RAZAQ KHAN MOHAMMAD ABDUL

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EDUCATION

Northeastern University, Boston, MA GPA : 3.7/4
Master of Science in Robotics, Concentration: Electrical and Computer Engineering May 2025
• Relevant Coursework: Robotics Sensing and Navigation, Robot Mechanics and Control, Mobile Robotics, Pattern Recognition and Computer Vision

Osmania University, Hyderabad, India GPA : 7.8/10
Bachelor of Engineering in Electronics and Communication Engineering June 2022
• Relevant Coursework: Digital Electronics, Electronic Devices and Circuits, Control Systems, Fundamentals of AI&ML, Mechatronics, Embedded Systems, Neural Networks, Microcontrollers & Microprocessors, Computer Organization & Architecture, Signal Processing, Programming with C++, Data Structures and Algorithms

SKILLS

Programming: C, C++, Embedded C, Python, MATLAB/Simulink, JavaScript
Frameworks/Libraries: ROS, RViz, Gazebo, MoveIt, Point Cloud Library(PCL), OpenCV, NumPy, Pandas, Matplotlib
Tools: Linux, Git, Gitlab, CMake, VS Code, Jupyter Notebook, Keil µvision, CV – AVR
Hardware: SolidWorks (3D printing), Raspberry Pi, Arduino boards, Jetson boards, Atmel ATMega microcontrollers, Lidars, Oscilloscopes, Ki-CAD, Eagle-CAD (Circuits), Soldering

WORK EXPERIENCE

ROBOTICS ENGINEER, *Dhi Sathi Robotics Pvt. Ltd. (Farm Sathi), Hyderabad, India* July 2022 - June 2023
• Led the design, assembly, and creation of prototype circuit boards via KiCad, employing precision milling with FlatCAM for proper power distribution for robust and accurate movement of robot in the farm
• Developed ROS-based firmware on Jetson Nano CPU for advanced processing and control, programmed u-blox F9R modules for precise GPS communication and created python script for waypoint publishing for outdoor navigation
• Transformed the robot into a fully autonomous agricultural solution, revolutionizing farm operations by proficiently executing tasks such as weed removal, plowing, and fertilizer spraying

ROBOTICS INTERN, *Introbotics Systems Pvt. Ltd., Hyderabad, India* Jan 2022 - July 2022
• Developed navigation systems using LIDAR sensor, incorporating Adaptive Monte Carlo Localization (AMCL) and gmapping algorithms for efficient Simultaneous Localization and Mapping (SLAM)
• Identified the desired object using Image processing and programmed a 5-DoF robotic arm for autonomous manipulation with MoveIt to go and grasp the object and define its operational area and motion sequences
• Attended code reviews, resolved tickets and documented work done on Confluence

ASIA PACIFIC ROBOT CONTEST (ABU ROBOCON)-2021/20 (view) Oct 2019 – Aug 2021
• Developed logic codes for different sensors and helped in building multiple robots from scratch as a team member for a 3-minute game competition
• Elevated to Electronics Lead, effectively steering the team of 33 members in circuit design and robot simulations, showcasing strong leadership and secured a rank of 12 nationwide (2021)
• Dealt mostly with electronics integration and programming game tasks with the aim to optimize performance and robustness

ACADEMIC PROJECTS

IMPLEMENTING ORBSLAM3 ON (NUANCE) – AUTONOMOUS CAR, *Boston, MA* Nov 2023
• Implemented ORBSLAM3 on an autonomous vehicle by integrating ROS packages, comprehensively understanding SLAM principles and the ORBSLAM algorithm
• Successfully configured camera and IMU data collection, restructured ROS bag data to ensure compatibility with ORBSLAM3 for seamless implementation

ROS-BASED SYNERGISTIC ARTICULATED ROBOTIC MANIPULATOR (R-SARM), *Hyderabad, India* July 2021
• Developed an autonomous 6DoF manipulator programmed for pick and place tasks by extracting coordinates of the objects from camera frame processing it through “Find-object” package
• Effectively solved motion planning challenges through the utilization of MoveIt for the development of an Inverse Kinematic solver, ensuring adept control, and implementing collision avoidance strategies based on extracted coordinates.

PROFARM – AN INTELLIGENT FARMING SOLUTION (view**),** *Hyderabad, India* August 2022
• Managed the collection and transmission of key environmental data, including temperature, pH, and moisture, using ESP8266 modules for real-time analysis
• Ensured seamless integration of sensor-generated data by implementing robust mechanisms, enabling an uninterrupted and synchronized flow of information to the central server

ACHIEVEMENTS

• Published research paper on 'ROS Based Autonomous Mobile Manipulator Robot' in Atlantis Press part of Springer Nature and was awarded first prize in the “Dr. Abdul Kalam Innovation Challenge” (view)
• First runner-up in Smart India Hackathon - 2020(SIH) a nationwide hackathon renowned for its emphasis on addressing everyday challenges through innovative solutions