DEVESH DATWANI

GRADUATE ROBOTICS ENGINEERING STUDENT
WORCESTER POLYTECHNIC INSTITUTE, WORCESTER, MA

LINKS
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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 3 students 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 controllers for building cruise control autonomy in RC planes
- Experimented with FP manual control
- Gained hands-on experience with building semi-autonomous aerial vehicles after some failures & more successes through a span of 8 years

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 training pipelines for unsupervised learning on user dataset
- Built web crawling tools for real time data acquisition from social media platforms such as Twitter, Reddit & ProductHunt
- Helped clients boost social media reach, engagement & revenue

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 a novel OTM distribution method for reducing rover weight
- Integrated the IMU & ultrasonic sensors with the rover and wrote filters for attitude estimation and perception with Arduino in C++

CAPSTONE PROJECT

FIRE FIGHTING ASSISTIVE RESPONSE ROBOT [GITHUB]
AUG 2022 - NOV 2022 | WPI & WORCESTER

- Engaged with stakeholders for problem statement identification
- Developed a mobile robot solution for fire-exit safety evaluation in consultancy with the Worcester Fire Department, MA, USA
- Integrated a navigation stack for autonomous path planning & validated accurate robot localization through particle filtering
- Constructed a novel approach for evaluating real-time fire safety status of building floors through gmapping with LiDAR sensors

ACADEMIC PROJECTS

VISION BASED ROBOT CONTROL [GITHUB]
SEP 2022 - NOV 2022 | WPI

- Conducted user studies to analyze & compare vision based robot control through hand gestures in ROS 1 & Gazebo environment
- Implemented an estimation graph pipeline for real-time hand pose estimation based on single shot detectors with MediaPipe
- Optimized keyframe detection for low latency-smooth operation of the estimator for teleoperation / manipulation tasks in Gazebo

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 in 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 SEMANTICS WITH UNET [GITHUB]
MAR 2022 - MAY 2021 | WPI

- Built & trained a U-Net model in PyTorch for multi class image segmentation in urban street scenes for self driving vehicles
- Implemented Resnet blocks on the postulated network architecture to improve accuracy on the CityScape dataset
- Studied pruning methods for run time frame rate optimization