MUNEEB ELAHI MALIK

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EDUCATION

National University of Sciences and Technology, ISB, PK Sep 2019 – May 2023

Bachelor of Science in Electrical Engineering, CGPA: 3.53/4.00

- Minor: Computer Science

South Dakota State University, Brookings, SD, USA Jan 2022 – May 2022

Global UGRAD Exchange Student, CGPA: 3.75/4.00

- Major: Electrical Engineering
- Minor: Leadership and Engr Management

WORK EXPERIENCE

TUKL Research and Development Center Sep 2022 – June 2023

Research Assistant

- Worked on the applications of unsupervised machine learning techniques for remote sensing applications.
- Designed a novel approach for forest damage assessment in data-scarce regions like Pakistan leveraging clustering techniques on multi-spectral satellite imagery.

High Performance Computing (HPC) Lab, SEECS June 2022 – Aug 2022

Research Intern

- Implemented Hardware Accelerator for Multi-Head Attention and Position-Wise Feed-Forward of the Transformer model.
- Deployed the model on a Xilinx FPGA to demonstrate its practical applicability.

Signal Processing and Machine Learning (SIGMA) Lab Aug 2021 – Nov 2021

Machine Learning Research Intern

- Developed HemoDetect, an advanced deep-learning solution for disease diagnosis and classification.
- Employed Faster R-CNN for multi-class disease classification in peripheral blood cell images.
- Applied the model for rapid diagnosis of Malaria, Leukemia, and Sickle Cell Anemia.

Research Institute for Microwave and Millimeter Wave Studies (RIMMS) Jul 2021 – Aug 2021

Electrical Engineering Intern

- Designed multi-layer PCBs for Microwave and RF applications.
- Fabricated PCBs using advanced PCB Fabrication devices by LPKF and Bungard Elektronik.
- Gained hands-on experience by working in the anechoic chamber, radar lab and EMC lab.

TECHNICAL SKILLS

- **Programming:** Python, C++, C, JavaScript, Verilog
- **Hardware:** PCB design, PCB fabrication, Embedded Design, PLC Programming
- **Machine Learning:** Numpy, TensorFlow, Scikit-learn, Keras, Pandas, Pytorch
- **Other:** MATLAB, OpenCV, Google Earth Engine, MS office, AutoCad

PROJECTS

Forest Damage Detection using Unsupervised Learning

- Applied Cascaded K-Means clustering algorithm on Sentinel-2 multispectral data to detect anomalies corresponding to forest fire damage.
- Employed a supervised classifier trained on spectral indices to classify clusters into burn severity classes.
- Designed a Web App for Forest Department to monitor Northern Punjab Forest Fires in the last 5 years.

Audio Processing of Fire-alarm and Wi-Fi Alert Transmission

- Created a safety-enhancing system integrating embedded systems, Wi-Fi communication and ML.
- Developed the system using ESP32 with Free-RTOS functionalities, using SVM for audio classification.

Car Drowsiness detector – Real-time Car Safety System

- Designed a real-time safety system for detecting driver's drowsiness with OpenCV and Deep Learning.
- Alarm is triggered to alert the driver if the system detects drowsiness for a specific duration.

Hardware Accelerator for the Transformer model

- Implemented Hardware Accelerator for Multi-Head Attention and Position-Wise Feed-Forward of the Transformer model.

Mobile based home automation system

- Designed a home automation system using Intel-8051 microcontroller.
- Incorporated the system's functionality using a mobile device for controls and designed a custom GUI.

RF Power Amplifier PCB design and fabrication

- Designed an RF Power Amplifier PCB with Altium and performed fabrication using LPKF machine.

Buck Converter

- Designed a 28V-12V buck converter circuit with 1% ripple voltage, tailored for the application of powering the onboard electronics and sensors of UAVs.

HONORS AND AWARDS

High Achiever's Gold Medal May 2023

- Recipient of two High Achiever's Gold Medals by the NUST university in the categories of *"Outstanding Academic Performance at International Level"* and *"International Grant Recipient"*.

Cultural Ambassador Jan 2022 – May 2022

- Appointed as the Cultural Ambassador of Pakistan by the U.S. Department of State.

Millennium Fellow, Class of 2021 Dec 2021

- Selected as one of 27 Pakistanis for the Millennium Fellowship by the United Nations Academic Impact.

Silver Medal, HSSC examination 2019 Sep 2019

Awarded Silver Medal for securing 2nd Position in Gujranwala Board in HSSC 2019 Examination.