

Muhammad Hamza Khan

MS in Computer Engineering

Introduction

I have a great deal of experience in all aspects of Artificial Intelligence, Signal and System, and Natural Language Processing, which I have gained from +3 years of experience. I have strong skills in Python, PyTorch, TensorFlow, Hugging Face, C/C++, and MATLAB.

Professional Experience

- 06/2025-11/2025 **Maverick, Innovista, Islamabad, Pakistan.**
 - Researcher in Artificial Intelligence
 - Developed Generative AI models, including Text-to-Speech, Text-to-Image, and Text-to-Video systems.
 - **Tools and Algorithms:** Python, TensorFlow, PyTorch, and Transformers.
- 08/2024-05/2025 **Machine Learning Engineer, Congo Rise InfoTech, Islamabad, Pakistan.**
 - Collaborated on specific project or task, e.g., "House Price Prediction, Sentiment Analysis on Movie Review, Digit Recognizer, etc.
 - **Tools and Algorithms:** Python, Random Forest, KNN, RF, Signal Processing.
- 08/2021-07/2024 **Research Engineer, Signal Image Multimedia Processing and Learning (SIMPLE) Lab, UET, Taxila, Pakistan.**
 - Research on Multimodal Depression Detection Using Physiological Signal.
 - **Tools and Algorithms:** Python, CNN, SVM.
- 09/2020-07/2021 **Software Developer, Portdex, Islamabad, Pakistan.**
 - WordPress App Development
 - PHP Plugin Development
 - **Tools and Algorithms:** WordPress, Elementor

Education

- 03/2021-01/2023 **MS, Computer Engineering, University of Engineering and Technology, Taxila, Pakistan.**
 - Deep Learning
 - Machine Learning
 - Signal Processing
 - **Thesis Title:** Multimodal Depression Detection Using Physiological Signal
- 09/2016-08/2020 **BS, Computer Engineering, COMSATS University Islamabad, Pakistan.**
 - C/C++
 - Signal Processing
 - Embedded Systems
 - Data Structure & Algorithms
 - Data Communication and Networks
 - Wireless Communication
 - **Thesis Title:** Forest Fire Detection, Monitoring, and Control System using IoT (Zigbee, Smoke Sensor, Temperature Sensor, Micro-controller etc)

Research Publications

1. **Muhammad Hamza Khan**, Muhammad Majid, and Aamir Arsalan. "Exploring the Diagnostic Potential of Heart Sound Spectrograms in Depression Identification." [[International Conference on Emerging Technologies \(ICET\)](#)].

– Islamabad, Pakistan

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2. **Muhammad Hamza Khan**, Muhammad Majid, Aamir Arsalan, Marius George Linguraru, and Syed Muhammad Anwar. "Deep Learning based Depression Detection using Speech Spectrograms." [2025 IEEE EMBC Conference].

Write-up.

1. "Heart Sounds Spectrogram: An Efficient Detection Tool for Depression Detection".
2. "EEG Spectrogram-Based Classification of Major Depressive Disorder Using Machine Learning and Deep Learning".
3. "Perceived Stress Classification in Response to Olfaction Enhanced Multimedia"

Project Participation

Signal Image Multimedia Processing and Learning (SIMPLE) Lab.

- o Research on Multimodal Depression Detection Using Physiological Signal
 - Duration: June 2021 - August 2024

Forest Fire Detection.

- o Research on Forest Fire Detection, Monitoring, and Control System using IoT (Zigbee, Smoke Sensor, Temperature Sensor, Micro-controller etc)
 - Duration: September 2019 - August 2020

Academic Skills

Artificial Intelligence tools and Algorithms: .

Random Forest, CNN, LSTM, RNN, SVM, Transformer, Python, PyTorch, TensorFlow, Scikit-Learn, Hugging Face, Linux, and MATLAB

Theoretical knowledge and competencies.

During my research and teaching, I have a good understanding of concepts related to Machine Learning, Deep Learning, Signal Processing, Wired Communication, Natural Language Processing, Computer Vision, and Image Processing

Awards and Distinctions

- o Partially Funded Bachelors scholarship, COMSATS University Islamabad
- o Graduated among top 10 of 2020 batch at Department of Computer and Electrical Engineering, COMSATS Attock, Pakistan
- o Laptop Awarded, Prime Minister Pakistan Program, Islamabad, Pakistan.

Social Skills.

Good at making new friends, adjustment with new teammates by studying in a multinational environment and interaction with people of diverse ethnicity and nations

Languages

English:	Official/Academic Language	(Advanced level speaking, reading and writing skills)
Urdu:	National/Official Language	(Advanced level speaking, reading and writing skills)
Punjabi:	Native Language	(Advanced level speaking, reading and writing skills)

References

Prof. Muhammad Majid

- o Professor at Department of Computer Engineering, UET, Taxila, Pakistan
- o Email: m.majid@uettaxila.edu.pk

Dr. Aamir Arsalan

- o Assistant Professor at Department of Software Engineering, Fatima Jinnah Women University Rawalpindi, Pakistan
- o Email: aamir.arsalan@fjwu.edu.pk

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