

# DEVESH DATWANI

GRADUATE ROBOTICS ENGINEERING STUDENT  
WORCESTER POLYTECHNIC INSTITUTE, WORCESTER, MA

## LINKS

[\[GITHUB\]](#) [\[LINKEDIN\]](#) [\[PERSONAL WEBSITE\]](#)

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## OBJECTIVE

**Seeking full time / co-op positions for robotics software / perception roles**

## LANGUAGES

Python 3+ • C++/C • MATLAB

## TECH STACK

ROS 1 & 2 • Git • OpenCV • TensorFlow  
Numpy & Keras • PyTorch • Django • AWS  
Linux • SolidWorks • AutoCad • Scikit Learn

## EDUCATION

### MS IN ROBOTICS ENGINEERING

WORCESTER POLYTECHNIC INSTITUTE  
WORCESTER, MA | AUG 2021 - MAY 2023

**Key Courses:** Artificial Intelligence • Machine Learning • AI For Autonomous Vehicles • Autonomous Aerial Vehicles • Robot Dynamics • Capstone Project

### BE IN MECHANICAL ENGINEERING

APSIT MUMBAI UNIVERSITY  
MUMBAI, INDIA | AUG 2014 - MAY 2018

**Notable Achievement:** Received the "Young Innovator" award for research on Plasma Actuators at the ICASTe conference, India

## THESIS / PERSONAL PROJECT / VOLUNTEERSHIP

### PLASMA ACTUATORS [\[DOC\]](#)

AUG 2017 - MAY 2018 | MUMBAI UNIVERSITY  
INDIAN INSTITUTE OF TECHNOLOGY  
PATENT APP NO. 201921038313

- Spearheaded a team of 4 to design a research project to induce & actuate airflow with plasma actuators
- Designed and constructed a plasma actuator with hollow pipes & high voltage, high frequency transformer
- Carried out experiments at the Aerospace Department of IIT Bombay
- Recorded air flows of ~9000 liters/hr

### AERIAL VEHICLE AUTONOMY [\[DOC\]](#)

2011 - 2019 | MUMBAI

- Designed, fabricated and tested semi-autonomous aerial vehicles
- Experimented with gas & electric powered power plant for RC planes
- Wrote PID controller in arduino uno to introduce cruising autonomy

## TUTOR

2018 - 2020 | SPREADING SMILES NGO

- Taught science to class 9 & 10 students from lesser privileged backgrounds

## EXPERIENCE

### TRAINEE | AIR INDIA ENGINEER SERVICES

JUN 2017 | MUMBAI, INDIA

- Partook in the engine overhaul of CFM-56B turbofan engines
- Assisted in non-destructive testing of HP turbine blades

### ADMATAZZ | DATA/ML ANALYST

DEC 2019 - DEC 2020 | MUMBAI

- Built end to end data analysis web applications for market research analysis with Tensorflow, Python, scikit-learn & AWS
- Built pipelines to train machine learning models on datasets
- Built web crawling tools for real time data acquisition from social media platforms such as Twitter, Reddit & ProductHunt
- Helped clients boost annual revenue growths by ~5% on average

### SPACE GOAT | DESIGN & PERCEPTION ENGINEER

SEP 2021 - JAN 2022 | WPI

- Represented WPI through a 15 member team at the NASA Big Idea Extreme Terrain Challenge 2022 to build a Martian robot
- Built an OTM capstone clutch mechanism for power distribution
- Integrated IMU & ultrasonic sensors with the robot and wrote a complementary filter for attitude estimation in C++

## CAPSTONE PROJECT

### FIRE FIGHTING ASSISTIVE RESPONSE ROBOT [\[GITHUB\]](#)

AUG 2022 - NOV 2022 | WPI & WORCESTER

- Conducted extensive stakeholder research to solidify a problem statement to integrate robotics for fire fighting assistance
- Developed a mobile robot solution for fire-exit safety evaluation in consultancy with the Worcester Fire Department, MA, USA
- Modified a turtle bot for fire safety assistance with ROS in Gazebo
- Deployed autonomous path planning and tracking packages
- Integrated & validated the perception stack for adaptive monte carlo localization & obstacle detection using a 2D LiDAR sensor

## ACADEMIC PROJECTS

### HUMAN BODY POSE ESTIMATION WITH CNN [\[GITHUB\]](#)

MAR 2022 - MAY 2022 | WPI

- Implemented the DeepPose paper from scratch to estimate human body pose in 2D with Tensorflow in Python
- Built a training pipeline and trained a cascaded VGG16 for regression task on the FLIC dataset through Google Colab
- Observed accuracies of ~70% on PCP metric configurations

### TRAFFIC SIGN DETECTION WITH MASK R-CNN [\[GITHUB\]](#)

SEP 2021 - DEC 2021 | WPI

- Built a training pipeline for fine tuning Mask R-CNN model on a custom traffic sign dataset with Tensorflow through Python
- Implemented adaptations to the Mask R-CNN's to enhance its performance in the task of real time traffic sign detection
- Improved mAP values by ~50% after training the model on an customized augmented dataset & troubleshooting dataset errors

### URBAN STREET SEGMENTATION WITH UNET [\[GITHUB\]](#)

MAR 2022 - MAY 2021 | WPI

- Built and trained a UNet from scratch with PyTorch for urban street segmentation for perception task of autonomous vehicles
- Built a Resnet18 architecture for the encoder to enhance accuracy & experimented with with CNN model pruning
- Validated the network with ~75% recall rate for CityScape dataset