H M A Mohit *Chowdhury*

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Summary — Ph.D. student in Computer Science with research interest in bioinformatics, specifically genomics using Machine Learning, Computer Vision. Experienced in machine learning, computer vision, data analysis, and computational biology, with proficiency in Python, TensorFlow, PyTorch, and AWS. Published five peer-reviewed research articles that have helped shape the field of genome analysis. Prior to academia, possessed five years of experience as a software engineer, developing scalable applications with Java, Spring, C#, .NET, SQL, AWS, Docker, and Linux.

Education

Ph.D. in Computer Science **GPA: 3.867**
University of Colorado Colorado Springs *2022-Present*
M.Sc. in Computer Science **GPA: 3.867**
University of Colorado Colorado Springs *2024*
B.Sc. in Computer Science and Engineering **GPA: 3.71**
Ahsanullah University of Science and Technology *2017*

Scientific Presence

Journal

- **Chowdhury, H. M. A. M.**, & Oluwadare, O. (2024). *EmbedTAD: Using Graph Embedding and Unsupervised Learning to Identify TADs from High-Resolution Hi-C Data*. (submitted)
- **Chowdhury, H. M. A. M.**, Fuller, M., & Oluwadare, O. (2024). *Robin: An Advanced Tool for Comparative Loop Caller Analysis Leveraging Large Language Models*. (submitted)
- Rohit, M., **Chowdhury, H. M. A. M.**, & Oluwadare, O. (2024). *ScHiCAtt: Hi-C Super Resolution Using Attention Methods for Single Cell*. Computational and Structural Biotechnology Journal, Volume 27, 978 - 991. doi.org/10.1016/j.csbj.2025.02.031
- Pinchuk, D., **Chowdhury, H. M. A. M.**, Pandeya, A., & Oluwadare, O. (2024). *HiCForecast: dynamic network optical flow estimation algorithm for spatiotemporal Hi-C data forecasting*. Bioinformatics, Volume 41, Issue 2, February 2025. doi.org/10.1093/bioinformatics/btaf030
- Houchens D, **Chowdhury H. M. A. M.**, Oluwadare O. *coiTAD: Detection of Topologically Associating Domains Based on Clustering of Circular Influence Features from Hi-C Data. Genes*. 2024; 15(10):1293. doi.org/10.3390/genes15101293
- **Chowdhury, H. M. A. M.**, Boult, T., & Oluwadare, O. (2024). *Comparative study on chromatin loop callers using Hi-C data reveals their effectiveness*. BMC Bioinformatics, 25(1), 123. doi:10.1186/s12859-024-05713-w
- Akpokiro, V., **Chowdhury, H. M. A. M.**, Olowofila, S., Nusrat, R., & Oluwadare, O. (2023). *CNNSplice: Robust models for splice site prediction using convolutional neural networks*. Computational and Structural Biotechnology Journal, Volume 21, 3210–3223. doi:10.1016/j.csbj.2023.05.031

Poster Presentation

- Comparative study on chromatin loop callers using Hi-C data reveals their effectiveness. (RECOMB 2024).
- Comparative study on chromatin loop callers using Hi-C data reveals their effectiveness. (UCCS MLRD 2023).

Reviewer

- NAR Genomics and Bioinformatics. (Co-reviewer)
- IEEE International Conference on Bioinformatics and Biomedicine (BIBM), 2024. (Co-reviewer)

Skills

P. Languages: Python, Java, C#, C, JavaScript
Frameworks: TensorFlow, PyTorch, cu (RAPIDS API), Spring, .NET
Databases: MySQL, MSSQL
Deployment Tools: AWS, Docker, Terraform, git
Operating Systems: Linux, Windows, MacOS

Experience

Bioinformatics Lab **2022 – Present**
Graduate Research Assistant

- Implementing efficient models for chromatin Loop and TAD prediction, and DNA sequence modeling using DNN, GNN and other ML algorithms.
- Utilizing Hi-C data for 3D genome organization analysis.
- Collaboration with colleagues in different projects such as data enhancement, and aiding support to other colleagues in server-related issues.

Otto International **2022 – 2022**
Solution Developer

- Conceptualized and transformed deployment infrastructure and pipeline with AWS, Terraform, and Jenkin.
- Solved the existing bugs, and drew a new architecture for the Enterprise Service Bus (ESB) using Java, Micronaut, and PostgreSQL.
- Collaborated with Business Analyst and other team members for requirements analysis, knowledge sharing, and scaling the ESB system.

Dovetail Technology **2020 – 2022**
Software Engineer

- Designed and developed Volmet system for Changi International Airport using C#, .NET Web API, and MSSQL.
- Deployed the whole system in the IIS Web server and established windows services to keep the system running.
- Collaborated with business analyst and automation team to scale the development process.

IdeaScale Bangladesh **2019 – 2020**
Software Engineer

- Developed new features and updated the existing features according to the new business process using Java, Spring, MySQL, and Docker.
- Simplified existing raw SQL to query object with JPA and Querydsl.

Netweaver Software Limited **2017 – 2019**
Software Engineer

- Developed woobiedesk.com and amargriho.com using Java, SpringBoot, SAPUI5, and MySQL.
- Developed doctor.ne.jp with Nodejs, Vuejs, and PostgreSQL.

Awards

- UCCS Graduate School Travel Award (RECOMB 2024).
- UCCS Tuition Matching Grant Award (2023-2024).
- UCCS Tuition Matching Grant Award (2022-2023).

Certificates

- Tableau Fundamentals.
- Responsible Conduct of Research (RCR-mini).

Activities

- Participant, Open House 2025 at UCCS.
- President, Bangladeshi Student Association (BSA) at UCCS (2024-2025).
- Participant, Cool Science Festival 2024 at UCCS.
- Session Chair, NSF REU Summer Research 2023 at UCCS.
- Technical Assistant, NSF REU Summer Research 2023 at UCCS.
- Participant, Cool Science Festival 2023 at UCCS.
- Conducted basic Linux and Docker hands on class in NSF REU Summer Research 2023 at UCCS.
- Participant, Cool Science Festival 2022 at UCCS.
- Organized *Cumilla Victoria Govt. College Reunion 2016*.