

Muhammad Sameer Amjad

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EDUCATION

National University of Sciences and Technology

H-12 Islamabad, Pakistan

Bachelors of Science in Computer Science - CGPA 3.61

Sept. 2022 – Jun 2026

- **Relevant Coursework:** Data Structures and Algorithms, Artificial Intelligence, Machine Learning, Design and Analysis of Algorithms, Operating Systems, Web Engineering, Deep Learning, Parallel and Distributed Computing

AREAS OF EXPERTISE AND INTERESTS

Web Development, Large Language Models (LLMs), Deep Learning, Machine Learning, AI Research and Development, Data Analysis, Algorithm Design

Research Interests: Large Language Models for Multimodal AI Systems, Vision Models in Deep learning, LLMs, transformer networks, Application of software analytics, AI-driven tools in Web Development and Data Processing

EXPERIENCE

Machine Vision and Intelligent Systems Lab, SEECS

Jun. 2024 – Present

Researcher

NUST H-12, Islamabad

- Contribute to deep learning-based projects, applying advanced techniques to solve real-world problems such as Glacier Monitoring
- Authored a systematic research paper analyzing recent applications of Machine Learning and Deep Learning (DL) in Business and Finance
- Support final year projects (FYP) of senior students, providing guidance and technical expertise in AI and deep learning.

High Performance Computing Lab, SEECS

May 2024 – Dec. 2024

Research Assistant

NUST H-12, Islamabad

- Developed and implemented advanced AI projects, including a presentation generator and AI lip-syncing model, leveraging Large Language Models (LLMs) and NLP techniques.
- Contribute to **SiBot**, an AI-based chatbot startup, enhancing applications with cutting-edge research insights, leading to a 25% improvement in chatbot accuracy and user engagement.
- Lead author of an upcoming white paper and actively contributed to the development of **BaatGPT**, a flagship project aimed at building a large-scale language model.

Research, Innovation & Commercialisation, NUST

May 2024 – Aug. 2024

Web Application Developer

NUST H-12, Islamabad

- Developed and deployed the NUST Digital Research Repository using the MERN stack, successfully launching a funded institutional project now live and used by over **1500+** faculty members.
- Designed the frontend interface and built APIs, improving user experience by **30%** based on feedback, while enabling seamless access to over **10,000+ research publications**.

PROJECTS

Deep Learning for Disease Detection using NIH Chest X-ray Dataset

Ongoing

- Conducting a comprehensive study leveraging CNN models like ResNet50v2 architecture for disease detection, achieving an average AUC of 73% across 13 disease classes.
- Utilized Grad-CAMs for qualitative insights into model interpretability and employed quantitative metrics such as accuracy, recall, and precision for evaluation.
- Addressed key challenges including class imbalance and overfitting through weighted loss functions, early stopping, and dynamic threshold adjustments.

Temporal Analysis and Deep Learning-Based Glacier Monitoring

Ongoing

- Conducting temporal analysis and glacier monitoring in the Northern Areas of Pakistan using multi-sensor satellite imagery from Sentinel-1, Sentinel-2, and Landsat.

- Employing deep learning techniques for the analysis of satellite images, focusing on detecting and monitoring changes in glacial structures over time.

NUST Digital Research Repository

May 2024 – Aug. 2024

- Developed a web-based platform to facilitate the publication and dissemination of research papers at NUST, enhancing visibility and accessibility of academic work.

Medibot.Ai

April 2024

- Created an AI-powered medical chatbot integrated with WhatsApp, providing instant access to reliable medical information.
- Achieved finalist status at FICS 2024, demonstrating innovative application of AI in healthcare and showcasing potential for further development towards a startup.

Infotron

Jul. 2024 – Aug. 2024

- Created a RAG-based application that extracts embeddings from PDFs, allowing users to query and retrieve information or summaries, with integrated Automatic Speech Recognition (ASR) for enhanced interactivity and accessibility in document analysis.

NUST360 database

Sept. 2023 – Jan. 2024

- Developed an SQL based database to develop a comprehensive educational management system to streamline academic operations at NUST, including user roles, courses, and attendance management.

ACHIEVEMENTS AND CERTIFICATIONS

Finalist at FICS 2024

July 2024

- * *Medibot.Ai*, an AI-powered medical chatbot integrated with WhatsApp, was selected as one of the finalists at the **Finding Innovative and Creative Solutions (FICS)** competition, organized by NUST. FICS promotes social entrepreneurship and the development of innovative solutions that benefit communities and society.

Certifications

- * **The Fundamentals of Digital Marketing** - Google
- * **EF SET English Certificate** - Scored 76/100 (C2 Proficient)

PUBLICATIONS

AI in Business and Finance: A Micro-to-Macro Perspective on Its Impact

October 2024

Second Author — DOI: 10.14738/abr.1210.17781

NUST, Islamabad

- * A systematic review analyzing recent applications of Machine Learning (ML), Deep Learning (DL), and Natural Language Processing (NLP) in Business and Finance over the last 5 years

Personalization vs. Security: Challenges in Large Language Models

May 2024

Lead Author

NUST, Islamabad

- * Explored privacy risks and security vulnerabilities in LLMs' personalization, proposing strategies to balance enhanced user experiences with robust security measures.

AI Singularity - A White paper (Upcoming)

July 2024 – In-Progress

Research Writer

NUST, Islamabad

- * Contributing author to a white paper led by Dr. Sohail Iqbal, exploring the future implications of AI singularity and proposing strategic recommendations.

EXTRACURRICULAR ACTIVITIES

Millennium fellowship

Aug. 2024 – Dec. 2024

MCN Fellow - Class of 2024

NUST, Islamabad

- * Worked on a project focused on providing guidance and mentorship to orphan children. The team is also exploring funding opportunities to scale the project.

Tech Avant-Garde (TAG-24)

Apr. 2024

Module Head, Internal Management

SEECS-NUST, Islamabad

- * Played the role of Module Head in managing *TAG-24*, an event by the **Google Developer Student Club** of **NUST**, overseeing all internal operations and logistics to ensure the event's success.