

Atharva Pusalkar

Mumbai, India

🌐 [atharva-18.github.io](https://github.com/atharva-18)

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EDUCATION

DJ Sanghvi College of Engineering - University of Mumbai

India

BE in Electronics Engineering. GPA: 8.82/10.0

Expected Graduation: May 2022

COURSES

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

EXPERIENCE

DJS Racing

Mumbai, India

Technical Lead - Driverless

May 2021 -

Design Engineer

Mar 2019 - May 2020

- Spearheading a team of 20 members to develop the hardware and software for an autonomous Formula Student race-car.
- Designed a data acquisition system using the CAN protocol for automotive-grade safety.
- Developed a robotic system using 3D perception, planning and motion control for race-cars.
- Assisted in developing a redundant car velocity estimation algorithm.
- Blog post - atharva-18.github.io/djsr

Open Robotics

Remote

Student Developer (Google Summer of Code)

May 2021 - Aug 2021

- Worked at Open Robotics to add new features in 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 - atharva-18.github.io/gsoc

Mowito Robotics

Bangalore, India

Robotics Engineer Intern

Jan 2021 - May 2021

- Collaborated with the development team to deploy autonomous robot software in warehouse environments.
- Worked on the startup's self-developed robot navigation stack - *maxL*.
- Created a tool to calibrate wheel encoders for a differential-drive robot.
- Developed an automated testing system to generate synthetic LiDAR measurements.
- Added the capability to remotely debug deployed robots using AWS Greengrass and SSH tunneling.
- Blog post - atharva-18.github.io/mowito

PROJECTS

Medicine Dispensing Robot

Oct 2021 -

- A two-wheeled Medicine dispensing robot for hospital patients.
- Integrated a voice synthesizing system to mimic the voice of a trusted person.
- Implemented a facial recognition and 2D SLAM system using a monocular camera.
- Project link - atharva-18.github.io/med-robot

ROS 2D Landmark SLAM

Jul 2021 - Aug 2021

- ROS 2 package for 2D landmark SLAM.
- Used FastSLAM 2.0 as the back-end.
- Project link - atharva-18.github.io/2d-landmark-slam

Wireless Data Transceiver

Dec 2020 - Apr 2021

- Worked on a IIoT product for wireless data transmission using the LoRa mesh system.
- Added MODBUS protocol and Ethernet interface for increased compatibility.
- Implemented the MISRA C standard and an OTA update system for the device.
- Client base includes companies from South Asia, Canada, and Switzerland.
- Project link - atharva-18.github.io/iiot-device

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 - atharva-18.github.io/rrt-cpp

Data Acquisition for a Formula Student Car

Aug 2019 - Aug 2020

- Designed and fabricated PCBs for sensor data acquisition using the CAN protocol and Teensy micro-controller.
- Developed a desktop app to visualize data uploaded by the micro-controller to an AWS server.
- Project link - 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 - atharva-18.github.io/cgan

EXTRACURRICULAR ACTIVITIES

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 to conduct the activities of the committee.
- Developed the website of the committee to showcase the blogs, events, and the members of the team.
- Blog post - atharva-18.github.io/ieee-sb

National Service Scheme - DJSCE

Mumbai, India

Volunteer

Jun 2019 - Jun 2020

- Organized and participated in tree plantation and blood donation drives.
- Increased the reach of the events, online and offline.
- Website - djsce.ac.in/nss

TECHNICAL SKILLS

- Programming Languages: Python, C, C++, and JavaScript
- Software: ROS, Gazebo, Fusion360, and Ultimaker Cura.
- Libraries: TensorFlow, PyTorch, NumPy, Eigen, PCL, Ipopt, and OpenCV.
- Electronic Circuit Simulation: LTspice, NI Multisim, and Proteus.
- Micro-controllers - Arduino, Teensy4.1, STM32F1, and ESP32.

ADDITIONAL

- As a member of DJS Racing - the team secured fourth position nationally in the Engineering Design event and fifth overall rank at Formula Bharat 2021 competition.
- Open Source: Contributed to Ignition Gazebo and RViz - <https://atharva-18.github.io/osrf>
- Participated in ACM ICPC 2019 Regional programming competition.
- Languages: Marathi, English, Hindi, and Spanish.