

# DEVESH DATWANI

ROBOTICS **ENGINEER**  
WORCESTER, MA

## OBJECTIVE

Seeking for full time co-op positions in the space of computer vision and/or robot perception

## SKILLS

### LANGUAGES

Python 3+ • MATLAB • C/C++

### SOFTWARE STACK

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

### HARDWARE STACK

Arduino Uno • Raspberry Pi 3 B

### EXPERTISE

Deep Learning • Computer Vision  
Machine Learning • Robot Perception

## EDUCATION

### MS IN ROBOTICS ENGINEERING

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

KEY COURSES: Machine Learning • Robot Control • Computer Vision • Artificial Intelligence • AI For Autonomous Vehicles  
Robot Dynamics

### 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

## CERTIFICATION

Python Programming • Robotics: Aerial Vehicles • Applied Machine Learning  
Introduction To Self Driving Cars  
Deep Learning Specialization

## LINKS

<https://github.com/deveshdatwani>  
<http://www.linkedin.com/in/deveshdatwani>  
<http://www.devshdatwani.com/>

## CONTACT

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## LATEST EXPERIENCE

### SPACE GOAT | DESIGN & PERCEPTION ENGINEER

SEP 2021 - JAN 2022 | WORCESTER, MA

- Competed at the NASA Extreme Terrain Challenge 2022 to build a Mars rover while representing WPI
- Actively contributed in the design of a Martian rover encompassing a novel OTM capstone clutch mechanism
- Integrated sensors with the rover and contributed to the firmware code for rover-environment-perception and pose estimation by implementing statistical filtering algorithms on sensor data

## CAPSTONE PROJECT

### QUADCOPTER NAVIGATION | RESEARCH ASSISTANT

AUG 2022 - PRESENT | WPI, WORCESTER, MA

- Developing a swarm of mini-quadcopters to navigate through dense spaces like forests & buildings to aid rescue missions under Professor Nitin Sanket
- Building GPS-free quadcopters the size of sunflowers that solely rely on visual perception to navigate challenging environments
- Attempting to build a neural network-based perception stack

## RELEVANT EXPERIENCE

### BOSON MACHINES | R&D INTERN

JUN 2018 - DEC 2018 | MUMBAI, INDIA

- Assisted in the design and development phase of Boson's new generation 3D printers
- Modeled the new prototype on linear guide rail technology which helped reduced printing time by ~ 40%
- Carried out relentless printing experiments on the prototype

### TRAINEE | AIR INDIA

JUN 2017 | MUMBAI, INDIA

- Took part in the major engine overhaul process of a CFM-56B turbofan engine at Air India's aircraft maintenance department
- Assisted in the nondestructive testing and reporting of damaged high-pressure turbine blades
- Gained hands-on experience in maintenance of multi-million dollar aircraft engines in accordance with aviation standards

## PROGRAMMING EXPERIENCE

### NURTURELABS | JUNIOR WEB DEVELOPER INTERN

MAY 2021 - JUL 2021 | REMOTE

- Worked in the back-end development team to build an on-demand web application for users to generate business leads
- Merged the FastAPI and Django frameworks to build a quick and reliable web application hosted on Amazon's Web Services
- Wrote Pythonic scripts to automate data scraping from 52+ million users on Reddit, StackOverflow and ProductHunt

## ENGINEERING PROJECTS

### HUMAN POSE ESTIMATION WITH CNN [GITHUB]

MAR 2022 - MAY 2022 | WORCESTER POLYTECHNIC INST.

- Implemented the DeepPose paper to build a convolution neural network for estimating human-body pose in 2 dimensions
- Created a TensorFlow pipeline to fetch and load the FLIC dataset and train an AlexNet on a Google Colab notebook
- Recorded mean squared error values of ~ 400

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

SEP 2021 - DEC 2021 | WORCESTER POLYTECHNIC INST

- Implemented adaptations to the Mask R-CNN network to enhance its performance in detecting traffic signs
- Augmented a dataset of 10,000+ traffic sign images (motion blur and condensation) to improve model robustness in adverse weather conditions
- Helped enhance mAP value of the model from 0.05 to 0.25

### TRENDS ON THE MAP [GITHUB]

NOV 2020 | MUMBAI, INDIA

- Designed and implemented a visualizer to display Twitter trends on a world map
- Built an interactive web application to display Twitter trends using the Flask framework and Twitter API
- Deployed the server on an AWS EC2 instance

### AERIAL VEHICLE DESIGN [PROJECT DOC]

2011 - 2020 | MUMBAI, INDIA

- Designed, fabricated and flight-tested remote operated and semi-autonomous fixed-wing planes and quad copters
- Combined various power-plant, wing, composites and electronic, microcontroller and sensor configurations in the 100+ test flights
- Gained hands on experience working with open source firmware for reaching semi and sometimes full autonomy during flights

### FACIAL EXPRESSION DETECTION [GITHUB]

AUG 2019 | MUMBAI, INDIA

- Built a facial expression monitoring application as part of final project of the python programming certification
- Deployed the DLIB pythonic library to build a facial map of the subject in view and hypothesized model parameters for yawns
- Gained understanding of feature extraction techniques such as Haar, SIFT and HOG for object detection

## RESEARCH PROJECT

### AIRFLOW INDUCTION WITH PLASMA ACTUATORS [DOC]

2017 - 2018 | ASPIT, MUMBAI UNIVERSITY

- Designed and led a research project on plasma actuators to induce air flow without the use of any moving elements
- Designed and fabricated a plasma actuator inside hollow pipes powered by a high voltage-high frequency transformer
- Observed & recorded wall-bounded jet air flow of ~ 9000 liters/hr during experiments at the aerospace department of IIT, Bombay

## VOLUNTEER EXPERIENCE

### TUTOR | SPREADING SMILES

SEP 2018 - MAR 2020 | MUMBAI, INDIA

- Taught science 1 & 2 to children of lesser privileged backgrounds at Father Agnel Church Ashram, Mumbai
- Conducted weekly classes and focused lecture delivery to ensure building strong foundation in scientific concepts
- Realized 80% in class 9 and 100% in class 10 passing results for the year 2019 % 2020

### VOLUNTEER | SPREADING SMILES

DEC 2015 - MAR 2020 | MUMBAI, INDIA

- Volunteered to assist in logistical and on-ground service support at events conducted for community welfare
- Tutored science to children from lesser privileged backgrounds for the years 2019 & 2020
- Worked in the part time volunteer team to organize events such as christmas parties, going to cinema and more

## OTHER EXPERIENCE

### ADMATAZZ | DATA ANALYST INTERN

DEC 2019 - MAR 2020 | MUMBAI

- Built web scraping tools using pythonic library BeautifulSoup for scraping and parsing textual data
- Carried out sentiment analysis on acquired textual data to build consumer insights

### ADMATAZZ | DATA ANALYST & MARKETING EXECUTIVE

APR 2020 - DEC 2020 | REMOTE

- Worked in the ML team to build data and machine learning driven solutions for social media marketing
- Carried out data visualizations for consumer behavior analysis
- Deployed cloud based services for training ML models
- Introduced the use of R-CNN to carry out consumer behavior analysis from their social media image data (user consented only)
- Helped the marketing to tweak marketing strategies by building consumer insight reports