# HACKAP HACKATHON

ROBOTICS

**HackAP Robotics Hackathon**

**25 & 26 May 2024**

Problem Statements

ā hub (AU Incubation Center), Alcove Partners, TiE Vizag and Teckybot are happy to announce the tenth in the HackAP Hackathon series. The theme of the hackathon is Robotics. Participating teams are expected to come in person to the ā hub on 26th May to refine and demonstrate their solutions.

We encourage participants to pick one challenge and come up with a solution. Participants should have a functioning robot to demonstrate the solution.

1. Delivery Robot: Develop a robot capable of navigating through indoor environments to deliver packages or items to designated locations. The challenge involves integrating computer vision, path planning, and robotic control.

2. Robot-Assisted Healthcare: Create a robotic system designed to assist healthcare professionals in tasks such as patient monitoring, medication delivery, or eldercare assistance. Solutions could involve AI-driven diagnostics, sensor integration, and safe human-robot interaction.

3. Educational Robotics Platform: Design a platform that allows students to learn robotics concepts in a fun and engaging way. This could include building and programming robots to solve challenges, incorporating gamification elements, and providing educational content.

4. Agricultural Robot for Precision Farming: Develop a robot capable of navigating through fields to perform tasks such as planting, watering, or harvesting crops with precision. Solutions should consider factors like crop detection, soil analysis, and efficient energy usage.

5. Disaster Response Robot: Create a robot that can assist in disaster response scenarios, such as search and rescue missions in collapsed buildings or hazardous environments. The robot should be capable of navigating through debris, detecting survivors, and providing necessary assistance.

6. Robotics in Entertainment: Build an interactive robotic system designed for entertainment purposes, such as a robotic bartender, a musical performance robot, or a storytelling robot. Creativity and user engagement are key components of this challenge.

7. Robotic Exoskeleton for Rehabilitation: Design a wearable robotic exoskeleton to assist individuals with mobility impairments in rehabilitation exercises. The exoskeleton should provide support and feedback to help users regain strength and mobility.

8. Marine Exploration Robot: Develop a robot capable of exploring underwater environments, such as coral reefs or deep-sea habitats, to collect data on marine biodiversity, water quality, and ecosystem health.

9. Robotics in Sports Performance Analysis: Design a robotic system equipped with sensors and cameras to analyze athletes' performance in sports training or competitions, providing real-time feedback and insights to coaches and athletes for performance optimization.

10. Culinary Robotics: Design a robotic system for automating cooking tasks in commercial kitchens or home environments, such as food preparation, cooking, and plating, to enhance culinary creativity, efficiency, and accessibility.

For any questions, please contact: auincubation@gmail.com or use the WhatsApp group (https://chat.whatsapp.com/BAIiMFsO7tr3mS5ZaF9wKd). Please note that the WhatsApp group will only be open for discussion on the 25th and 26th of May.

All the best.