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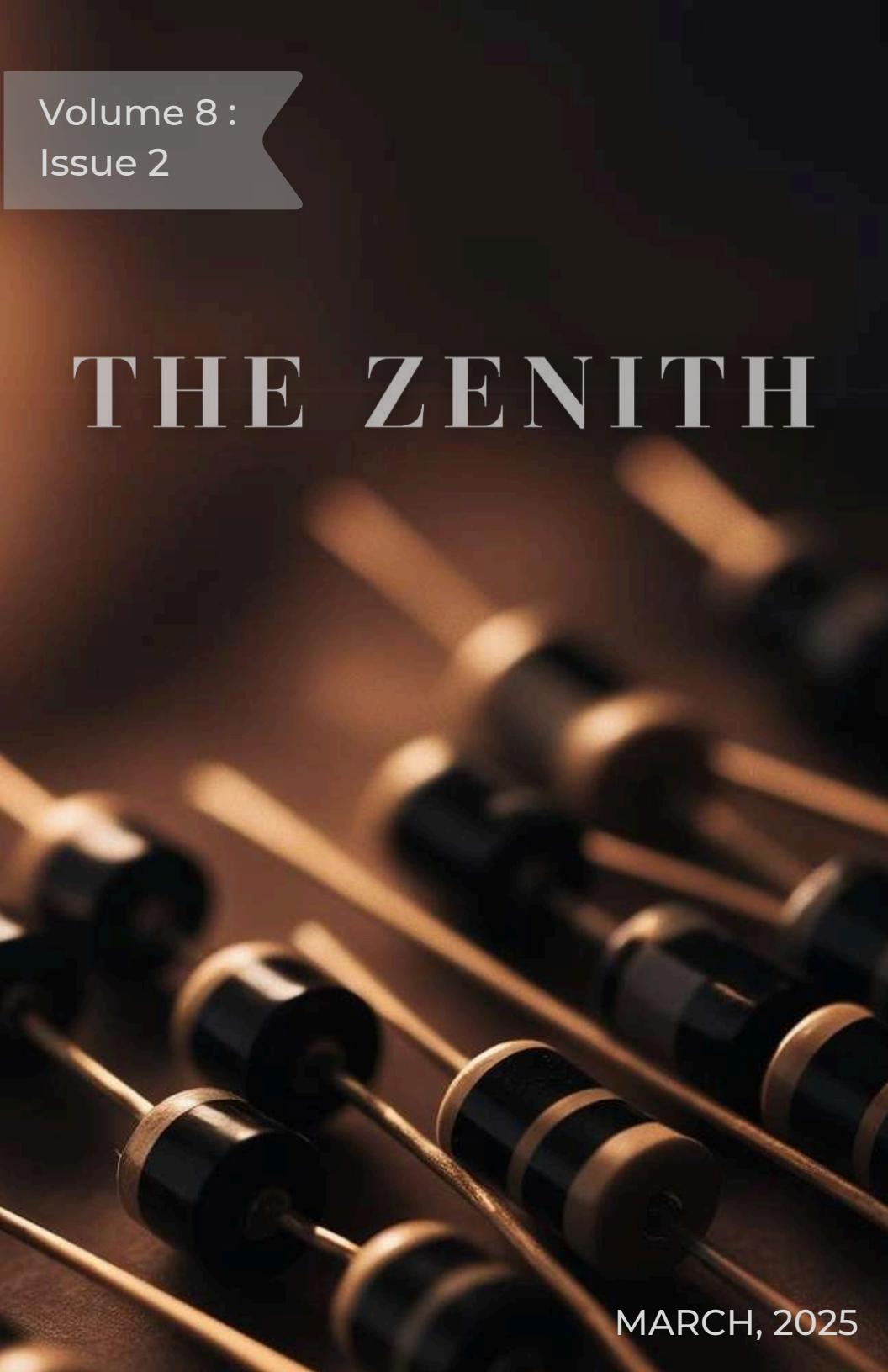
THE ZENITH



