

# Abdullah Bin Faiz

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## EDUCATION

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### National University of Computer and Emerging Sciences

Bachelor of Science: Computer Science

08/2019 — 06/2023

Islamabad, Pakistan

- Cumulative GPA: 3.69/4.00

## RESEARCH EXPERIENCE

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### Lahore University of Management Sciences

Research Assistant

Lahore, Pakistan

10-2024 — Present

- Developed a centralized web server providing rich analysis and programmatic access of Post-Translational Modification (PTM) data; designed log sum and log-log product algorithms for statistical propensity evaluation of PTM site
- Developing a spatial deep learning model for residue-level PTM prediction by applying structural conformations and amino acid-pair relationships

## INDUSTRY EXPERIENCE

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### CureMD Inc.

Senior AI Research Engineer

Lahore, Pakistan

07/2023 — Present

- **Hybrid Agents' Knowledgebase Intelligence (HAKI)**

Proposed a hybrid extension of BDI architecture by integrating learning-based behavior adaptation and lookahead mechanisms for concrete planning; employed language models for deep reasoning and depth-first search for optimal decision paths; developed the HAKI Python framework enabling autonomous decision-making in classical BDI agents enabling seamless integration into new or existing multi-agent environments.

- **Medical Metaverse**

Designed a scalable multi-agent digital twin system supporting over 100,000 concurrent doctor-patient agents using the HAKI framework; implemented patient agents that gather chronic disease and disease trajectories predictions and proactively alert physician agents for evaluation; developed doctor agents that evaluate patients through eCQM and USPSTF guidelines and provide adaptive treatment plans and recommendations; achieved throughput of 70,000 patient simulations per second for disease outcome modeling.

- **HAKI Agent Factory**

Led development of an automated multi-agent system codebase generation system built atop the HAKI agent framework using Deepseek-V3, Qwen3-Coder, and GLM-4.5; employed a hierarchical agent architecture emulating developer, lead, and product manager roles for effective task decomposition and coordination; created a web-based interface enabling non-technical users to design and deploy agent systems and integrate external workflows (Langchain and n8n) for development of intelligent agent ecosystems.

- **Early Prediction of Chemotherapy Outcomes**

Collaborated for an internal research project into feasibility of chemotherapy treatment outcome prediction; developed an early prediction framework for chemotherapy treatment outcomes using Random Survival Forests (RSF) integrated with language model-driven phenotype and outcome label extraction from oncological notes; implemented Retrieval-Augmented Generation (RAG) and Critic-Agent feedback loop for reliable extraction of cancer phenotypes and toxicity/progression labels; trained on 3,409 breast cancer patient EMRs achieving a C-index of 0.731, accuracy 72.3%, and F-1 score 72.4% in treatment failure prediction; extended modeling to colon, lung, prostate cancer, and multiple myeloma with consistent performance (0.66–0.76 C-index).

- **Cancer Phenotypes Extraction system**

Designed a language model-based ontology system for extraction of breast cancer phenotypes from unstructured clinical SOAP notes; integrated rule-based NCI ontology matching, semantic reranking using mxbaai embeddings, and a ReAct-style reasoning agent for interpretability; validated across Llama 3.1 8B, Mistral v0.2, GPT-4, and rule-based ontology only system for breast cancer phenotypes extraction; achieved accuracy of 92.3% on GPT-4 and 86.1% on Llama 3.1 8B.

## PUBLICATIONS

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- A. B. Faiz, M. Shoaib, S. U. Chaudhary. “PERCEPTRON-PTMKB – A Web Server for Residue-Based Post-Translational Modification Analysis and Propensity Scoring.” [Manuscript under review].
- R. Shah, A. Faisal, A. B. Faiz, I. Bashir, K. Bashir, M. Shoaib, S. U. Chaudhary. “The Cancer Noise Atlas (TCNA) – Mapping the Multiscale Transcriptional Noise in Cancer” [Manuscript under review].

## WORKSHOPS

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- A. B. Faiz, A. K. Shehzad, A. Afzal, M. Tariq, M. Siddiqi, M. Noor, S. Hashmat, M. Farooq (presenter). “Extracting Breast Cancer Phenotypes from Clinical Notes: Comparing LLMs with Classical Ontology Methods.” *Proceedings of 22nd International Conference on Artificial Intelligence in Medicine – Artificial Intelligence in Oncology Workshop*, 2024.

## ACADEMIC PROJECTS

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- **Novozymes Enzymes Thermostability Prediction**

Developed a statistical algorithm for predicting the optimal melting temperature of a wildtype enzyme with 2,413 different single point mutations; computed changes in Gibbs Free Energy secondary protein structures predicted using AlphaFold 2; experimented with various amino acid substitution matrices including PAM, BLOSUM, Wheelan And Goldman (WAG), and LG; applied an adjusted sigmoid function to calculate ranks of important columns using Gibbs Free energy, LG substitution matrix values, and B-factor; achieved Spearman’s correlation of 0.42 on testing dataset.

- **GoogleTalk**

Designed a service which allows users to control Google applications (Sheets, Forms, Gmail) through their voice; applied Whisper for speech-to-text extraction; finetuned a Spacy Named Entity Recognition (NER) model on custom dataset for extraction of actions and values used in determining which application to control and how; developed a web browser extension with voice recording capability for ease of access and use.

## TEACHING EXPERIENCE

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**National University of Computer and Emerging Sciences**  
Lab Demonstrator

07/2022 — 06/2023  
Islamabad, Pakistan

- Supervised practical labs, guided students in lab work, and conducted evaluations.

**National University of Computer and Emerging Sciences**  
Teaching Assistant

07/2021 — 06/2023  
Islamabad, Pakistan

- Assisted supervisors in designing assessments, and supported students with challenges in coursework.
- Participated in Design and Analysis of Algorithms, Data Structures, Object-Oriented Programming, and Computer Organization & Assembly Language.

## AWARDS

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**NUCES – Dean’s List**  
Seven times consecutive academic achievement recognition.

Islamabad, Pakistan  
06/2023

## VOLUNTEER EXPERIENCE

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- Co-organized the 24th IEEE International Multitopic Conference.
- Served as Research Secretary at the IEEE Computer Society.
- Served as a Buddy Programme at the FAST Computing Society.

## STANDARDIZED TESTS

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- **TOEFL:** 109 (overall score) – 26R27L30S26W 25/10/2025

## SKILLS

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- **Programming Languages:** Python, C/C++, Java
- **Tools:** Git, GNU/Linux, Docker, Milvus, Nginx, OpenMPI
- **Frameworks:** Pytorch, Scikit-Learn, Numpy, Pandas, Scipy, Matplotlib, Transformers, Langchain, Langgraph, Biopython, CUDA, TensorRT, Apple MLX