AZZAN RAUF

Embedded ML Engineer

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SUMMARY

I am a motivated undergraduate at the National University of Sciences and Technology with expertise in machine learning, computer vision, IoT, and embedded systems. Passionate about innovation, I develop solutions to complex challenges and strive for impactful results in academic and practical endeavors.

EDUCATION

Bachelors of Electrical Engineering   **2021-2025**

School of Electrical Engineering and Computer Sciences - SEECS
National University of Science and Technology - NUST

Work Experience

Interloop Power Plant   **Jul 2023 - Aug 2023**
Training Internee

- Monitored and analyzed all the working principles of power engines.
- Learnt the technicalities involved in power distribution.
- Understanding of all the safety measures and equipment in engine room, grid station, breaker/transformer rooms etc.

PROJECTS

BlueShield USV (Ongoing)

- A water surface drone for detecting heavy metals like iron, mercury etc.
- Removing trash from water bodies.
- Enabled real-time monitoring via wireless LoRa communication with a software application.
- Neural Network techniques to predict metal levels from water parameters.

Solar Tracker using Arduino

- Implemented PID control logic to manage servo motors integrated with an Arduino.
- Used LDR sensors and a solar panel to track the sun's direction for maximum power output.

Autonomous Soccer Playing robot using ATmega chip

- Programmed an ATmega chip to autonomously control a robot.
- Integrated infrared and ultrasonic sensors for obstacle avoidance and field navigation.

Essay Scoring using NLP and LSTM

- Features extraction using NLP tools such as Spacy, Bert, NLTK.
- Trained a Neural Network to make predictions based on these features.
- Implemented an alternate approach using LSTM trained on textual data for automated scoring.

Sound Localization using Raspberry pi

- Integrated three microphones with a Raspberry Pi to detect the direction of high-pitched sounds.
- Programmed the Raspberry Pi using Python to collect real-time sound data.
- Detected high-pitched sounds such as gunshots and whistles.

DermaVision: Skin Disease Classification Project
- Designed a web app to diagnose skin diseases using Convolutional Neural Network
- Leveraged the ResNet-34 architecture for accurate predictions.
- Developed a minimalistic, user-friendly interface for accessible healthcare solutions.

Air Quality Monitoring using ESP32
- Developed an air quality monitoring system using ESP32 and FreeRTOS.
- Integrated DHT22 and MQ135 sensors for temperature, humidity, and air quality measurements.
- Enabled real-time visualization using Arduino Cloud integration.

SKILLS

- **Technical Skills:**
  C/C++, Python, Assembly, OpenCV, TensorFlow, PyTorch, Git, Github, Arduino, ESP32, FPGA, MATLAB, Arduino, Raspberry Pi, Proteus, PSpice, CAD.
- **Other Skills:**
  Microsoft Office, Caput, Canva, Teamwork, Public speaking, Leadership, Project management.
- **Languages:**
  English, Urdu, German(A1)

Extra-Curriculars

- Social Media Marketing Piston Cup. — 2023
- Social Media Marketing NUST Orientation. — 2023
- Deputy Director Marketing AL-Qhalq Foundation — 2022-2023
- Deputy Director Social Media Marketing and Logistics NUST Media Club. — 2022-2023
- Deputy Director Logistics NUST Adventure Club. — 2023
- Deputy Director Social Media Marketing NUST Music Society — 2021-2022