

UnPlugged 1.0 by DJSCE IETE-ISF

The Team IETE-ISF of Dwarkadas J Sanghvi College of Engineering, Mumbai made history by organising the 24-hour National Hardware Hackathon “**UnPlugged 1.0**” on the 9th and 10th of March 2024. This ground-breaking event attracted teams from various corners of India, bringing together some of the brightest minds in the field of hardware innovation. Unplugged 1.0 aimed to provide a platform for aspiring engineers, inventors, and tech enthusiasts to showcase their skills, creativity and problem-solving abilities. The event focused on hardware-based projects, challenging participants to bring their innovative ideas to life within a compressed time frame. Event commenced with a grand inauguration ceremony at 9:00 hrs on the 9th of March. The event was inaugurated by Dr. Hari Vasudevan, the esteemed Principal of the college, alongside Dr. Amit Deshmukh, Head of the Department of Electronics and Telecommunication (EXTC), and faculty members of the department of EXTC.

The dignitaries inaugurated the hackathon with a motivational address, emphasising the significance of innovation and collaboration in the rapidly evolving field of hardware technology. Their presence added prestige to the event, setting the stage for an inspiring and dynamic competition. The opening ceremony not only marked the formal commencement of the hackathon but also created a sense of camaraderie among the participants, mentors, and organisers.

The event was also graced by Shri. Bharat M. Sanghvi, Hon. Vice President of SVKM & In-charge Mentor of Dwarkadas J Sanghvi College of Engineering. He took a round of the events venue in the department.

Dr. Hari Vasudevan and Dr. Amit Deshmukh expressed their support for the initiative and encouraged the participants to make the most of the unique opportunity presented by the 24-hour hackathon. The involvement of the college leadership and faculty members underscored the institution's commitment to fostering a culture of technological innovation and hands-on learning. The presence of these esteemed



individuals at the inauguration contributed to the overall success and prestige of the IETE-ISF National Hardware Hackathon Unplugged 1.0, 2024.

Problem Statement

Round 1:

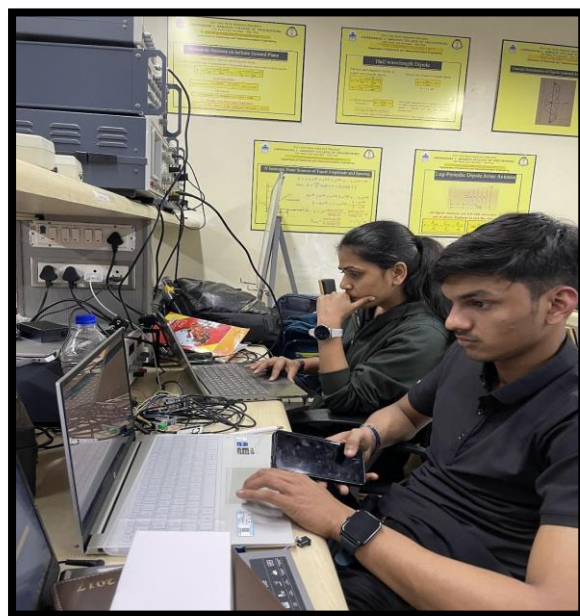
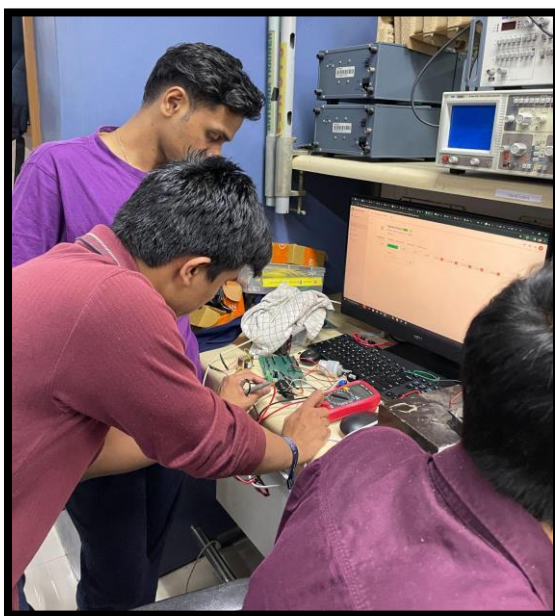
In a bid to tackle the pressing issue of water conservation in agriculture, engineers and designers were called upon to push the boundaries of innovation. Crafting a sophisticated printed circuit board (PCB) using KiCad, a task that demands seamless integration of predetermined components while encouraging participants to introduce their own creative elements. Beyond mastering KiCad, participants were urged to think innovatively, aiming to surpass current limits and redefine agricultural IoT applications. With the goal of fostering sustainability and efficiency, participants were tasked with pioneering the future of precision agriculture, paving the way for a more resource-conscious and productive farming industry.

Round 2:

Efficient water management in agriculture is paramount for crop yields, conservation, and ecological balance. Existing irrigation systems often lack precision, leading to water wastage and suboptimal plant growth. Manual control fails to adapt to varying soil moisture conditions, hindering water distribution and impacting both yield and conservation efforts. To tackle this, an innovative solution leveraging AI for automatic valve regulation was sought.

