

## **Robotics and Machine Intelligence Laboratory**

The Robotics and Machine Intelligence Lab stands as a beacon of innovation, propelling the fields of robotics and AI into uncharted territories. Through rigorous research, technological ingenuity, and collaborative efforts, the lab serves as a catalyst for transformative change, shaping the way we interact with machines and the intelligence they possess. As technology continues to evolve, the lab's contributions are poised to reshape industries, improve quality of life, and redefine the possibilities of human-robot coexistence. The Robotics and Machine Intelligence Lab actively collaborates with academic institutions, industry partners, and research centres to foster innovation and drive technological advancements. These collaborations not only contribute to the academic and scientific community but also lead to tangible societal impacts.

The Robotics and Machine Intelligence Lab is committed to advancing the fields of robotics and AI through interdisciplinary research, cutting-edge experimentation, and collaborative endeavours. The lab's primary objectives are conducting pioneering research in the areas of robotics, AI, computer vision, machine learning, and human-robot interaction, among others, to address complex challenges and create novel solutions, developing state-of-the-art robotic systems, intelligent algorithms, and AI-driven applications that contribute to various industries, including manufacturing, healthcare, transportation, and beyond, nurturing the next generation of researchers, engineers, and innovators by providing a platform for learning, hands-on experience, and collaboration in the realms of robotics and machine intelligence, and forging partnerships with industry leaders, startups, and academic institutions to bridge the gap between theoretical research and practical implementations, facilitating the transition of lab-developed technologies into the real world.

The lab's multifaceted research endeavours span several critical domains:

**Autonomous Systems:** Developing intelligent algorithms that enable robots and autonomous vehicles to navigate, perceive their environment, and make informed decisions in dynamic and unpredictable situations.

**Human-Robot Interaction:** Exploring methods to enhance the collaboration between humans and robots, including natural language processing, gesture recognition, and emotion understanding, to create more intuitive and effective interaction mechanisms.

**Computer Vision:** Advancing computer vision techniques to empower robots with the ability to interpret and understand visual information from the world around them, facilitating tasks such as object recognition, scene understanding, and visual tracking.

**Machine Learning:** Harnessing the power of machine learning algorithms, including deep learning and reinforcement learning, to enable robots to learn from data, adapt to new situations, and continuously improve their performance.

The lab is well-equipped with personal computers, FPGA board, JETSON Board, Intel Development Boards, Raspberry Pi Boards, Autonomous Robot and Workstation with GPU, that offer the required framework for carrying out research, putting algorithms into practise, and creating useful applications. B. Tech, M. Tech, and Ph.D. Students get the chance to collaborate closely with knowledgeable researchers and professors, taking use of their advice and expertise.