MARCH, 2025

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TECHNICAL NEWS

Mind-Driven Movement: Paralyzed Individual Controls Robotic Arm Using Thoughts

Researchers at the University of California, San Francisco (UCSF) have made significant strides in neuroprosthetics with the development of a groundbreaking brain-computer interface (BCI) that enables a man with paralysis to control a robotic arm using only his thoughts. Over the course of several months, the participant was able to perform a variety of tasks such as picking up objects, moving them with precision, opening cabinets, and pouring water. This achievement highlights the potential of BCIs to assist individuals with motor impairments, offering a glimmer of hope for those suffering from debilitating conditions like stroke.

The BCI in this study operates using an advanced artificial intelligence (AI) model that adapts to the participant's brain activity patterns. This adaptability is key to the system's success, as the AI continuously learns and adjusts to changes in the neural signals over time. Remarkably, this system remained stable and effective for a record seven months without requiring recalibration, unlike most previous BCI systems, which generally lose functionality after a few days or weeks. The participant was able to control the robotic arm simply by imagining the movements, with no physical effort required.

An important aspect of the research lies in understanding how the brain's representation of movement can evolve. The study found that as the participant repeatedly imagined moving his limbs, the neural patterns associated with these actions subtly changed. The AI's ability to adjust to these variations in real-time was crucial for the device's long-term effectiveness. Neurologist Karunesh Ganguly, who was involved in the study, emphasized the significance of this synergy between human learning and AI, stating that this interaction is the next frontier in brain-computer interface technology.

To train the participant, the researchers initially used a virtual interface, allowing him to practice movements in a simulated environment. This virtual platform provided immediate feedback on his mental visualization of the tasks, helping him refine his intentions and develop greater control over the technology. The gradual transition from virtual exercises to real-world applications proved essential in translating the participant's mental commands into actual robotic movements, further enhancing the potential of neuroprosthetics.

Throughout the study, the participant showed increasing ability to perform complex tasks, such as opening cabinets and pouring water, using the robotic arm. The AI's adaptive learning allowed the device to maintain stable performance over time, needing only brief recalibration. This breakthrough suggests BCIs could provide a sustainable solution for individuals with paralysis, enabling them to regain independence in daily tasks like feeding themselves.

However, researchers faced challenges with the variability of neural signals. Ganguly and his team emphasized the need to address these fluctuations to ensure the BCI's reliability. The study's success suggests BCIs could be used in everyday environments, providing practical solutions for people with paralysis.

Looking forward, Ganguly's team plans to refine the AI for smoother, faster movements and test the technology in real-world settings. If successful, these advancements could revolutionize assistive technology for individuals with severe physical limitations.

Published in Cell and funded by the National Institutes of Health, the study paves the way for future neuroprosthetics and offers insights into human cognition and resilience. As the technology progresses, discussions on accessibility and equity will be crucial to ensure it benefits all individuals, regardless of socioeconomic status. This research represents a step toward a more inclusive future for individuals with disabilities.

In conclusion, this study marks a significant advancement in neuroprosthetics, demonstrating the potential of combining human cognition and AI to create new possibilities for people with motor impairments.

Source:https://scienmag.com/

Source: University of California – San Francisco

EXPERT LECTURES / SEMINARS / COURSES ORGANISED

Expert Talk on Forensic and Investigation Organized for Second-Year Students

TThe Electronics and Telecommunication Engineering Department hosted an expert talk on "Forensic and Investigation" for second-year students on 18th January 2025. The session was led by Mrs. Dilpal Rana, Advisor at Cyber Sanskar, Nashik, and focused on the latest trends in cyber forensics and investigation techniques.
Mrs. Rana shared her expertise on digital forensics, emphasizing the role of cyber security in solving crimes. The talk provided valuable insights, engaging students in discussions about the growing importance of forensics in the digital world. The event was a great learning opportunity for students to explore real-world applications in the field of cyber security.

