Atharva Pusalkar

Mumbai, India | atharvapusalkar18@gmail.com | atharva-18.github.io

EDUCATION

University of Mumbai — August 2018 - Present
Bachelor of Engineering in Electronics Engineering
CGPA: 8.40/10 (As of semester 4)

Sathaye College — July 2016 – May 2018
High School
Grade: 86.46%

SUMMARY AND INTERESTS

A robotic systems development enthusiast with a keen interest in Deep Learning, state estimation and non-linear control techniques. Currently working on a scientific paper based on Learning based Model Predictive Contouring Control. I am interested in the following fields – Deep Reinforcement Learning, Geometric Computer Vision, State Estimation, Non-linear Controls, Embedded Systems, Digital Signal Processing.

PROJECTS

Data Acquisition for a Formula SAE race car. 2020
Created a data visualization app using ElectronJS, ApexCharts, SocketIO and NodeJS. The incoming sensor can be taken either through a serial port or via a cloud connection. The cloud connection is established through a WebSocket. The server currently hosted on AWS EC2 with flask as its backend. The app also employs sensor fusion with the help of quaternion EKFs.

Monocular depth estimation using conditional GANs. 2019
Monocular depth estimation and object detection pipeline that makes use of Image-to-Image Translation with Conditional Adversarial Nets (Isola et al., 2017). The model was trained such that it learns the translation between a raw image and its stereo depth estimate.

DJS Racing Driverless 2020
The first driverless formula SAE car of India.
• Worked on 3D traffic cone detection and visual odometry using ZED camera with ANN based stereo feature matching.
• Designed an Unscented Kalman Filter based fastSLAM for pose and velocity estimation using IMU and differential GPS data.
• Created a Deep Reinforcement Learning based behaviour planning pipeline for optimal trajectory planning.
• Designed PID and geometric path controllers for track mapping and global race optimization.
• Implemented Learning based Model Predictive Contouring Control to take advantage of vehicle dynamics.

PathMaker Smart Cap (Ongoing)
A smart cap that guides blind people on streets by telling them of obstacles ahead making use of Computer Vision, NLP, and GPS. Technologies used Google Cloud API, ROS, Object Recognition, Keras, and shell scripting.

EXPERIENCE

Autonomous Systems Engineer 2020-Present
DJS Racing Driverless
Software Architecture, SLAM and Control Systems 2019-2020
DJS Racing Driverless
Social Work Volunteer 2019-2020
National Service Scheme

TECHNICAL SKILLS

Programming Languages	C/C++, Python, 8086 Assembly.
Libraries	Boost, Eigen3, PyTorch, PyTorch C++ API, TensorFlow, Keras, CUDA, OpenCV.
Robotic Simulators	Gazebo, RViz, Carla.
Design Software	Proteus, Cura, SolidWorks.
Development Boards	Nvidia Jetson Xavier NX, Arduino.
Robotic Frameworks	Robot Operating System (ROS)