Saud Ahmad

Robotics Engineer | Embedded Systems Developer

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[Profile]

I am a robotics and embedded systems enthusiast with a degree in Data Science and hands-on experience in building intelligent robotic systems. With a strong foundation in C, C++, and Python, I enjoy designing systems that bridge software intelligence with hardware precision. I have led a 40-member technical team, training them in hardware and software problem-solving across multiple robotics projects. My freelance and academic work demonstrate a deep passion for automation, sensor integration, and smart agriculture.

[Projects & Experience]

AgroBot (Final Year Project)
Autonomous Weed Control Robot

- Solar-powered robot for outdoor field navigation
- Zig-zag navigation using GPS + IMU fusion
- YOLOv8-based weed detection running on Jetson Orin Nano
- Laser-based weed removal with 1-axis gantry and servo motors
- Arduino Mega for hardware control

Smart Agriculture IoT System

- Static unit (ESP32) for monitoring temperature, humidity, and light
- Dynamic unit (Raspberry Pi): line-following bot with robotic arm for soil moisture reading
- Data sent to Blynk IoT dashboard for real-time visualization
- Future roadmap: camera-based plant disease detection and autonomous nav

Freelance Robotics Project (2023)

- Developed multifunctional robot with obstacle avoidance, line following, and RC control
- Mobile app connectivity for control and monitoring
- Focused on embedded programming, sensor integration, and real-time decision making

Early Robotics Projects

- Built robots with PID-based line following and obstacle avoidance
- Enabled RC-mode switching for manual override
- Emphasis on control tuning and embedded debugging

[Education]

BSc in Data Science
Ghulam Ishaq Khan Institute of Engineering Sciences and Technology (GIK), Topi, Swabi
Graduated: 2025

[Skills]

Programming Languages
C, C++ – Embedded/robotics applications
Python – Data science, scripting, AI, ROS2

Embedded Systems
STM32 Nucleo – Embedded firmware
ESP32 – IoT + sensor integration
Arduino (Mega, Uno) – General robotics prototyping

Microprocessors
Jetson Orin Nano / Nano – YOLOv8 inference, edge AI
Raspberry Pi 3/5 – Sensor data, IoT, robotic control

Robotics Platforms
ROS2 – Sensor fusion, nav, control
PID Control – Line-following, obstacle avoid
YOLOv8 – Custom object detection training

Sensors & Hardware
GPS NEO-8M – Outdoor localization
IMU – Orientation tracking
Encoders – Odometry and navigation
Stepper Motors – Gantry control
Servo Motors – Aiming and positioning

Data & AI
Data Preprocessing – pandas, NumPy
Model Training – YOLOv8 custom datasets
Visualization – Power BI, Tableau, Matplotlib, Seaborn

[Soft Skills]

- Team Leadership
- Technical Mentoring
- Problem Solving
- Communication
- Initiative & Ownership
- Adaptability
- Ethical Judgment