quantum networks. Researchers are actively working to integrate these technologies with existing fibre-optic infrastructure, bringing practical quantum communication closer to reality.

The Quantum Internet has the potential to transform cybersecurity, enable distributed quantum computing, and support next-generation communication systems. As research continues to advance, this groundbreaking innovation is expected to play a vital role in shaping a secure, intelligent, and interconnected digital future.

Edge AI for Smart and Sustainable Agriculture



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Agriculture is stepping into a new era as AI and IoT technologies are being integrated into agriculture. One of the most exciting advancements in this area is Edge AI technology, where by smart algorithms are performed not in the cloud but rather at the device level, like drones, sensors, and cameras.

Edge computing technology is utilised in the application of artificial intelligence in precision farming for crop surveillance, early disease identification, and irrigation. With the use of AI cameras, plant diseases can be detected within a matter of seconds. Moreover, moisture and nutrient levels in the soil can be analysed by sensors to ensure efficient water usage.

However, the key strength of Edge AI is the ability to make immediate decisions without any substantial use of the internet, thereby making it very useful for agricultural areas that are far away from urban zones. In addition to increasing crop production, it helps reduce wastage of resources.

With the ever-increasing need for food worldwide, the Edge AI-enabled agriculture technology provides a promising solution that is both sustainable and efficient in helping farmers make decisions and ensuring food security across the world.

Therapy in Your Pocket: The Rise of Digital Mental Health



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What if mental health support was available anytime, anywhere, right from our phones? Digital mental health platforms are making this a reality by mitigating stigma and fostering resilience in young minds.

In 10 people in India experience some form of mental health condition, and the NCERT Survey highlighted that 11% of students reported anxiety, 14% experienced extreme emotions, and 43% had mood swings. Youth struggle silently with anxiety, burnout, and emotional exhaustion, and often hesitate to seek professional help due to stigma, cost, or limited access to services. This is where digital mental health platforms are changing the landscape and bridging this gap by offering immediate assistance, self-help resources, and connections to mental health professionals. The help starts with mobile apps that track mood, such as MoodFit and depression diary, and ranges to online counselling and AI-powered chatbots, such as Woebot and Wysa.

These platforms provide a safe, convenient, and affordable way to access support. The online peer-support communities allow users to connect with others facing similar challenges, reducing feelings of isolation. Digital mental health is not merely a technological innovation; it is a social innovation that recognises that mental health support must meet people where they already are online.

Digital Twins: Bridging the Physical and Digital World



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Digital Twin technology is one of the most promising innovations of the modern digital era. A Digital Twin is a virtual representation of a physical object, system, or process that continuously receives real-time data from its real-world counterpart. By combining sensors, data analytics, and connectivity, Digital Twins help organisations understand how physical systems perform and respond to changing conditions.

This technology is widely used across various industries. In manufacturing, Digital Twins help monitor equipment, predict failures, and reduce maintenance costs. In healthcare, digital models of organs and medical systems support research and improve treatment planning. Smart cities also use Digital Twins to analyse traffic patterns, manage infrastructure, and optimise energy consumption, leading to more efficient urban development.

One of the major advantages of Digital Twins is their ability to improve efficiency and sustainability. Organisations can test different scenarios in a virtual environment before making changes in the real world. This reduces waste, saves resources, and supports better decision-making. Predictive maintenance and real-time monitoring also help increase productivity and operational reliability.

Despite challenges such as data security and the need for accurate real-time information, Digital Twin technology continues to evolve rapidly. As industries become more connected and data-driven, Digital Twins are expected to play a crucial role in creating smarter, more efficient, and sustainable systems. Their ability to bridge the gap between the physical and digital worlds makes them a key innovation for the future.

IEEE KU SB OFFICIAL VOLUNTEERS



NEWLY JOINED MEMBERS

S.No.	Name	
1.	Akshay Pandey	Student
2.	Sumeet Kumar	Student
3.	Om Hari Rai	Student
4.	Hricha Kumari	Student
5.	Shalu Kumari	Student
6.	Vikki Saw	Student
7.	Sanjana Kumari	Student
8.	Khushi Sharma	Student
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