

PERSONAL INFORMATION **Muhammad Anss**

-  Lahore, Pakistan
-  +92 331 4293657
-  muhammadanss0907@gmail.com
-  <https://github.com/anss0907>
-  <https://www.linkedin.com/in/muhammad-anss-6a6207281>

JOB APPLIED FOR **Mechatronics & Control Engineer / Master's Candidate**

PROFESSIONAL SUMMARY

Dedicated Mechatronics Engineering student (Rank 1st, 3.84 CGPA) who loves building real-world robotic systems from scratch. I enjoy combining mechanical design, electronics, and coding to solve practical problems. With hands-on experience in autonomous navigation, PLC automation, and AI, I actively share my technical skills through community workshops and love learning from global engineering environments.

EDUCATION AND TRAINING

- Dec 2022 – Present **BS Mechatronics and Control Engineering**
University of Engineering and Technology (UET), Lahore, Pakistan
- CGPA **3.84/4.00** (Rank: 1st in Department/Batch)
- Key Subjects Control Systems, Robotics, Embedded Systems, Data Structures and Algorithms, Mechanism and Machine Design, Probability and Statistics.

HONORS & GLOBAL EXPOSURE

- 2024 **DAAD Sponsored Exchange:** Fully-funded Robotics Week at THWS, Germany. Won the **Conceptual Excellence Award** in the Maze Navigation Challenge.
- 2024 **Global & Industrial Tours:** Deutsches Museum, SACHS Ausstellung, and Schaeffler manufacturing (Germany). Networked with BMW alumni and TUM PhD students. Gained large-scale industrial insights visiting the **SNGPL** and **Haval** plants in Pakistan.
- 2022–2026 **Scholarships:** UET Merit Scholarship (2022–2024), Honhaar Scholarship (2025–2026), STEP High Achiever (2022–2026).

EXPERIENCE & LEADERSHIP

- Summer 2024 **Research Intern | IHYA LAB, UET Lahore**
 - Extracted and analyzed vital health data from smart bands, optimizing signal processing workflows for wearable sensors.
- Summer 2023 **Intern Engineer | DAWN Foods (Muridke Plant)**
 - Analyzed automated production lines and debugged real-time PLC/Machine faults to reduce manufacturing downtime.
- 2022 – Present **Technical & Outreach Director | Mechatronics Club & IET On Campus**
 - Spearheaded 3 major outreach programs (2 at GCU, 1 at Deaf Foundation) to promote STEM education.
 - Showcased engineering projects at the Lahore Science Mela and led hands-on technical workshops covering soldering, Arduino programming, and PCB design.

CORE ENGINEERING PROJECTS

- Final Year Project **GRACE: Geriatric Robotic Assistance for Care and Engagement**

- Description A fully autonomous service robot built from scratch using a custom Master-Slave architecture.
- Contributions
- **Autonomy & Vision:** Implemented Nav2 SLAM on a Jetson Orin Nano. Deployed PyTorch CNN-RNN pipelines for activity recognition and MediaPipe for human posture detection using Intel RealSense.
 - **Control:** Bridged AI with physical actuators using STM32/ESP32 via micro-ROS. Designed custom closed-loop velocity control for repurposed BLDC hoverboard motors.
 - **Hardware:** Designed a 19-part custom chassis in SolidWorks optimized for DFA/DFM principles.

Semester Projects **Robotics, Control & Path Planning**

- Contributions
- Engineered a 2-Axis CNC Pen Plotter from scratch and computed forward/inverse kinematics for a 6-DOF Robotic Arm.
 - Derived state-space models and implemented an LQR controller in ROS 2, validating 30kg chassis stability via Gazebo.
 - Simulated SCARA Manipulators; developed Robot Motion Control in MATLAB using PRM and A* algorithms.
 - Built Line-Following, Obstacle-Avoidance, and Surveillance vehicles with PCBs, and a Digital Logic Waiter Robot.

Semester Projects **Industrial Automation & Embedded Systems**

- Contributions
- Implemented a PLC Ladder Diagram to control an automated punching system utilizing industrial pneumatic cylinders.
 - Built a MATLAB Voice Recognition App (MFCCs) and programmed a TIVA C Series (Bare-Metal C) to drive a BLDC motor.
 - Solved the Knight Dominant Problem using Genetic Algorithms (C) and built a Jetson Nano Face Security System.
 - Built an Arduino Fan Analyzer, TIVA Projectile Launcher, 7-segment Digital Clock, Bridge Rectifier PCB, and Web Dashboards.

PERSONAL SKILLS

Mother tongue Urdu

Other languages	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B2
Medium of Instruction Certificate (JET Lahore)					
German	A1	A1	A1	A1	A1
Self-taught (Duolingo) - Elementary					
Chinese	A1	A1	A1	A1	A1
HSK-1 (University Course)					

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user
[Common European Framework of Reference for Languages](https://www.europecollege.edu/cefr/)

DIGITAL SKILLS

Robotics & Kinematics ROS 2 (Humble), ROS 1, Nav2, SLAM, TF2, Gazebo, 6-DOF Robot Kinematics.

Control & Automation PID, LQR, State-Space, Pneumatics, PLC Programming (LD, FBD, ST, IL, SFC).

Hardware Jetson Orin Nano Super, STM32 (HAL), TIVA C (Bare Metal), Raspberry Pi, Arduino.

Programming & AI C++, Python, MATLAB, PyTorch (CNN-RNN), OpenCV, Machine Learning, DSP.

CAD & Mech SolidWorks (Stress/Motion Analysis), AutoCAD, CNC Machining, PCB Design (Proteus).