

Md. Imran Hasan

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ACADEMIC CREDENTIALS

Aug 2023- **Master of Science (M.S.)**

CGPA: 4.00/4.00 (3rd semester)

Ongoing Department of Life Sciences

Faculty of the College of Arts and Sciences,
Texas A&M University – San Antonio, USA.

- **Master's Thesis:** A computational system biology approach for unveiling novel drug targets in *staphylococcus aureus*.

Jan 2016 – **Bachelor of Science (B.Sc.)**

CGPA: 3.32/4.00

Jul 2020 Department of Computer Science and Engineering

Total credit hours: **160**

Faculty of Engineering and Technology,
Islamic University, Bangladesh.

- **Bachelor's Project:** Galangin for COVID-19 and Mucormycosis co-infection: a potential therapeutic strategy of targeting critical host signal pathways triggered by SARS-CoV-2 and Mucormycosis.

NOTABLE PUBLICATIONS

[†]EQUAL CONTRIBUTION

Md. Imran Hasan, Md. Arju Hossain, Md Habibur Rahman, Md Sohel, Asif Ahsan, Md. Sadat Hossain Soikot, Md. Nazrul Islam, Mohammad Ruhul Amin, and Deepak Kumar Jain (2023): *Galangin for COVID-19 and Mucormycosis co-infection: a potential therapeutic strategy of targeting critical host signal pathways triggered by SARS-CoV-2 and Mucormycosis. Network Modeling Analysis in Health Informatics and Bioinformatics (Springer)*. DOI: [10.1007/s13721-023-00421-6](https://doi.org/10.1007/s13721-023-00421-6); [IF: 2.056]

Md. Arju Hossain, Md Sohel, Md Habibur Rahman, **Md Imran Hasan**, Md. Sharif Khan, Md. Al Amin, Md. Zahidul Islam, and Silong Peng (2023): Bioinformatics and In silico approaches to identify novel biomarkers and key pathways for cancers that are linked to the progression of female infertility: A comprehensive approach for drug discovery. **PLOS ONE**. DOI: [10.1371/journal.pone.0265746](https://doi.org/10.1371/journal.pone.0265746); [IF: 3.7; Q1]

Md Imran Hasan, Shahin Ali, Habibur Rahman, and Khairul Islam (2022): *Automated Detection and Characterization of Colon Cancer with Deep Convolutional Neural Networks*. **Journal of Healthcare Engineering**. DOI: [10.1155/2022/5269913](https://doi.org/10.1155/2022/5269913); [IF: 3.822]

Md. Imran Hasan, Md Arju Hossain, Piplu Bhuiyan, Md Sipon Miah, Md Habibur Rahman (2022): *A system biology approach to determine therapeutic targets by identifying molecular mechanisms and key pathways for type 2 diabetes that are linked to the development of tuberculosis and rheumatoid arthritis*, **Life Sciences**, DOI: [10.1016/j.lfs.2022.120483](https://doi.org/10.1016/j.lfs.2022.120483); [IF: 5.03; Q1]

Nosin Ibna Mahbub[†], **Md. Imran Hasan**[†], Md Habibur Rahman, Feroza Naznin, Md Zahidul Islam, Mohammad Ali Moni (2022): *Identifying molecular signatures and pathways shared between Alzheimer's and Huntington's disorders: A bioinformatics and systems biology approach*. **Informatics in Medicine Unlocked**. DOI: [10.1016/j.imu.2021.100840](https://doi.org/10.1016/j.imu.2021.100840) [IF: 3.8; Q2]

Md. Imran Hasan, Nosin Ibna Mahbub, Bappa Sarkar: *Identification of Black Fungus Diseases Using CNN and Transfer-Learning Approach*. ICCA – 2022. ACM Digital Library. DOI: [10.1145/3542954.3542972](https://doi.org/10.1145/3542954.3542972)