Participants were urged to collaborate and innovate, crafting a comprehensive solution that optimises resource utilisation and minimises environmental impact. Key challenges include designing an IoT-based circuit for agricultural use, acquiring data from sensors and cameras to monitor soil moisture levels, integrating cloud storage for seamless data management, developing AI/ML models to regulate water release, implementing hardware solutions to execute AI algorithms, designing PCB boards for efficient system integration, creating a user-friendly system maintenance app, and implementing an alert system for timely notifications.

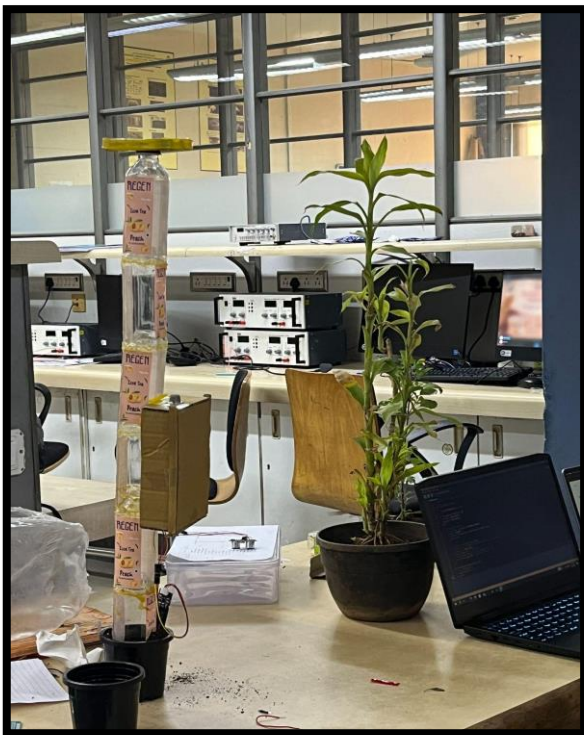
The aim of this challenge is to develop a scalable and sustainable solution that revolutionises water management in agriculture, ensuring optimal crop growth while conserving valuable resources. Participants were encouraged to think creatively and push the boundaries of innovation to address the pressing issues facing modern agriculture.



Challenges and Themes:

In the ever-evolving landscape of agriculture, precision farming stands as a beacon of innovation. At the heart of this movement lies the transformative power of Internet of Things (IoT) technologies, reshaping traditional agricultural practices. By integrating smart sensors, data analytics, and connectivity solutions, IoT opens doors to real-time monitoring and management of crucial parameters for crop health. Through the fusion of hardware and software expertise, participants will explore the forefront of innovation, contributing to the evolution of **IoT in Agriculture**.

By empowering farmers with insights into soil conditions, water usage, pest control, and overall crop health, these IoT applications pave the way for informed decision-making. The hackathon served as a platform for collaboration and creativity, addressing critical challenges faced by the farming community. As participants delve into this dynamic field, they embark on a journey to revolutionise agriculture, shaping a future where technology and sustainability converge for the greater good.



Judging Criteria:

In Round 1, participants were evaluated based on their innovation, presentation skills, integration of components, electrical checks, and the size of their PCB design. Each criterion held a weight of 5 marks, emphasising the importance of creativity, technical prowess, and attention to detail in this initial phase.

Moving forward to Round 2, the stakes were raised as participants faced a more comprehensive assessment. Here, innovation and logic building took centre stage, each carrying a weight of 10 marks, reflecting the competition's commitment to pushing the boundaries of agricultural technology. Additionally, the completion of tasks, project development, documentation, and final output were meticulously scrutinised, with each criterion holding a significant weight of 10 marks.

With these criteria in place, the hackathon aimed to foster a spirit of innovation, collaboration, and excellence among participants as they strived to develop cutting-edge IoT solutions for precision farming. As the event unfolded, the judging process promised to be both rigorous and rewarding, highlighting the potential for technology to revolutionise the agricultural sector and address its most pressing challenges.

Winners and Prizes

Winner: Team LED (Hindustan Institute of Technology & Science, Kelambakkam, Tamil Nadu) (Prize: ₹50000)

First Runner-Up: Team Agro-Technicians (Shri Vile Parle Kelavani Mandal's Dwarkadas J. Sanghvi College of Engineering, Mumbai) (Prize: ₹30000)

Second Runner-Up: Team Cloud Crop (Jain College of Engineering [JCE], Belgaum, Karnataka) (Prize: ₹20000)



Conclusion

The IETE-ISF National Hardware Hackathon “Unplugged 1.0” held at Dwarkadas J Sanghvi College of Engineering stands as a testament to the boundless creativity and technological prowess within the academic and engineering communities of India. With its inaugural edition, the event not only broke new ground in providing a dedicated platform for hardware innovation but also showcased the collaborative spirit and resilience of the participating teams. The successful execution of the hackathon, from the meticulous planning by the organising committee to the enthusiastic participation of teams from across the nation, reflects the growing importance of hands-on, practical learning experiences in shaping the future of technology. This inaugural hackathon not only provided a dynamic platform for hands-on learning but also created lasting connections among participants. As the event's legacy takes root, it sets a high standard for future editions, promising continued advancements in hardware technology through collective ingenuity.