KExpert Talk on Workplace Readiness Organized for Students

An expert talk on "Workplace Readiness" was conducted for students on 23rd January 2025, featuring Ms. Radhika Pandharkar and Ms. Kasak Makhija. The session aimed to equip students with essential skills for a successful transition from academics to the workplace.

Ms. Pandharkar and Ms. Makhija shared valuable insights on professional communication, teamwork, time management, and other crucial workplace skills. The talk was well-received by students, providing them with practical knowledge to enhance their readiness for future career opportunities.

SY BTech Students Visit IREEN Nashik on 04/02/2025

On 4th February 2025, second-year BTech students from K.K. Wagh Institute of Engineering Education and Research visited IREEN (Integrated Renewable Energy and Environment Network), Nashik. The visit provided the students with valuable insights into the latest advancements in renewable energy technologies and environmental solutions.

During the visit, students had the opportunity to explore IREEN's innovative projects and gain hands-on experience, enhancing their understanding of sustainable energy practices. This visit was part of the institute's efforts to connect students with real-world applications of their academic learning, promoting a deeper understanding of industry practices and emerging technologies.

The experience was both informative and inspiring for the students, as they gained practical knowledge in the field of renewable energy and environmental sustainability.

Parent-Teacher Meet Organized by E&TC Department at K.K. Wagh Institute

The Electronics & Telecommunication (E&TC) Department of K.K. Wagh Institute of Engineering Education and Research successfully organized a Parent-Teacher Meet on February 22, 2025. The event provided an excellent platform for meaningful interactions between faculty members and parents, fostering collaboration aimed at supporting students' academic and professional growth.

During the meet, discussions centered around students' progress, curriculum updates, and future opportunities. Parents were able to engage directly with faculty, gaining valuable insights into their children's performance and future prospects. The event highlighted the institute's commitment to working closely with families to ensure the holistic development of students.

This initiative strengthened the bond between parents and faculty, ensuring a collaborative approach to student success.

CAMPUS PLACEMENTS / ACHIEVEMENTS

Successful Placements in Tech Mahindra and Infosys for E&TC Students

The Electronics and Telecommunication (E&TC) Department is proud to announce the successful placement of four students in renowned companies during the ongoing recruitment season.

Tech Mahindra has selected two students from the department, offering them a package of 4 LPA:

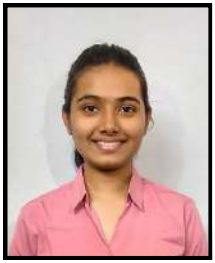
- **Kaustubh Aniruddha Patil** (BE E&TC, Div B)
- **Yash Anil Aswale** (BE E&TC, Div A)

Kaustubh Aniruddha Patil

Yash Anil Aswale

Infosys has selected two more students with an attractive package of 3.6 LPA:

- **Kaveri Tanaji Gholap** (BE E&TC, Div B)
- **Dhanshri Ransing Shisode** (BE E&TC, Div B)



Kaveri Tanaji Gholap

Dhanshri Ransing Shisode

Institute Wins First Prize in ABB Live Project Competition for the Second Time

Our institute has once again triumphed in the prestigious ABB Live Project Competition, securing the first prize for the second consecutive time. This remarkable achievement highlights the innovative spirit and technical excellence of our students.

One of the standout contributors to this success was Ritesh Sakhare, a student from TY BTech E&TC, who was a key member of the winning team. His dedication and expertise were instrumental in the team's victory.

The competition is known for its challenging nature, and winning it for the second time in a row speaks volumes about the caliber of our students and the support provided by the institute. Congratulations to Ritesh and the entire team for their outstanding achievement!

Team MittiManthan from ENTC Department Wins 1st Place in Agriculture Domain at TechFiesta International Hackathon

Team MittiManthan from the Electronics and Telecommunication (ENTC) Department of K. K. Wagh Institute of Engineering Education and Research has secured 1st place in the Agriculture domain at the prestigious TechFiesta International Hackathon, hosted by PICT.

