

Taimur Shahzad Gill

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github.com/taymuur | 0000-0003-2467-1688 | Taimur Shahzad Gill

Personal Profile

A research-focused electrical engineer with 1,310+ hours of research experience in AI, computer vision, and biomedical signal processing. Published 4 first-author papers with proven ability to develop novel computational architectures for complex healthcare challenges. Seeking to advance digital health solutions through AI-driven systems that translate complex biological data into actionable clinical insights for improved patient outcomes.

Education

University of East Anglia

Norwich, United Kingdom

Masters in Data Science for Biology

Sep 2015 - Present

- **Relevant Coursework:** Data Science & Bioinformatics, Statistics for Biologists, Data Mining

National University of Sciences and Technology

Islamabad, Pakistan

Bachelors in Electrical Engineering (CGPA 3.31/4.00)

Sep 2019 - Jun 2023

- **Relevant Coursework:** Machine Learning (A), Digital Image Processing (A), AI & Decision Support Systems (B+), Numerical Methods (B+), Calculus & Analytical Geometry (A), Digital Signal Processing (B+)
- First-author journal publication in *Epilepsy & Behavior* achieving 98.4% accuracy on multiclass seizure classification
- 3 first-author conference publications and 2+ years Master's-equivalent research experience across 3 research labs
- Co-founder of NUST Robotics and Artificial Intelligence; Runner-up in Hi-Robotec Robofiesta 2.0

Army Public School and Colleges System

Karachi, Pakistan

GCE Ordinary and Advanced Level

May 2013 - Jun 2019

- Highest Achiever in Class of 2019 and graduated with school-level distinction with 2A*s, 5As, and 1B
- Served as the College Head Boy with active participation in sports; Winner of Inter-College Cycling Championship

Research Experience

Nixon Research Group | University of Liverpool

Liverpool, United Kingdom

Honorary Research Assistant

May 2025 - Present

- Developed and evaluated TimeGPT for Influenza surveillance, achieving RMSE of 873.27 for 1-week forecast, outperforming traditional models (*NumPy, Matplotlib, Pandas, Scikit-learn, and TimeGPT*)
- Led seasonal pattern analysis for SFTS in South Korea using Complex EMD, harmonic regression ($R^2=0.848$), and bi-coherence analysis to identify multi-scale disease transmission cycles (*Python, R, and Epidemiological Modelling*)

Asia Petroleum Limited

Karachi, Pakistan

Project Engineer

Nov 2023 - Present

- Developed a hybrid ESN-LSTM model achieving R-squared of 0.975 and DA of 94.12% on long-short term forecasts of the KSE-100 Index (published in ICRAI 2024) (*Python, NumPy, and Scikit-learn*)
- Implemented real-time data visualization dashboards improving project delivery timelines by 20% (*Power BI*)

AdditechSim | University of Stuttgart

Stuttgart, Germany

Data Science Intern

Nov 2022 - May 2023

- Developed a Reinforcement Learning model which optimised pressure of shaft-hub connection 98% faster than the existing Q-learning approach (*Python, StableBaselines-3, OpenAI Gymnasium, NumPy, Pandas, and Scikit-learn*)
- Applied and evaluated deep reinforcement learning using Python, StableBaselines-3, and OpenAI Gymnasium (*StableBaselines-3, OpenAI Gymnasium*)

PRL | National University of Sciences and Technology

Karachi, Pakistan

Research Intern

Sep 2020 - Aug 2021

- Led a team of 6 undergraduate students to design and develop a working prototype of power theft detection system (published in ICET 2023) (*Python with Raspberry Pi, ThingSpeak, NumPy, and Pandas*)
- Programmed Raspberry Pi for real-time transmission of voltage, current, and power factor readings to the ThingSpeak server (*Python with Raspberry Pi, ThingSpeak, NumPy, and Pandas*)

Research Projects

MHA-CNN for Classification of Generalised Epileptic Seizures

Islamabad, Pakistan

National University of Sciences and Technology

Feb 2022 - Nov 2022

- Proposed a novel CNN architecture with a multi-headed attention mechanism to classify the 5 types of generalised epileptic seizures. (*Python, Tensorflow, Keras, MNE, PyEDF, NumPy, Pandas, and Matplotlib*)
- Achieved an average training accuracy of 99.1% and testing accuracy of 98.4% for multiclass seizure classification. (*Overleaf and \LaTeX*)

KneeViT: Hybrid Architecture for Knee MRI Classification

Liverpool, United Kingdom

University of Liverpool

Jan 2025 - Present

- Developed novel hybrid architecture combining VGG Transformer and OverLoCK ConvNet, achieving AUC scores of 0.919 (abnormal), 0.809 (ACL tear), and 0.760 (meniscus Tear) with average of 0.845 after 50 epoch (*Python, TensorFlow, PyTorch, NumPy, and Scikit-learn*)

Indigenous Development of a Low-Cost EEG Acquisition System

Islamabad, Pakistan

National University of Sciences and Technology

Sep 2022 - May 2023

- Developed a functional prototype of an EEG acquisition system (using Ambu electrodes) to amplify the EEG signal 150 times (*C with Arduino IDE*)
- Carried out live testing of the prototype using Ambu EEG electrodes and visualised the signal using 12-bit ADC (*Teamwork and Communication*)

Publications

JOURNAL ARTICLES

Attention-Based Deep Convolutional Neural Network for Classification of Generalized and Focal Epileptic Seizures

Taimur Shahzad Gill, Muhammad Ayaz Shirazi, Syed Sajjad Haider Zaidi

Epilepsy & Behavior 155.109732 (Feb. 2024). 2024

CONFERENCE PROCEEDINGS

Time Series Forecasting of KSE-100 Index Using a Hybrid ESN-LSTM Model

Taimur Shahzad Gill, Syed Ibrahim Zahid

2024 *International Conference on Robotics and Automation in Industry (ICRAI)*, 2024

Early Detection of Mesothelioma Using Machine Learning Algorithms

Taimur Shahzad Gill, Muhammad Ayaz Shirazi, Syed Sajjad Haider Zaidi

The 7th International Electrical Engineering Conference, 2023

IoT Based Smart Power Quality Monitoring and Electricity Theft Detection System

Taimur Shahzad Gill, Durr E Shehwar, Hira Memon, Sobia Khanam, Ali Ahmed, Urooj Shaukat, Abdul Mateen, Syed Sajjad Haider Zaidi

2021 *16th International Conference on Emerging Technologies (ICET)*, 2021, Islamabad, Pakistan

Skills

Programming

Python (Pandas, NumPy, Scikit-learn, Matplotlib, Tensorflow, and Keras), MATLAB, ESP-IDF, C/C++, HTML/CSS, and SQL.

Tools & Frameworks

Linux, \LaTeX (Overleaf/R Markdown), Tableau, SPSS, KNIME, Power BI, Microsoft Office Suite, Firebase, RTOS, and Git.