Muhammad Toseef

Contact Information

Room# 1407, 1st Floor, MMW Building,
CityU Hong Kong, 83 Tat Chee Avenue,
Kowloon Tong, Hong Kong SAR

Cell#: +852-53414199
E-mail: mtoseef2-c@my.cityu.edu.hk
Profile: **LinkedIn**, **GitHub**,
ResearchGate, **Google Scholar**

Research Interests

Biomedical Informatics, Computational Biology, Large Language Models, Machine Learning, Data Science

Education

City University of Hong Kong, Hong Kong SAR
PhD Computer Science, Sep 2020 – Aug 2025

South China University of Technology, Guangzhou, China
MS Software Engineering, Sep 2018 – Aug 2020
83% – CGPA 3.4
Thesis: A Novel Sentiment Analysis approach based on CPSO-LSTM

University of Bradford, United Kingdom
BEng Software Engineering, Sep 2010 – June 2014
2:1 – CGPA 3.7
Thesis: Intelligent Framework for Diagnosis of Crop Diseases using Fuzzy Inference System

Employment and Academic Positions

Harvard Medical School – Brigham and Women's Hospital, Boston, MA, USA
Visiting Research Trainee **December, 2023 - June, 2024**

- Worked on the analysis of spatial transcriptomics (ST) datasets such as NanoString, 10x Visium, etc. Specifically, leveraged machine learning methods to analyze the ST data.
- Studied and analyzed the perineural invasion (PNI) (cancer malignant cells and nerve cells interaction) for PDAC patients

Department of Computer Science – City University of Hong Kong, Hong Kong SAR
Teaching Assistant **January, 2021 - Aug 2024**

Undergraduate and postgraduate level courses TA duties

- CS3422 Software Design – Spring 2023, Spring 2022, Spring 2021
- CS4480 Data-Intensive Computing – Fall 2022, Fall 2021
- CS5488 Big Data Algorithms and Techniques – Fall 2022, Fall 2021

Department of Computer Science – Namal University, Mianwali, Pakistan
Senior Software Engineer **February, 2017 - January, 2018**

- Worked on an intelligent disease diagnosis system for livestock in rural Pakistan
- Easy-to-use localized web and Android-based applications to timely diagnose livestock diseases
- Leveraged hybrid fuzzy-Case Based Reasoning (fuzzy-CBR) technique for inferences

Department of Computer Science and Information Technology – University Of Sargodha, Pakistan

Visiting Faculty **February, 2016 - June, 2016**
Taught Software Engineering and Information Systems, and also performed administrative tasks.

Department of Computer Science – Namal University, Mianwali, Pakistan
Research Associate **July, 2014 - March, 2016**

1. *Optimized crop distribution for enhanced productivity*
   - developed an Android application in English and Urdu language to help the rural farmer communities using Linear Programming (LP)
2. *Disease diagnosis system of crop using Fuzzy Inference System*
   - developed an Android app for disease diagnosis using English and Urdu Language for the crop disease diagnosis using Fuzzy Fuzzy Inference System in MATLAB

Namal University, Mianwali, Department of Computer Science
Intern Research Assistant **June, 2013 - May, 2014**

Publications

Publications

- **Muhammad Toseef**, Li, X., & Wong, K. C. (2022). Reducing healthcare disparities using multiple multiethnic data distributions with fine-tuning of transfer learning. *Briefings in Bioinformatics*, 23(3), bbac078.
- **Muhammad Toseef**, Olayemi Petinrin, O., Wang, F., Rahaman, S., Liu, Z., Li, X., & Wong, K. C. (2023). Deep transfer learning for clinical decision-making based on high-throughput data: comprehensive survey with benchmark results. *Briefings in Bioinformatics*, bbad254.
- **Muhammad Toseef**, Olutomilayo Olayemi Petinrin, Xiangtao Li, Ka-Chun Wong (2024), "Malignant cell annotations via domain generalization for brain cancer spatial transcriptomics", *The International Conference on Neural Information Processing (ICONIP)*, 2024.
- Liu, Z., Petinrin, O. O., **Toseef, M.**, Chen, N., & Wong, K. C. (2023). Construction of Immune Infiltration-Related LncRNA Signatures Based on Machine Learning for the Prognosis in Colon Cancer. Biochemical Genetics, 1-28.
- Petinrin, O. O., Saeed, F., Salim, N., **Toseef, M**., Liu, Z., & Muyide, I. O. (2023). Dimension Reduction and Classifier-Based Feature Selection for Oversampled Gene Expression Data and Cancer Classification. Processes, 11(7), 1940.
- Petinrin, O. O., Saeed, F., **Muhammad Toseef**., Liu, Z., Basurra, S., Muyide, I. O., Li, X & Wong, K. C. (2023). Machine Learning in Metastatic Cancer Research: Potentials, Possibilities, and Prospects. Computational and Structural Biotechnology Journal.
- Fuzhou Wang, Tingxiao Gao, Jiecong Lin, Zetian Zheng, Lei Huang, **Muhammad Toseef**, Xiangtao Li, and Ka-Chun Wong. "GILoop: robust chromatin loop calling across multiple sequencing depths on Hi-C data." *iScience* (2022): 105535.
- Solyman, A., Zhenyu, W., Qian, T., Elhag, A. A. **Muhammad Toseef**, M., and Aleibeid, Z. (2021). Synthetic data with neural machine translation for automatic correction in Arabic grammar. *Egyptian Informatics Journal*, 22(3), 303-315.
- **Muhammad Toseef** and Khan, M. J. (2018). An intelligent mobile application for diagnosis of crop diseases in Pakistan using fuzzy inference system. *Computers and Electronics in Agriculture*, 153, 1-11
- **Muhammad Toseef**, Malik Jahan Khan, Saifur Rahaman, Atta Ullah, Olutomilayo Olayemi Petinrin, Xiangtao Li, Ka-Chun Wong, "Addressing Capture Bias in Tomato Disease Classification with Deep Transfer Learning", *submitted to ICONIP*, 2025.

Technical Skills

- **Programming Languages:** Python, R, Java
- **Tools:** Slurm, Hadoop, Weka, UML Tools
- **Operating Systems:** Linux, macOS, Windows

Professional Services

Review Service

- Computational and Structural Biotechnology Journal
- Heliyon
- IEEE BigData Conference (2022)
- BioData Mining
- International Conference on Intelligent Systems, Metaheuristics & Swarm Intelligence (ISMSI 2021, ISMSI 2020)
- PeerJ Computer Science

Scholarships / Awards

- 4 years UGC funded studentship for PhD degree at City University of Hong Kong
- 4 years merit scholarship at Namal University Mianwali Pakistan
- PEEF (Government of Punjab, Pakistan) Scholarship at SSC level

Reference

Ka-Chun Wong, PhD
Associate Professor
City University of Hong Kong
kc.w@cityu.edu.hk

Malik Jahan Khan, PhD
Associate Professor
Lahore University of Management Sciences
jahan@lums.edu.pk

Shahid Hussain, PhD
Assistant Professor
Penn State Behrend
sjh6561@psu.edu