Sarim Mehdi

MASTER'S STUDENT

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https://sarimmehdi.github.io/individual.html 🌐

SUMMARY

Automation engineering student with a passion for self-driving cars and a background in computer vision and deep learning

SKILLS

- Programming: Python, C++, C, OpenCV, PyTorch, MATLAB & Simulink, Rospy
- Software: PyCharm, Visual Studio, Google Colab, ROS, Unity 3D
- OS: Ubuntu, Windows
- Languages: English (Fluent), Urdu (Native)

EXPERIENCE

Computer Vision & Deep Learning Intern
T3LAB, Italy *Oct 2019 - Mar 2020*
▪ Reviewed the accuracy of pretrained 2D object detectors like Faster-RCNN, SSD, & YOLO on video data

▪ Developed real-time (30 FPS) application for vehicle and person counting at busy road junctions

▪ Also did research on my Master Thesis

AUDI Autonomous Driving Competition Participant
AUDI, Germany *May 2018 - Oct 2018*
▪ Among 16 teams selected from all over Europe

▪ Led a team of 4 other students in designing an autonomous car algorithm using deep reinforcement learning and computer vision techniques

▪ Designed a simulator (from scratch) using C++ and Unity where RL agent was trained and tested using Apprenticeship Learning

EDUCATION

Master's in Automation Engineering
University of Bologna, Italy *Sep 2017 - Oct 2020*
▪ **Coursework**: Computer Vision, Industrial Robotics, Optimization Models, Probability & Stochastic Processes, Mechatronics Systems, Mechanics, Real-Time Systems

▪ **Thesis**: Object trajectory prediction from an ego-centric perspective by combining 3D object detector (PointPillars) with depth map (MADNet) and real-time semantic segmentation neural nets

Bachelor's in Electrical Engineering
National University of Science & Technology, Pakistan *Sep 2012 - Jun 2016*
▪ **Coursework**: Programming, Control Theory, Circuit Analysis, Embedded Systems

▪ **Thesis**: Designed a path-following drone and performed analysis under different PID values in the Unity simulation environment

PROJECTS

▪ **Contributor to Open Source Robotics Library:** Python Robotics is an open source library for learning about robotics (path planning, mapping, navigation). My contributions: Bug Planning and variants of A*

▪ **Visual Inspection of Blade Tools:** Programmed application to measure tooth angles of blade tool using C++ and OpenCV functions (Canny Edge, Hough Transform & Haris Corner Detector)

▪ **Robot Mapping & Navigation in ROS:** Used custom bug planning for mapping and probabilistic roadmap for navigation. Potential Field Algorithm was used for following generated trajectory

▪ **Joint-Space Trajectory Analysis of the PUMA 560 manipulator:** Studied the joint-space performance of PUMA 560 manipulator under PD Control with Gravity Compensation, Inverse Dynamics Control and Robust Sliding-Mode Control using Peter Corke's Robotics Toolbox in MATLAB

▪ **Solution to Tanenbaum's Walking Philosophers**: Developed the program in C using POSIX threads with minimum starvation and no deadlock and usable for any number of philosophers