M. Nazmul Hoque, Md. Arif Khan, Md. Arju Hossain, **Md. Imran Hasan**, Md Habibur Rahman, Mahmoud E. Soliman, Yusha Araf, Chunfu Zheng, Tofazzal Islam: *Differential gene expression profiling reveals potential biomarkers and pharmacological compounds against SARS-CoV-2: insights from machine learning and bioinformatics approaches*. **Frontiers in Immunology** DOI: [10.1101/2022.03.30.486356](https://doi.org/10.1101/2022.03.30.486356) [IF: 7.3; Q1]

Md. Imran Hasan, Md Habibur Rahman, Md Babul Islam, Md Zahidul Islam, Md Arju Hossain, Mohammad Ali Moni (2022): *Systems Biology and Bioinformatics approach to Identify blood based signatures molecules and drug targets of patient with COVID-19*. **Informatics in Medicine Unlocked**, DOI: [10.1016/j.imu.2021.100840](https://doi.org/10.1016/j.imu.2021.100840) [IF: 3.8; Q2]

Total peer-reviewed journal publications: 15; Citation Count: 178 (h-index: 7)

RESEARCH EXPERIENCES

Aug 2023- **Research Assistant | Dr. Teufel Lab**

Present Department of Life Sciences, Texas A&M University-San Antonio, TX-78224, USA.

- **Project 1:** An integrated whole-genome sequencing and system biology method predicts antibiotic resistance in the virulent *Staphylococcus aureus* strain.
 - ◆ Analysis of *Staphylococcus aureus* strains identified antimicrobial resistant genes, highlighting key hub genes, drug class, and resistance mechanisms which can be targeted for new therapies.
 - ◆ Functional enrichment of AMR gene networks revealed critical processes and mechanisms related to antibiotic resistance, aiding the development of effective antimicrobial agents and enhancing understanding of *S. aureus* resistance.
- **Project 2:** Unveiling the Molecular Landscape of HIV Infection: Identification of Key Gene Biomarkers and Potential Drug Candidates through Single-Cell RNA Sequencing and Network Based Bioinformatics Approach
 - ◆ Single-cell RNA sequencing identified differentially expressed genes and key pathways in HIV-infected cells, particularly in CD4+ T cell.
 - ◆ Molecular docking studies highlight Hypericin as potential inhibitors of key HIV-related proteins, suggesting new therapeutic avenues.

Supervised by **Professor Dr. ASHLEY I. TEUFEL** [Ashley.Teufel@tamusa.edu]

Jun 2019- **Research Assistant**

Dec 2022 Department of Computer Science and Engineering, Islamic University, Kushtia-7003, Bangladesh.

- **Project 1:** Identifying molecular mechanisms and key pathways that are linked to type 2 diabetes development of tuberculosis and rheumatoid arthritis.
- **Project 2:** Exploring Galangin as a Therapeutic Agent for SARS-CoV-2 and Mucormycosis Co-Infection.
- **Project 3:** Automatic Detection and Characterization of Colon Cancer with Deep Convolutional Neural Networks.

Supervised by **Dr. Md Habibur Rahman** [habib@iu.ac.bd]

Mar 2019- **Research Assistant**

- Aug 2021
- **Project 1:** Identification of blood-based signatures molecules and prediction of drug targets for COVID-19 patient.
 - **Project 2:** Diagnosis, Prognosis and Characterise Osteosarcoma with DCNN.

Supervised by **Dr. Mohammad Ali Moni** [m.moni@uq.edu.au]

PROFESSIONAL EXPERIENCE

- June 2024- Aug 2024 **Research Assistant (Summer Intern)**, University of Texas Health Science Center at San Antonio, Texas, USA
- Vaccine effectiveness and immune response of SARS-CoV-2 vaccines in active military personnel (VIRAMP).
 - Integration of miRNA expression, phenotype data, and associated gene data highlights the multi-protective salutogenic traits sustained by optimal immune resilience and providing insights into gene expression signatures associated with lifespan and immune aging.
- Supervised by **Dr. Sunil K. Ahuja** [Ahuja@uthscsa.edu] | Center for Personalized Medicine
- Aug 2023- Present **Graduate Teaching Assistant**, Texas A&M University-San Antonio, Texas, USA
- Assist in teaching and mentoring undergraduate students in statistics in biology & medicine classroom, laboratory, or field settings.
 - Grade undergraduate student assignments, exams, and coursework, providing valuable feedback.

