MUHAMMAD TALHA IRFAN

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EDUCATION

National University of Sciences and Technology (NUST)
Bachelor of Mechanical Engineering
Nov 2021 – Present | Islamabad, Pakistan

PROJECTS

Text to Braille
Apr 2024

- Developed a Python program taking text input and converting it to UEB, grade 1 uncontracted or grade 2 contracted braille.

Webots Driverless Simulation
Mar 2024

- Programmed controllers, in Python and C++, for navigation system algorithm of a virtual driverless vehicular robot navigating for multiple laps around 3 racetracks of variety.
- Modelled a Webots world containing a track with 15° ramps; enhanced robot physics and sensors.
- Optimised distance sensor thresholds and turn coefficients of robot controller for all tested racetracks, achieving fastest lap times possible in 60x simulation speeds while avoiding collisions.

Home Automation System
May 2023

- Implemented a NodeMCU-based DHT11 temperature sensor setup to control a DC fan and a relay.
- Developed a single-page web application hosted on a local web server, utilising HTTP requests and JavaScript DOM manipulation, for manual control and automation for set temperature threshold.

CNC XY Plotter
Dec 2022

- Built an Arduino-based two-dimensional CNC Plotter, with stepper motors controlling XY motion and a servo motor guiding a pen in Z axis, drawing various objects with precision on a surface.
- Streamed sample numerical control G-codes via GRBL, a parser, both simulating on Proteus through Universal G-code Sender (UGS) and physically to Arduino CNC shield V3 by Benbox.

Plagiarism Detection Software in C++
Feb 2022

- Developed a C++ program to check similarity of a text file, comparing with 5 source files by counting similar words and phrases, calculating percentages, and outputting a similarity report.
- Optimised the program to handle at most 10000 phrases, improving plagiarism detection for common English language text, and for sample C++ codes achieving 32% greater accuracy.

COURSES

Kaggle Learn
Kaggle – Jul 2024 to Present

Introducing Generative AI with AWS
Udacity – Sep 2024

Elements of AI
University of Helsinki – Jun 2024

AI for Good Specialization
DeepLearning.AI – Nov 2023

Meta Full-Stack Engineer Certificate
Meta – Aug 2023

Introduction to Environmental Science
Coursera – Jul 2023

Google Data Analytics
Google – Jun 2023

Google IT Automation with Python
Google – Jun 2023

Google IT Support
Google – Jun 2023

Renewable Energy Specialization
Coursera – Feb 2023

6 Axis Robot Arm
ASME – Oct 2022

SKILLS

Python | Pandas | Scikit-Learn | Matplotlib | Seaborn | NumPy | SQL

C++ | HTML 5 | CSS 3 – SASS | JavaScript | Version Control – Git

Webots | AutoCAD | SOLIDWORKS | Proteus | LabVIEW | Technical Writing | Microsoft Office | 5S | Kaizen

LANGUAGES

English – Fluent | Urdu – Native | Spanish – Elementary