

## Embedded Systems and Robotics Laboratory, Dept. of CSE

This laboratory, established under the guidance of the e-Yantra initiative of IIT Bombay in 2019, serves as a dedicated facility for promoting hands-on learning and innovation in robotics and embedded systems.



Dr. Kavi Arya, Professor, Dept. of CSE, IIT Bombay and Principal Investigator of e-Yantra, during his visit to BPPIMT to inaugurate this lab, the 1<sup>st</sup> in eastern India.

The lab provides students with exposure to industry-relevant hardware platforms, embedded systems programming environments, and real-world problem-solving opportunities. The laboratory has been strengthened through participation in training programs, workshops, and certification initiatives conducted by IIT Bombay and other reputed institutions.



Dr. Kavi Arya, IIT Bombay at Principal's meet of colleges with Dept of CSE, BPPIMT

The laboratory is equipped with FireBird V 2560 robotic platforms and supports training in robotics programming, sensor integration, and embedded system design. Faculty members and students have actively participated in task-based training programs and workshops, enhancing their technical expertise and research capabilities. The lab has facilitated several innovative student projects that have received recognition at national and international levels.



Notable projects include IoT-based smart healthcare solutions, amphibian robots, drone controller and simulator development, and robotic applications involving image processing, signal processing, and Robot Operating System (ROS) integration.



Students associated with the laboratory have participated in prestigious competitions and innovation programs such as e-Yantra Robotics Competition, AICTE Canada India Acceleration Program, IIT Kharagpur technical competitions, and All India Research Competitions at IIT Bombay. Several teams have achieved finalist positions and project recognitions, demonstrating the effectiveness of the laboratory in nurturing research aptitude and technical creativity. The laboratory also regularly organizes workshops, training programs, and expert sessions to enhance the skill development of students and faculty members.



**Workshop Hands-on session in progress: Participants building line and obstacle follower robots**



**Workshop Theoretical session in progress**



**Workshop Organizers & Participants**

Faculty development has been an integral component of the laboratory's growth. Faculty members have attended Quality Improvement Programs (QIP), Continuing Education Programs (CEP), and specialized robotics and IoT training sessions at premier institutions such as IIT Bombay and IIT Kharagpur. These initiatives have strengthened the laboratory's academic and research ecosystem and ensured continuous technological upgradation.

The laboratory aims to further expand its capabilities by incorporating advanced computing resources such as GPU-enabled systems for deep learning and AI-based robotics applications.