Muhammad Talha Irfan

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EDUCATION

National University of Sciences and Technology (NUST) Islamabad, Pakistan
Bachelor of Mechanical Engineering – CGPA: 3.11 *Nov 2021 – Jun 2025*
Elective Courses: Intro to Mechatronics Design, Robotics and Automation, Data Analytics for Engineers.

EXPERIENCE

PARCO - Pak-Arab Refinery Limited Kot Addu, Pakistan
Mechanical Maintenance Intern *Jun 2024 – Jul 2024*
– 2-day HSE training on Permit to Work, Risk Assessment, Life Saving Rules, Fire Safety and more.
– Spent 2 weeks each at Process, Workshop and U&OM Groups of Mechanical Maintenance.
– Studied Standard Operating Procedures (SOPs), API, ASME BPVC, AWS and TEMA Standards in-use, Equipment Technical Drawings and Data Sheets, and Piping and Instrument Diagrams (P&IDs).
– Observed in-service Pumps, Compressors, Heat Exchangers, Pressure Vessels, Pressure Safety Valves, Breather Valves, Boilers and Storage Tanks, on Field Visits at various Refinery facilities.

PROJECTS

Dynamic Braille Generator System (Final Year Project) – Python, C++, Arduino, EasyEDA *Sep 2024 – May 2025*
– Developed a Python program to convert text to grade 1 uncontracted and grade 2 contracted braille.
– Showcased a 5-cell LED display controlled by Arduino Mega, displaying input text into grade 1 braille.
– Designed a PCB Shield for Arduino Mega to evaluate the working of electro-mechanical braille cells.

Robot Manipulator – Robotics Toolbox, MATLAB, Python, NumPy, Matplotlib *Oct 2024 – Nov 2024*
– Constructed the PUMA560 manipulator using the DH parameters in Robotics Toolbox.
– Plotted 3 unique Inverse Kinematics solutions for a set of random joint angles.
– Obtained the workspace of PUMA560, graphing 100000 end-effector positions.

Webots Driverless Simulation – Webots, Python, C++ *Mar 2024 – Apr 2024*
– Modelled a Webots world containing a track with 15° ramps and enhanced robot physics and sensors.
– Programmed controllers for navigation system algorithm of a virtual driverless vehicular robot navigating for multiple laps around the racetracks.

Home Automation System – ESP8266, Proteus, C++, HTML, CSS, JavaScript *Apr 2023 – May 2023*
– Implemented a NodeMCU-based DHT11 temperature sensor setup to control a DC fan and a relay.
– Developed a single-page web application, utilising HTTP requests and JavaScript DOM manipulation for manual control, and automation for a set temperature threshold.

SKILLS

– Mechanical and Electrical Design: AutoCAD | SOLIDWORKS | COMSOL Multiphysics | Proteus | LabVIEW | EasyEDA
– Embedded and Control Systems: C / C++ | Arduino | NodeMCU – ESP8266 | MATLAB – Simulink
– Robotics and Industrial Automation: Python | Webots | Robotics Toolbox | PLC Ladder Logic

– Data Science: Jupyter Notebook | Pandas | Scikit-Learn | Matplotlib | Seaborn | NumPy | Tensorflow – Keras | PyTorch
– Data Analytics: MS Excel | SQL | Jotform | Zapier

– Miscellaneous: Technical Drawing | Technical Writing | Microsoft Office | 5S | Kaizen | Version Control – Git
– Soft Skills: Teamwork | Attention to Detail | Flexibility | Adaptability | Problem-Solving | Creativity
– Languages: English - Fluent | Urdu - Native

Courses and Certifications

– Data Analytics Essentials	Cisco Netacad	*Mar 2025*
– AI for Mechanical Engineers	Coursera	*Dec 2024*
– PCB Design Masterclass	NUST SMME	*Dec 2024*
– McKinsey Forward Program	McKinsey	*Dec 2024*
– Kaggle Learn	Kaggle	*Oct 2024*
– Elements of AI: Introduction to AI and Building AI	MinnaLearn	*Jun 2024*
– Ethics and Communication for Engineers	ASME	*Nov 2023*
– Mastering 5S and Kaizen, The Toyota Way	UNAP	*Oct 2023*
– Renewable Energy Specialization	Coursera	*Feb 2023*

VOLUNTEERING

NUST Community Services Club (NCSC) Islamabad, Pakistan
Executive Publications *Dec 2021 – Sep 2022*
– Transcribed positive changes on various social matters to captions for NCSC social media posts.