HIRA ANEES AWAN

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PROFILE

A motivated and determined ***Fulbright Scholar*** and ***Biostatistician*** with substantial experience in multidisciplinary research related to immunology, cancer systems biology, and data science. Currently, a ***Carver Fellow*** and ***PhD candidate*** exploring the world of biomedical imaging and deep learning. Published author, recognized for leadership and problem-solving skills.

Technical Skills: R, Python, Bash, SAS (basic), MATLAB, C#, C, Java, JavaScript, Git, Docker

EDUCATION

THE UNIVERSITY OF IOWA, College of Engineering, Iowa city, IA
PhD in Biomedical Engineering*,* May 2026. GPA: 4.0/4.0. Carver Fellowship
Relevant coursework: Digital Image Processing, Medical Imaging Physics, Quantitative Studies of Respiratory and Cardiovascular Systems, Applied Machine Learning (to be continued…)
Advisors: Joseph Reinhardt

DUKE UNIVERSITY, School of Medicine, Durham, NC
Master of Biostatistics, May 2021. GPA: 3.968/4.0. Fulbright Scholarship - Partial Tuition Scholarship
Relevant coursework: Introduction to Statistical Theory & Methods I & II, Applied Biostatistical Methods I & II, Introduction to the Practice of Biostatistics I & II, Software Tools for Data Science, Introduction to Statistical Programming II, Biostatistics Career Preparation and Development I & II, Statistical Methods for Learning and Discovery, Survival Analysis, Generalized Linear Models, Introduction to Real Analysis (Audit), Categorical Data Analysis, Analysis of Correlated and Longitudinal Data, Observational Studies

Master's project (Awarded best project award – Data Science category):
A deep learning approach for joint batch calibration and clustering of multi-center flow cytometry data
Advisors: Cliburn Chan, Georgia Tomaras, Jichun Xie

UNIVERSITY OF ENGINEERING AND TECHNOLOGY, Lahore, PK
Bachelor of Science, **Major: Electrical Engineering, Minor: Computer Engineering**, May 2017. GPA: 3.7/4.0.
Relevant coursework: Differential Equations, Linear Algebra, Digital Logic Design, Applied Biology, Signals and Systems, Data Structures, Scientific Computing, Applied Probability and Statistics, Control Systems, Data Mining, Introduction to Machine Learning, Introduction to Artificial Intelligence

Bachelor's project:
Theatre for In Silico Oncology (TISON) – A Multiscale Cancer Systems Modeling and Simulation Platform
Advisors: Safee Ullah Chaudhary, Khalid Mahmood Hasan

PROFESSIONAL EXPERIENCE

THE UNIVERSITY OF IOWA, Iowa city, IA 2021-Present
The Reinhardt Biomedical Imaging Laboratory
Graduate Research Assistant

- Working on a deep learning architecture to predict severe exacerbations from computed tomography (CT) images in chronic obstructive pulmonary disease (COPD) patients
- Working on a statistical analysis pipeline to classify symptomatic and asymptomatic tobacco exposed people with preserved spirometry

THE DUKE HUMAN VACCINE INSTITUTE, Durham, NC 2020-2021
Tomaras Laboratory
Research Intern

- Worked on a statistical analysis pipeline to unveil the effects of preexisting CMV immunity on vaccine specific cellular and humoral responses and the risk of HIV acquisition in HVTN 505 Phase IIb Human Vaccine Efficacy Trial

UNITED WE REACH, Lahore, PK 2018-2019
Curriculum Developer

- Collaborated with coordinators of more than 500 primary schools across Pakistan to enhance the current curriculum of science and mathematics
- Transformed the computer science curriculum by adding modern programming languages for children like Scratch. For higher grades, incorporated basic Python coding exercises

LAHORE UNIVERSITY OF MANAGEMENT SCIENCES, Lahore, PK 2016-2018
Biomedical Informatics Research Lab

***Team Lead** (2018)*

- Initiated Phase II of Theatre for in silico Oncology (TISON) – a multiscale cancer systems modeling and simulation web platform
- Worked with biologists towards incorporating more features to enhance the overall desirability of the software platform
- Developed and revamped three out of seven scales (Cell circuit design, Phenotype design, Tissue design) of the platform
- Implemented the simulation engine of the platform by integrating data from all the scales
- Trained a new team of four fresh undergraduate students and accelerated the development process by dividing scales among them

***Research Associate** (2017)*

- Contributed towards the development of MATLAB-based Attractor Landscape Analysis Toolbox for Cell Fate Discovery and Reprogramming (ATLANTIS) and later enhanced the performance of the toolbox
- Developed the manuscript for the toolbox with my team and independently worked on supplementary material and user manual for the toolbox and later executed the rebuttal process with my team and dealt with a major revision within 30 days

