

SAUDAMINI GHATGE

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EDUCATION

Carnegie Mellon University, Pittsburgh, PA

May 2025

Master of Science in Robotic Systems Development | **CQPA - 3.83/4.0**

Relevant Coursework - Planning and Decision-making in Robotics, Robot Mobility on Air, Land and Sea

Manipulation, Estimation and Control, Systems Engineering and Management for Robotics

D. J. Sanghvi College of Engineering, Mumbai, India

Sep 2020

Bachelor of Engineering in Electronics Engineering | **CGPA - 8.13/10.0**

Relevant Coursework - Robotics, Applied Mathematics

SKILLS

Programming Skills	C++, Python, C, Embedded C
Industry Skills	ROS, MATLAB & Simulink, Linux, Gazebo, OpenCV, Android Studio, Altium Designer
Hardware	Nvidia Jetson Nano, Intel RealSense D435i, LiDAR, Rpi Pico W, STM32, ESP32, Arduino

PROJECTS

NiMo: Autonomous Nitrate Monitoring Robot | *MRSD Capstone, CMU*

Sept 2023 - present

- Developing an autonomous ground robot to navigate cornfields and inserting a nitrate sensor into cornstalks for logging nitrate readings, thus aiding farmers in optimizing fertilizer use and increasing profit by 30%
- Developing a navigation stack for the robot to traverse from barn to cornfield and also within the cornfield
- Writing a task planner for the various processes using a finite state machine

Robot Chasing a Moving Target (C++) | *CMU*

Aug 2023

- Implemented an A* search algorithm to find an optimal path for a robot in less than 1 second, to track a moving target
- Wrote a 2D backward Dijkstra search algorithm serving as a heuristic function providing admissible and consistent heuristic distances to the goal with total path cost equal to the total traversal time

RRT, RRT*, RRTConnect for n DOF robot arm (C++) | *CMU*

Oct 2023

- Programmed a planner to find a path for a robot manipulator to achieve a desired goal configuration within 2 seconds of runtime
- Implemented goal-biasing to expand less number of nodes

Symbolic Planner (C++) | *CMU*

Oct 2023

- Wrote a domain-independent graph search algorithm which takes in the description file of any world written in STRIPS language and returns a valid plan in less than 1 second
- Implemented a heuristic function which expands 50% lesser states as compared to when a heuristic function was not used

EXPERIENCE

Engineer - Integration | *TIH Foundation for IoT & IoE, IIT Bombay, Mumbai*

July 2022 - June 2023

- Fused IMU and wheel encoder sensor data using ROS robot_localization package for calculating odometry
- Developed a visual servoing algorithm using D435i camera, for navigating the robot through crop rows with an accuracy of 5cm
- Established a multi-node ROS network across three computers, achieving a low 1% latency across all data transfers
- Utilized the open-source software OpenDroneMap to generate an image mosaic from an agricultural farm dataset of 2000 HD images

System Design Engineer | *Vioma Motors, Mumbai*

June 2021 - May 2022

- Built a Li-ion cell model on MATLAB & Simulink using parameter estimator optimization toolbox to perform full system simulation
- Designed a BMS for 20 Li-ion cells using Texas Instruments' IC and interfaced it with STM32 uC using I2C protocol and augmented with CRC8 error checking algorithm, ensuring robust communication between them

PUBLICATIONS

Design of Battery Management System | *R. Ravikumar, S. Ghatge, R. Soni, J. Nadar*

IEEE PuneCon, 2020

LEADERSHIP AND INVOLVEMENT

- *Electrical Head* for D. J. Sanghvi college robotics team DJS Robocon'19
- Organized technical workshops on Altium Designer software as a member of the Robotics and Automation Society (RAS) of D. J. Sanghvi College of Engineering