This outstanding achievement highlights the team's innovative approach and technical prowess in addressing key challenges in the agriculture sector. The winning team members include:

- Ayush Pund (Leader)
- Yash Giri
- Yash Barve
- Vidhi Metkar
- Jaymala Desale (Computer Department)

The hackathon provided a platform for students to showcase their skills and creativity, and Team MittiManthan's victory reflects their dedication and expertise. Congratulations to the team for their exceptional performance and for bringing home the first prize! 🌟

Team Nemesis Karting from K.K. Wagh Institute Wins Overall Champion (AIR-1) Title at EDGELINE GO-KART

We are excited to announce that Team Nemesis Karting from K.K. Wagh Institute of Engineering Education and Research has emerged as the Overall Champion (AIR-1) at the EDGELINE GO-KART CHAMPIONSHIP | Wisdomatic Swarms LLP 2025, held at Ajeenkya DY Patil School of Engineering, Pune, from February 6-9, 2025.

One of the standout contributors to this victory was Sarthak Kanade, a student from TY E&TC, who played a pivotal role in the team's success. The competition showcased the team's engineering excellence, innovation, and high-performance engineering skills, securing them the top position among various competitors.

Congratulations to Team Nemesis Karting for their remarkable achievement, and special recognition to Sarthak Kanade for his contribution to this incredible success! 🌟

Dr. S. A. Patil (Ugale) Serves as Session Chair at 1st International Conference on AIML-Applications for Engineering and Technology

Dr. S. A. Patil (Ugale) contributed as a Session Chair at the 1st International Conference on AIML-Applications for Engineering and Technology, held on 16th-17th January 2025. The conference, technically sponsored by IEEE Pune Section, was organized by MKSSS's Cummins College of Engineering for Women, Pune.

The event brought together experts, researchers, and practitioners to explore the latest advancements in Artificial Intelligence and Machine Learning applications for engineering and technology. Dr. Patil's role as a session chair involved guiding discussions, facilitating presentations, and ensuring the smooth flow of the sessions.

This conference provided an excellent platform for knowledge exchange and showcased the importance of AIML in driving innovation across various engineering domains. Dr. Patil's participation reflects the strong academic presence of our institute in global research forums.


ICAET-2025

1st International Conference on
AIML-Applications for Engineering & Technology
January 16th – 17th, 2025

IEEE COMPUTER SOCIETY Pune Section

IEEE Pune Section

CERTIFICATE

We appreciate the contribution of

Dr. Sunita Ugale

Serving as

Session Chair in

1st International Conference on AIML-Applications for Engineering & Technology
held on January 16th - 17th, 2025,
Technically Sponsored by IEEE Pune Section and
Organized by MKSSS's Cummins College Of Engineering For Women, Pune-411052 (MH), India.

Dr. Madhuri Khambete	Dr. Anand Bewoor	Dr. Mahendra Deore
General Chair,	Convener,	Convener,
ICAET 2025	ICAET 2025	ICAET 2025

INDUSTRIAL TRAINING / SEMINAR / WORKSHOP DONE BY STAFF

Dr. K. S. Holkar Presents on Best Practices in Autonomy at One-Day Workshop

Dr. K. S. Holkar participated and presented on Best Practices in Autonomy at the One-Day Workshop on "Governance in Autonomy: Challenges, Opportunities, and Transformational Strategies". The workshop, organized by MIT Academy of Engineering under the aegis of Savitribai Phule Pune University, was held on 22nd January 2025 at the MIT Academy of Engineering, Alandi.

Dr. Holkar's presentation focused on the key practices that contribute to successful governance in autonomous institutions, sharing insights into the challenges and strategies for transformation. The workshop brought together academicians and industry experts to discuss the evolving landscape of autonomy in higher education and explore ways to leverage it for institutional growth.

The event was an excellent opportunity for knowledge exchange, and Dr. Holkar's contributions were highly appreciated by all attendees.


MIT Academy of Engineering

Certificate


MIT Academy of Engineering

Certificate

Dr. K.S. Holkar

Faculty Members Successfully Complete ATAL FDPs

- **K. Nirmalakumari** successfully completed **the ATAL FDP (Faculty Development Program) on VLSI (Very-Large-Scale Integration)**, held from 6th January 2025 to 11th January 2025. This program provided valuable insights into the latest trends and advancements in VLSI technology, enhancing her expertise in the field.