***Research Intern** (2016)*

- Gained proficiency in software development over the summer and familiarized myself with the latest trends and practices in the world of web development
- Initiated Phase I of Theatre for in silico Oncology (TISON) – a multiscale cancer systems modeling and simulation web platform and worked on cell circuit design scale to familiarize myself with the underlying software practices and later broadening my knowledge about the biology of cell cycles

UNIVERSITY OF ENGINEERING AND TECHNOLOGY, Lahore, PK 2015-2016

***Research Intern** (2016)*

- Worked on a Linux based platform (Ubuntu) towards the development of Next Generation Sequencing (NGS) data analysis pipeline

TEACHING ASSISTANT EXPERIENCE

DUKE UNIVERSITY, Durham, NC Fall 2020

- Course: Applied Biostatistical Methods I

UNIVERSITY OF ENGINEERING AND TECHNOLOGY, Lahore, PK Fall 2015

- Course: Applied Biology

PUBLICATIONS

JOURNALS

O. S. Shah, M. F. A. Chaudhary, **H. A. Awan**, F. Fatima, Z. Arshad, B. Amina, M. Ahmed et al. "ATLANTIS – Attractor Landscape Analysis Toolbox for Cell Fate Discovery and Reprogramming." *Nature Scientific Reports* 8, no. 1 (2018): 3554.

M. N. Gondal, A. Rehman, A Arif, M. U. Sultan, **H. A. Awan**, Z. Arshad, M. F. A. Chaudhary et al. "TISON: A Next-generation Multi-scale Modeling Theatre for in silico Systems Oncology", *Molecular Systems Biology. (In Preparation)*

CONFERENCES & POSTER PRESENTATIONS

H. A. Awan, C. J. L. Angel, G. Tomaras, "Investigating the impact of preexisting CMV immunity on the risk of HIV acquisition in HVTN505 vaccine efficacy trial for HIV", *Duke Surgery 5th Annual Research Day*, April. 2021, Durham, NC, USA. (*abstract selected for oral presentation)*

H. A. Awan, C. J. L. Angel, J. McCarthy, G. Tomaras, "Preexisting CMV immunity is associated with blunted vaccine specific cellular and humoral responses and increased risk of HIV acquisition in phase IIb human vaccine efficacy trial", *16th Annual Duke Center for AIDS Research Virtual Fall Scientific Retreat*, Sept. 2020, Durham, NC, USA. (*abstract selected for oral presentation)*

M. N. Gondal, A. Rehman, A. Arif, R. Hussain, H. Khawar, M. U. Sultan, **H. A. Awan** et al., "A Next Generation Multi-scale Modeling Theatre for In Silico Oncology", *14th International Conference on Systems Biology (ICSB 2020)*, Jan. 2020, Zurich, Switzerland.

M. F. A. Chaudhary, **H. A. Awan**, H. Hameed, Z. Arshad, M. Abubakar, K. M. Hasan, B. Wajid, et al., "TISON - Theatre for in silico Oncology: A Next-Generation Multiscale Modeling Platform for Predicting Cancer Growth, Development and Metastasis," *DICE Mega Innovation and Entrepreneurship Summit,* Dec. 2016, National University of Science and Technology, Pakistan *(won second prize among 350 posters presented)*

M. F. A. Chaudhary, **H. A. Awan**, H. Hameed, Z. Arshad, M. Abubakar, K. M. Hasan, B. Wajid, et al., "TISON - Theatre for in silico Oncology: A Next-Generation Multiscale Modeling Platform for Predicting Cancer Growth, Development and Metastasis," *BioSymposium 2016*, Lahore University of Management Sciences, Lahore, Pakistan *(honorable mention at the poster presentation contest)*

E. Serpedin, Z. Arshad, H. Hameed, M. F. A. Chaudhary, **H. A. Awan**, B. Wajid, "Investigating Functional Relationships of Five Critical Genes Present in the Familial Non-Synonymous Loci with Risk of having Acute Lymphoblastic Leukemia," *Integrative Biology Conference,* July 18-20, 2016, Berlin, Germany

HONORS & AWARDS

- Awarded the prestigious ***Carver Fellowship*** to pursue PhD in Biomedical Engineering at The University of Iowa
- Awarded best master's project award (data science category) by the Department of Biostatistics and Bioinformatics at Duke University
- Awarded the prestigious ***Fulbright Scholarship*** to study Biostatistics at Duke University
- Granted 2nd prize for TISON - Theatre for in silico Oncology among 350 other projects at the DICE Mega Innovation Summit
- Awarded ***Student Research Grant*** for the project, "Diagnostic Tests for Cancer (now TISON)", by the National Grassroots ICT Research Initiative
- Awarded Dean's Honor Roll for Fall 2014, Spring 2015, Fall 2016, Spring 2017, Department of Electrical Engineering, University of Engineering and Technology, Lahore, Pakistan