

Atharva Pusalkar

Mumbai, India

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🔗 [atharva-18](#)

EDUCATION

DJ Sanghvi College of Engineering (affiliated to University of Mumbai)

India

BE in Electronics Engineering. GPA: 8.82/10.0

Expected Graduation: May 2022

EXPERIENCE

Open Robotics

Remote

Student Developer (Google Summer of Code)

May 2021 - Aug 2021

- Worked at Open Robotics to add new features to Ignition Gazebo, funded by Google.
- Added the capability to visualize joints, inertia, and center of mass of robot models in simulation worlds.
- Developed transparent and wireframe rendering modes to debug 3D models.
- Engaged with the entire organization in weekly technical meetings to plan the project work.
- Blog post - <https://atharva-18.github.io/gsoc>

IEEE Student Branch, DJSCE

Mumbai, India

Chairperson

Aug 2020 - Aug 2021

Technical Team Member

Aug 2019 - Aug 2020

- Led a team of 36 members to organize events, webinars, and workshops on the college campus.
- Implemented Agile project management for smooth operation of the committee.
- Developed the website of the committee to showcase the blogs, events, and the members of the team.
- Blog post - <https://atharva-18.github.io/ieee-sb>

Mowito

Bangalore, India

Robotics Engineer Intern

Jan 2021 - May 2021

- Worked with the development team to deploy autonomous robot software in warehouse environments.
- Worked on the startup's *maxL* robot navigation stack, for smooth trajectory planning.
- Created a tool to calibrate wheel encoders for a differential-drive robot.
- Developed an automated testing system to generate synthetic 2D/3D LiDAR measurements.
- Added the capability to remotely debug deployed robots using AWS Greengrass and SSH tools.
- Blog post - <https://atharva-18.github.io/Mowito>

DJS Racing

Mumbai, India

Technical Lead - Driverless

May 2021 - Present

Design Engineer

Mar 2019 - April 2021

- Spearheading a team of 20 members to develop the software for an autonomous Formula Student racecar.
- Designed the CAD model of the prototype.
- Designed a data acquisition system using the CAN protocol for automotive-grade safety.
- Developed a pipeline for 3D object detection using a LiDAR and mono camera.
- Assisted in developing a redundant state estimation algorithm.
- Integrated 2D landmark SLAM, MPC controller and sampling-based path planning.
- Blog post - <https://atharva-18.github.io/djsr>

PROJECTS

ROS 2D Landmark SLAM

Present

- ROS 2 package for 2D landmark SLAM
- Used fastSLAM 2.0 as the back-end.
- Technologies - ROS 2, C++, and Eigen.

Wireless PLC interface

Dec 2020 - April 2021

- Worked on a product for wireless interface in PLCs using the LoRa mesh system.
- Added MODBUS protocol and Ethernet for increased compatibility.
- Implemented MISRA C for predictable operation.
- Client base includes companies from South Asia, Canada, and Switzerland.
- Implemented OTA updates and file-system in the PIC32 MCU.
- Project link - <https://atharva-18.github.io/iiot-device>

Ignition Gazebo and RViz

Dec 2020 - Mar 2021

- Adds features such as modifying light intensity and joint controller topic validation in the Ignition Gazebo simulator.
- Implemented a new dialog box to display version number, license, and links to tutorials in the program.
- Ported features to visualize coordinate frame transforms from RViz.
- Project link - <https://atharva-18.github.io/osrf>
- Technologies - ROS 2, C++, Qt, and Ignition Math Library.

RRT Path Planner in C++17

Dec 2020

- Rapidly-Exploring Random Trees (RRTs, LaValle et al., 1998) implementation in C++17
- Used Eigen 3 for matrix manipulation and matplotlib for visualization.
- Project link - <https://github.com/atharva-18/RRT-CPP>

Data Acquisition for a Formula Student Car

Aug 2019 - Aug 2020

- Data acquisition system for DJS Racing.
- Designed and fabricated PCBs for data logging using the CAN protocol and STM32 MCU.
- Developed a desktop app to visualize data uploaded by the microcontroller to an AWS server.
- Thirty sensors are used to measure the pressures, wheel speeds, temperature, and IMU readings.
- Project link - <https://atharva-18.github.io/djsr-daq>

Monocular Depth Estimation

Dec 2019

- Monocular depth estimation and object detection pipeline that uses Image-to-Image Translation with Conditional GANs (Isola et al., 2017).
- The model learns the translation between an RGB image and its true stereo depth.
- Project link - <https://atharva-18.github.io/cgan>

COURSES

- Digital Circuit Design, Linear Control Systems, Circuit Theory and Networks, Object-Oriented Programming, Linear Integrated Circuits, Database and Management Systems, Computer Networks.
- Coursera: Self-Driving Cars - University of Toronto, Machine Learning, Deep Learning.

ADDITIONAL

- Volunteered at National Service Scheme - DJSCE (<https://djsce.ac.in/nss>). Organized tree plantation and blood donation drives.
- Graduate Record Examinations: Verbal - 158/170, Quantitative - 166/170.
- Programming Languages: Python, C, C++, and JavaScript
- Software: SolidWorks, Fusion360, ROS/ROS2, Gazebo, LTspice, and Ultimaker Cura.
- Libraries: TensorFlow, PyTorch, NumPy, Eigen, PCL, and OpenCV.
- Languages: Marathi, English, Hindi, and Spanish.