PERSONAL DEVELOPMENT

- Mar 2024 **High Performance Computing for Biologist**
Instructed by: Texas A&M University – San Antonio
- May 2022 **Basics to Advanced modules in Multiomics data analysis**
Instructed by: Nextgenhelper, New Delhi.
- Sep 2021 **WHOLE EXOME SEQUENCING (5 Days)**
Instructed by: BDG Lifesciences (OPC) Pvt. Ltd., India.
- May 2021 **NGS | WHOLE GENOME SEQ**
Instructed by: BDG Lifesciences (OPC) Pvt. Ltd., India.
- Dec 2020 **Crush Course on Python**
Instructed by: Google (Coursera).
- Nov 2020 **Google IT Support Professional Certificate (150 hours).**
This five-course specialization covered technical support, bits and bytes of Computer Networking, system administration etc.
Instructed by: Google (Coursera).

TECHNICAL SKILLS

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|-------------------|---|
| Languages | R, Python, C, C++, HTML/CSS, SQL. |
| Frameworks | Scikit, NLP, TensorFlow, Github, Keras. |
| Dry-Lab Skills | RNAseq and Microarray Data Analysis, scRNAseq analysis, miRNA analysis, Pathway and Signaling Analysis, Computer-aided Drug Design, Molecular dynamics simulations, Virtual Screening, Protein Modelling, Molecular Docking, Phylogenetic analysis, Whole genome analysis and annotation, Medical Image Analysis. |
| Tools & Softwares | Schrodinger Suite, Discovery Studio, PyMol, PyRx, AutoDock Vina, Swiss PDB viewer, UCSF Chimera, Cytoscape, Biorender, Galaxy Web, SPSS, Latex, Linux, Mendeley, EndNote. |

ADDITIONAL INFORMATION

- Presentations
- **Oral Presentation** (Paper No: **221**), International Conference on Innovations in Science, Engineering and Technology 2022 (ICISSET 2022), Bangladesh. [26-27 February 2022]
 - **Paper No 221:** Machine Learning Approaches to Identify Significant Features for the Diagnosis and Prognosis of Chronic Kidney Disease.
 - **Oral Presentation** (Paper No: **56**), 2nd International Conference on Computing Advancements - ICCA 2022, Bangladesh. [10-12 March 2022]
 - **Paper No 56:** Identification of Black Fungus Diseases Using CNN and Transfer-Learning Approach.
 - **Poster Presentation**, New Mexico Research Symposium – 2024, Unveiling the Molecular Landscape of HIV Infection: Identification of Key Gene Biomarkers and Potential Drug Candidates through Single-Cell RNA Sequencing and Network Based Bioinformatics Approach.
 - **3 Minute Thesis Presentation**, Systems Biology Approach to Identify Drug Targets in Staphylococcus aureus, Texas A&M University – San Antonio, 2024.
- Awards & Achievements
- **University Merit Scholarship**, Competitive Graduate Scholarship, Texas A&M University-San Antonio.
- Organizations
- **Founding Chair**, IEEE Computer Society Islamic University Chapter, Islamic University, Mar 2021 – Dec 2021.
 - **Public Relation Coordinator**, IEEE Islamic University Student Branch, Jan 2020 – Dec 2020.
 - **Coordinator**, Alorito’30, Islamic University, Jan 2017 – Aug 2021.

REFERENCES

Ashley Teufel, PhD

Assistant Professor of Bioinformatics,
Department of Natural Sciences,
College Of Arts And Sciences,
Texas A&M University-San Antonio, Texas, USA
Email: ateufel@tamusa.edu

Sunil K Ahuja, M.D.

Professor of Medicine, Microbiology, Immunology &
Molecular Genetics/Biochemistry,
President’s Council/Dielmann Chair for Excellence in
Medical Research, UTHSCSA, San Antonio, TX
Director, Center for Personalized Medicine, South Texas
Veterans Health Care System (STVHCS), San Antonio, TX
University of Texas Health Science Center (UTHSCSA),
San Antonio, TX
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Department of Computer Science and Engineering,
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