- **P. P. Patil** completed **the ATAL FDP on Practical Insights into RF System Design,** also conducted from 6th January 2025 to 11th January 2025. The program focused on practical knowledge related to RF system design, equipping him with advanced skills in this specialized area.

- **S. D. Raut, R. V. Daund, and N. A. Dheringe** completed **the ATAL FDP on Next Gen in AI/ML and IoT**, held during the same dates (6th January 2025 to 11th January 2025). This program provided essential insights into the next-generation technologies in Artificial Intelligence (AI), Machine Learning (ML), and Internet of Things (IoT).

Conferences Attended and Papers Presented at ICEISF-2025

Dr. S. P. Ugale served as **a Session Chair for the International Conference on Engineering Innovations for Sustainable Future (ICEISF-2025)**, held on 6th-7th January 2025. Several faculty members and researchers from the institute also **contributed to the conference with their insightful papers**. Below is a list of the authors and the titles of the papers presented:

- **Puja P. Patil, Dr. D. M. Chandwadkar, Dr. S. P. Ugale**
- **Title:** Textile Materials for Wearable Antennas: A Comprehensive Review
- **Conference:** International Conference on Engineering Innovations for Sustainable Future (ICEISF-2025)
- **Date:** 6th - 7th January, 2025

- **Dr. S. S. Morade, R. R. Khinde**
- **Title:** Novel Feature Extraction Using DCT and Statistical Discrimination Analysis for Lip Reading
- **Conference:** International Conference on Engineering Innovations for Sustainable Future (ICEISF-2025)
- **Date:** 6th - 7th January, 2025

- **R. V. Chothe, Dr. S. P. Ugale, Dr. D. M. Chandwadkar, S. V. Shelke**
- **Title:** Medical Image Encryption for Healthcare Applications
- **Conference:** International Conference on Engineering Innovations for Sustainable Future (ICEISF-2025)
- **Date:** 6th - 7th January, 2025

- **S. V. Shelke, Dr. D. M. Chandwadkar, Dr. S. P. Ugale, R. V. Chothe**
- **Title:** Handwritten Word Recognition Using GoogLeNet
- **Conference:** International Conference on Engineering Innovations for Sustainable Future (ICEISF-2025)
- **Date:** 6th - 7th January, 2025

Industrial Training / Seminar / Workshop done by Staff

- **S. D. Raut, Dr. S. P. Ugale, Dr. D. M. Chandwadkar**
- **Title:** A Review of Cryptography and Steganography Integration for Enhanced Image Security
- **Conference:** International Conference on Engineering Innovations for Sustainable Future (ICEISF-2025)
- **Date:** 6th - 7th January, 2025

- **Shriganeshrajkumar S. Togare, Gulshan Kumar**
- **Title:** Enhanced Audio Classification Using CNN, and Hybrid CNN-LSTM
- **Conference:** International Conference on Engineering Innovations for Sustainable Future (ICEISF-2025)
- **Date:** 6th - 7th January, 2025

VISION & MISSION

VISION

Excel in quality technical education and research in Electronics and Telecommunication (E&TC) Engineering for sustainable solution development for industry and betterment of society.

MISSION

M 1: To provide quality education for the preparation of technically and professionally competent E&TC engineers.
M 2: To create an environment to enhance life-long learning and 21st century skills
M 3: To inspire students' innovative thinking and creativity to promote research
culture.

MEET OUR TEAM

FACULTY ADIVSOR

Prof. S. D. Raut

STUDENTS FROM THIRD YEAR

Kshitija Deshmukh

Shreya Bhakare

Om Dhokane

Devashri Shastri

Harsh Gavali

Bhavi Sankhala

Jay Ikhe

STUDENTS FROM SECOND YEAR

Sayali Patil

Anushka Patil

Published by Department of of E&TC
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