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EDUCATION

University of Engineering and Technology Lahore

BSc. Mechatronics and Control Engineering

Expected, May 2025

CGPA 3.72/4.00

PROFESSIONAL EXPERIENCE

Human Centered Robotics Lab (NCRA), UET Lahore

Mechatronics Intern

July 2024 - August 2024

Lahore, Pakistan

- Implemented SLAM algorithms and integrated LiDAR and depth cameras with Jetson Nano using ROS, designing cost-effective AMRs for healthcare and industry.

Precision Manufacturing Pvt Ltd.

Design Trainee

January 2024 - February 2024

Lahore, Punjab

- Designed and reverse engineered mechanical parts of military projects using SolidWorks.
- Overseen production and manufacturing processes in CNC workshop.

RADWI Electronics Pvt Ltd.

Embedded Systems Engineer Intern

June 2023 - August 2023

Islamabad

- Developed optimized ESP32 firmware for RFID-based smart lock integration & efficient data storage.
- Implemented UDP and MQTT protocols for efficient IoT communication.

Designmen Consulting Engineers Pvt Ltd.

HVAC Design & FLS Systems Intern

August 2022

Islamabad

- Acquired expertise in HVAC design, Fire & Life Safety systems, and AutoCAD, with site visits and project coordination ensuring compliance with engineering standards.

PROJECTS

Autonomous Mobile Robot for Lab-to-Lab Sample Shifting | Final Project, Robotics, Nvidia Controller

- Developed an autonomous material-handling robot with LiDAR and depth cameras, featuring SLAM-based navigation and obstacle avoidance in ROS.
- Designed chassis and suspension, conducting FEA to support an 80-100 kg payload.
- Developed a mobile app and touchscreen interface for real-time monitoring and control.

SMART Parking Lot Control System Using OpenPLC | Automation, PLC Programming

- Designed and implemented a SMART parking control system using OpenPLC with ladder logic.
- Integrated Arduino Mega for cost-effective PLC system simulation.

Ball Balancing on a Plate | PID Control, MATLAB & Simulink, Arduino

- Designed and implemented a 3DOF 3RPS parallel manipulator for a ball balancing system.
- Developed and tuned PID controllers on Arduino for real-time motor control, ensuring stability and trajectory tracking.

Design & Analysis of Amber Lucid One Robot | Robotics, SolidWorks, MATLAB & Simulink

- Designed and validated the Amber Lucid One 7-DOF robot in SolidWorks, integrating MATLAB-Simulink for dynamic simulations and kinematic optimization.

Portable Ventilator Using AMBU Bag | Mechanism, Programming, Control, TIVA Controller

Design and Simulation of Conveyor Belt System | SolidWorks

Automatic Pick and Place System | Automation, Electro-Pneumatic

ADDITIONAL INFORMATION

Technical Skills: Microsoft Office, SolidWorks, PLC Programming, MATLAB, Python, C, AutoCAD, ANSYS

Certifications: AutoCAD Training, Safety in Utility Industry, Problem-Solving Using Computational Thinking

Research Interests: Mobile Robotics, 3D Modelling, PLC Programming, Control

Awards: Laptop Scholarship (PMYLS), Merit Scholarships & Educational Grants, 1st Position in CAD War

Languages: Urdu (Native) & English (Fluent)