

Report on ELCIA Next Gen Tech Hackathon Participation and Achievements

Introduction

The ELCIA Next Gen Tech Hackathon, conducted by IIIT Bangalore, is a premier event designed to encourage innovation and problem-solving among students and professionals. It brings together some of the brightest minds to create technological solutions for real-world challenges. This year, out of 125 participating teams, the top 10 were selected to compete in the finals, held on July 25th and 26th, 2024, at IIIT Bangalore.

Our team from Generic Junkiez consisting of Ashish Ramesh (1MJ22CS021) 5th sem CSE, Sahil Desai (1MJ22EC128) 5th sem EC, Jonathan Daniel K (1MJ22IO008) 5th sem IIOT, Siddaling Nagavimath (1MJ22EC133) 5th sem EC was privileged to be among the finalists, where we presented Project ARIA, a cutting-edge robotics solution aimed at enhancing operational efficiency in challenging environments.

Project ARIA Overview

Project ARIA is a ROS-based autonomous robot designed for precision and adaptability in dynamic environments. Its core capabilities include autonomous navigation, object detection, and real-time mapping. For the hackathon, we focused on leveraging ARIA's features to address the problem statement: Warehouse automation using AMRs (Autonomous Mobile Robots)

Solution Description

Objective: To develop an Autonomous Mobile Robot capable of navigating in a warehouse to deliver packages.

Key Features:

Visual SLAM: Used for mapping complex and unstructured environments.

Autonomous Navigation: Leveraged ROS2's Nav2 framework for obstacle avoidance and path planning.

RISC-V Integration: A RISC-V board was used as a motor controller, ensuring efficient hardware-software interfacing.

Map Visualization: The detected locations of individuals were marked on the map for easy accessibility by rescue teams.

Achievements

Our team's efforts and innovation were recognized, and we secured the 2nd Runner-Up position in the hackathon.

Prize: ₹25,000.

Conclusion

The ELCIA Next Gen Tech Hackathon provided us with an incredible platform to showcase our skills and creativity. Building and presenting Project ARIA in such a competitive environment was both challenging and rewarding. Securing the 2nd Runner-Up position among Karnataka's top teams has motivated us to continue developing impactful solutions and advancing our technical expertise.





