HADIA ZULFIQAR

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EDUCATION

BE ELECTRICAL ENGINEERING

NATIONAL UNIVERSITY OF SCIENCES AND TECHNOLOGY, KARACHI   Sep 2021 – Jun 2025

- **CGPA**: 3.96

EXPERIENCE

ARÇELIK DAWLANCE, KARACHI

RESEARCH AND DEVELOPMENT INTERN   July 2024 – Aug 2024

Improvement Vino Parser Software
- Developed a Python-based parser to decode binary data from Vino monitoring devices using the UART protocol.
- Automated data conversion into labeled CSV files for advanced analysis and monitoring of air conditioner (AC) performance.
- Incorporated error code handling to improve diagnostics and provide actionable insights.

AC Troubleshooting App
- Created a troubleshooting application with the Kivy framework, catering to both service teams and consumers.
- Utilized phone microphone input to capture and decode AC buzzer sounds into binary values using FFT and constellation mapping techniques.
- Parsed data is displayed as real-time performance metrics, offering immediate and valuable insights into AC operation.

ADDITECH-SIM, GERMANY (REMOTE)

DATA SCIENCE INTERN | FORMING AND DEFECT DETECTION TOOL (FADD)   Feb 2023 – Sept 2024

- Worked with the Forming part of the Forming & Defect Detection Tool, a project affiliated with the Swinburne University of Technology (Australia), The University of Stuttgart (Germany) and ESI Group.
- Optimized parameters crucial in the forming processes. Automated the open-source tool HDFView to extract mechanical parameters and coordinates for the geometries from .erfh5 files using Python and also automated open-source visualization tool ParaView to visualize those mechanical parameters over the respective geometries using Python.
- Implemented a Machine Learning model for predicting young's modulus based on data received from sensors at different temperatures.

Research Paper
- Presented the project's poster and paper titled "Optimising Forming Process Behaviour using Artificial Intelligence" at the ICCM Conference 2023.

IEEE WOMEN IN ENGINEERING SOCIETY

DESIGN & PUBLICATIONS MEMBER   Dec 2021– Jun 2025

- Designed multiple posters and responsible for creating interactive posts for society's social media platforms.

PROJECTS

COURSE PROJECTS

ELECTRICAL CIRCUIT ANALYSIS
- *Cost-saving and reliable house lights circuit*: Simulated an energy-efficient lighting system with fault tolerance in Proteus.

ELECTRICAL NETWORK ANALYSIS
- *Automatic Power Factor Correction Unit*: Designed a relay-based APFC system to improve power factor without microcontrollers.

OBJECT ORIENTED PROGRAMMING
- *Scrabble game GUI using Tkinter*: Developed a Python-based Scrabble game with GUI using OOP concepts.

MICROPROCESSOR SYSTEMS
- *Obstacle Avoidance Line Following Robot*: Built an Arduino-based robot using IR and ultrasonic sensors for navigation.

MACHINE LEARNING
- *CNN-based Product Categorization Model*: Developed a model to classify product images using pre-trained MobileNetV2.

FINAL YEAR PROJECT

INTELLIGENT SHOPPING CART FOR ENHANCED THEFT PREVENTION AND INVENTORY TRACKING
- Developed an *Intelligent Shopping Cart* leveraging Raspberry Pi, Camera, RFID, Load Cells, and ESP32 for real-time billing, product identification, weight validation, and theft prevention. Integrated with a MongoDB-based billing system for automated balance deduction and cloud-synced inventory management.

PERSONAL PROJECTS

RETAIL SALES ANALYTICS CASE STUDY (BAZAAR PRE-INTERNSHIP TASK)
- Analyzed sales data using SQL and visualized KPIs in Tableau to identify top items, customer behavior, and revenue trends.

COVID-19 DATA EXPLORATION (SQL):
- Explored and analyzed global COVID data using SQL joins, CTEs, window functions, temp tables, and views to uncover trends in infection, death, and vaccination rates.

NASHVILLE HOUSING DATA CLEANING PROJECT (SQL):
- Cleaned and transformed real estate data by standardizing formats, splitting columns, handling nulls, removing duplicates, and preparing it for analysis using SQL.

SKILLS

Programming Languages: C++, Python

Data Analytics: Microsoft Excel, Google Sheets, SQL, Tableau

Software: MATLAB, Arduino IDE, Multisim, Proteus, ParaView, Visual Studio, PAM-FORM, GNU Radio Companion, MS Office, Adobe Photoshop, Figma.

CERTIFICATIONS

GOOGLE DATA ANALYTICS PROFESSIONAL CERTIFICATE
EXCEL BASICS FOR DATA ANALYSIS

Coursera | In Progress: 2 out of 8 courses completed.

EXCEL BASICS FOR DATA ANALYSIS

Coursera| Oct 2022

AWARDS & NOMINATIONS

- Awarded the prestigious **Merit-based Merali Scholarship** for all four years of undergraduate study.
- Earned **Dean's List Honors Award** in 7 out of 8 semesters by maintaining an SGPA of 3.99+ and a CGPA of 4.0, ranking in the 1st in the whole batch.
- Secured **3rd position** in Karachi Intermediate Examination 2021.
- Received Dawlance's Golden Key Award for being the **Top Intern** out of 25 interns chosen from a pool of 8000 applicants in Fresh Start Internship Program 2024.