Aamish Hussain

Graduate Student in Robotics

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Programming/Computing

Languages

Python, MATLAB

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C++, R

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Technologies

- ROS, Docker, Git, Gazebo
- Pytorch, Numpy, Open3D, OpenCV
- Solidworks, Proteus
- Linux,MS office

Awards

Runner up TU Start-Up Week 2023

Best Senior Project, NUST 2017

NUST Merit Scholarship – 2015-17

Runner up – FICS 2017

Languages

English – business fluent, C1

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Urdu, Punjabi – Native

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German – A2-B1

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Activities

- Middle-distance running
- Tennis
- Sim racing

EDUCATION

Technische Universität Dortmund, Germany 2020-present

M.Sc. Automation and Robotics

Thesis: Using Segment Anything Models to Estimate Volume of Logistic Goods represented in 3D Colored Point clouds.

National University of Science and Technology, PK 2013-2017

Bachelors of Engineering, Mechatronics

Project Thesis: Slurry Deposition on Asperous Surfaces using 3D printers

CAREER HISTORY

Research Assistant - WHF 06-2023 - Present

Fraunhofer Institute for Material Flow and Logistics IML

- Using **Foundation image segmentation models** for view-based 3D **point cloud segmentation** to achieve zero-shot generalization.

Research Assistant - WHF 09-2022 - Present

Communication Networks Institute, TU Dortmund

- Developing simulation environment for communication aware robot navigation using OpenAI **Gym** and **gym-minigrid**
- Implementing **deep reinforcement learning** techniques for robot navigation.

Independent Project Work 09-2018 – 05-2019

- Developed a low-cost smart watch aimed for new users
- Developed its core functionality with **BLE**, **CAD** and assembly.
- **Sensor-actuator** integration, digital display functionality

Research Assistant 08-2017 – 07-2018

NUST College of Electrical and Mechanical Engineering

- Implementation of **Visual Odometry** for human-robot synchronization
- **Modeling and Simulation** of the robotic arm
- Development of **GUI** and literature review participation

ACADAMIC AND COMMERCIAL PROJECTS

10-2021
06-2022

Race against the machine – demonstrated 5G teleoperation of race cars

- Modified **ORB-SLAM3** for integration to the existing code base for **self driving**. Utilized **ROS** in **C++** to write nodes**.** Used **Docker** for the platform-agnostic solution.
- Contributed to **path following** set-up by utilizing a modified pure-pursuit algorithm written in **python.** Tested the approaches in the simulated environment in **gazebo** and **RVIZ.**

09-2016
09-2017

Slurry Deposition Printer for Asperous Surfaces

- Developed a **3D printe**r capable of printing on objects having different sizes, shapes, and surfaces.
- Contributed to the development of user control GUI using **QT** and **python**.
- Developed a system that takes an image and converts it into **vector graphics**, is manipulatable in GUI, and then can be converted into g-codes for GRBL and at the end, into CNC controls