



Rana Mobeen Tariq

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Home: Islamabad (Pakistan) **Date of birth:** 01/08/1997

WORK EXPERIENCE

Instructor (Computer Science)

National University of Computer and Emerging Sciences

[10/08/2022 – Current] **City:** Faisalabad **Country:** Pakistan

As a dedicated university instructor in the field of computer science and engineering, I have developed and delivered comprehensive course content to undergraduate students, focusing on both theoretical foundations and practical applications. My responsibilities included curriculum development, lecturing, mentoring, and assessing student performance.

Courses Taught:

- **Fundamentals of Programming**
 - **Key languages/tools:** C, C++, Python.
- **Computer Organization and Assembly Language**
 - **Key languages/tools:** Assembly Language (x86), MASM (Microsoft Macro Assembler), Logisim.
- **Digital Logic Design**
 - **Key tools:** Verilog, VHDL, Xilinx ISE Design Suite.
- **Introduction to Computing**
 - **Key languages/tools:** C, Scratch, Linux command-line tools.

AWARDS AND CERTIFICATION

Best Poster Award (2024)

- **Paper:** Fine-tuning and Evaluating the abilities of Open-Source Large Language Models for Generation Task.

Certificate for Highest CGPA in Masters (2024)

- Awarded the Certificate for Highest CGPA in Masters for securing the overall top CGPA in the batch.

Second Position in CEATS Math Contest (2016)

- Secured second position at the national level in the CEATS Math Contest.

EDUCATION AND TRAINING

Master of Science, Computer Science (3.52/4.00)

National University of Computer and Emerging Sciences [01/02/2023 – 30-12-2024]

City: Faisalabad | **Country:** Pakistan | **Website:** <https://cfd.nu.edu.pk/>

Bachelor of Science, Computer Engineering (3.27/4.00)

University of Engineering and Technology [01/09/2017 – 01/12/2021]

City: Taxila | **Country:** Pakistan | **Website:** <https://www.uettaxila.edu.pk/>

RESEARCH PROJECTS

MS Thesis: Fine-tuning and Evaluating the abilities of Open-Source Large Language Models for Generation Task.

My thesis was aimed at evaluating the efficiency of fine-tuning open-source Large Language Models (LLMs) for creative writing tasks, with a focus on story generation. It explored how diverse prompting strategies and prompt quality impact LLM performance, coherence, and narrative engagement. The research provided insights into optimizing LLMs for creative content generation with minimal computational cost, contributing to advancements in prompt engineering and fine-tuning for enhanced creative outputs.

Skills:

- Large Language Model (LLM) Fine-Tuning
- Prompt Engineering
- Python, PyTorch/TensorFlow
- Data Preprocessing and Dataset Curation
- Research and Data Analysis
- Natural Language Processing (NLP)
- Computational Efficiency Optimization
- Story Generation and Narrative Analysis
- Performance Evaluation of AI Models

Neural Machine Translation Pipeline for English-to-German Speech Translation Developed a neural machine translation pipeline using transformer-based models to convert English speech to German speech. The pipeline involves transcribing English audio input using the Deepgram Speech-to-Text API, translating the transcribed text into German with a custom-trained transformer model using multi-head self-attention, and then converting the translated German text back into speech via a Text-to-Speech API.

Skills:

- Natural Language Processing (NLP)
- Machine Translation
- Transformer Models (multi-head self-attention, encoder-decoder architecture)
- Deep Learning
- Speech Recognition (Deepgram Speech-to-Text API)
- Text-to-Speech (TTS)
- Python Programming
- API Integration

Machine Learning Based Fake News Detection App with Streamlit and FastAPI Utilizing the dataset "Fake News Dataset" from Kaggle, the project involved preprocessing text, extracting relevant features, and implementing classification algorithm. Performance evaluation was based on metrics such as recall, F1 score, and precision, providing insights into the model's efficacy in detecting fake news articles accurately.

Skills:

- Python / Data Manipulation with Pandas
- Numerical Computing with Numpy
- Machine Learning with Scikit-learn
- Ensemble Modeling Techniques
- API Development with FastAPI
- Data Visualization with Streamlit
- Model Deployment and Interactive Interfaces
- Data Preprocessing and Feature Engineering
- Building and Evaluating Predictive Models

Customized Industrial Programmable Controller(Embedded System) Software based GUI desktop application showing all available functionalities can be selected for any I/O. In the back end the embedded hardware code should be automatically generated. This custom program is setup to read all of the inputs and to perform the necessary operations to control the outputs of the PLC to have the equipment respond in the manner the system is designed for the following basic function.

Skills:

- GUI Development (MATLAB)
- Embedded Systems Programming
- Programmable Logic Controller (PLC) Control
- Digital and Analog I/O
- Digital-to-Analog Conversion (DAC)
- Serial Communication Protocols
- Automation and Control Systems
- Object-Oriented Programming (OOP)
- Micro C / PIC Controller

Mentor IEEE Robotics Club (FAST NUCES) I mentored the IEEE Robotics Club at FAST NUCES, CFD Campus, where I fostered innovation and teamwork among students. I organized several competitions and seminars to enhance members' skills and knowledge in robotics. Below are some of the projects I contributed to:

- RC Car Control System.
- Intelligent Traffic Signal System
- Obstacle Detection and Evasion System

Skills:

- Arduino Programming
- Sensor Integration (Ultrasonic, Infrared)
- Wireless Communication (RF Modules, Bluetooth)
- Embedded Systems Design
- Algorithm Development

- Robotics and Automation • Real-Time Data Processing.

CONFERENCES AND SEMINARS

[09/10/2023 – 10/10/2023] Faisalabad

International Conference on IT and Industrial Technologies (ICIT)

- Served as a **reviewer** for submitted papers in computer science, providing critical assessments and feedback to ensure high-quality submissions.
- Actively participated as a member of the **management core team**, coordinating conference logistics and supporting the overall planning and execution of the event.

Link: <https://cfd.nu.edu.pk/events/icit-2024/>

[24/08/2023 – 24/08/2023] Faisalabad

Side Channel Information Leakage

Conducted by **Dr. Maria Mushtaq**, Associate Professor at Telecom Paris.

- Overview of Side-Channel Attacks
- Information Leakage and Cryptography:
- Mitigation Techniques
- Mitigation Techniques

WORKSHOPS

[03/11/2022 – 03/11/2022]

Deep Graph Networks and Soft Robotics

Conducted by a panel of researchers from **Institute Sant'Anna Pisa**.

- Deep Graph Networks (DGN)
- Integration of DGN and Soft Robotics

DIGITAL SKILLS

Machine Learning, NLP, Robotics
Python, C++, Assembly Language
Numpy, Pandas, Scikit-Learn
Research Methodology, Embedded System

LANGUAGE SKILLS

Mother tongue(s): Urdu

English (Fluent - Professional)