

Fuzail Hamid Banday

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EXPERIENCE

Siemens

Munich, Germany

Robotics and Networking — Research and Predevelopment — Working Student

July 2025 – Present, Part-time

- Integrated a UR robot into a vPLC environment using TIA Portal, developing modular control logic and configuring real-time communication protocols (OPC UA, UDP, TCP) across the industrial network.
- Collaborated on a PID-based ball balancing control loop, receiving camera-derived position data from a colleague and preparing the framework for real-time control and networked feedback testing.
- Gained hands-on experience with PROFINET, virtual PLCs, and industrial networking configurations, ensuring interoperability and reliable data exchange across distributed devices.
- Documented system design, communication protocols, and control workflows to support maintainability, knowledge transfer, and future robotics integration projects.

HelloWorld Robotics

Kuala Lumpur, Malaysia

Robotics Intern

Jun 2023 – Sep 2023, Full-time

- HelloWorld Robotics is a robotics startup with focus on autonomous last mile delivery robots. As an intern there I got to work on a various aspects of the TARS robot hands on. Some of which include:
- Worked on the TARS autonomous delivery robot, handling software and hardware aspects, including extensive testing of sidewalk navigation.
- Designed modular ROS nodes in C++ using OOP principles, managing Git repositories, Docker deployments, and custom messages for multi-sensor data.
- Integrated and fused data from ZED stereo cameras, 3D LiDARs, IMUs, and Emlid RTK modules to enhance perception, state estimation, and localisation reliability.
- Fine-tuned ROS Navigation Stack parameters and developed a ROS surveillance package for automated video segmentation and removal.

EDUCATION

Technical University of Munich

Munich, Germany

Master of Science in Mechatronics, Robotics and Biomechanical Engineering

Apr. 2025 – Sep. 2027

- 100% Tuition Fee Waiver Scholarship.
- Relevant courses/labs so far: Autonomous Vehicles Perception, Cyber-Physical Systems with Ball balancing platform, F1Tenth Racecar Project.

University of Nottingham

Kuala Lumpur, Malaysia

Bachelor of Engineering with Honours in Mechatronics Engineering

Sep. 2021 – Jul. 2024

- High Achievers Scholarship.
- Some of the projects: Development of an autonomous multi-floor AGV using ROS 2, C++ Programming for Robot Car and Robotic Arm; Programming a PLC based sorting & assembly station.
- Relevant courses covered include: Autonomous Robotic Systems, Control Systems and Dynamics, Embedded Computing, Electronic Processing Robotics, Computer Aided Engineering.

SKILLS

Programming Languages: C, C++, Python, MATLAB

Robotics & Automation: ROS, URScript, TIA Portal, PLC Programming, Sensor Fusion, Industrial Networking (PROFINET, OPC UA, UDP/TCP)

Tools & Platforms: Docker (containerization), Git (version control), CI/CD pipelines (basic implementation for automated building/deployment)

Software Practices: OOP (object-oriented programming, basic), Documentation, Control Loops (introductory)

F1Tenth Race Car – Cyber-Physical Systems Lab | [GitHub](#)

- Developed autonomous control for an F1Tenth scale race car using ROS, implementing a PID-based control loop and gap-following algorithm to achieve competitive lap times.
- Implemented software speed modulation and gap-following strategies in simulation and validated performance on the real car.
- Gained experience in multi-sensor integration, real-time control, and robotics software deployment.

Ball Balancing Platform – Cyber-Physical Systems Lab | [GitHub](#)

- Programmed a dSPIC microcontroller to control a ball balancing platform using touch sensor input and PID-based control loops.
- Handled embedded system tasks including timer initialization, register configuration, and real-time data acquisition.
- Developed control logic to translate sensor inputs into actuator commands for stable balancing, gaining hands-on embedded systems experience.

Autonomous Multi-Floor Robot | [GitHub](#)

- Developed a multi-floor robot capable of navigating autonomously across floors, avoiding obstacles, and interacting with elevators.
- Used ROS, LiDAR-based SLAM, AMCL localization, Nav2 navigation, and sensor fusion (IMU + odometry) for real-world deployment.
- Implemented custom ROS packages for elevator transitions and multi-floor navigation; deployed software using Docker and version control with Git.

Reverse Engineering an Inlet Manifold of a Motorcycle | [GitHub](#)

- Recreated a discontinued motorcycle inlet manifold using 3D scanning, SolidWorks modeling, and TPU 3D printing for functional restoration.
- Performed iterative design and testing to ensure proper fit, durability, and performance under mechanical stress.

Spring-Powered Car

- Designed and built a spring-powered cart to carry a 2kg payload over 3 meters, optimizing energy efficiency and mechanical stability.
- Fabricated components using lathe and milling machines and iteratively improved performance through testing.

Complete Restoration of 2-Stroke Motorcycle

- Fully restored a neglected motorcycle including engine rebuild, chassis repair, and mechanical/electrical refurbishment to roadworthy condition.
- Gained deep practical experience in mechanical assembly, engine balancing, and vehicle restoration.