NAVID BIN HASAN

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Research Interests: Computational Biology, Bioinformatics

EDUCATION

Bangladesh University of Engineering and Technology May 2022
B.Sc. in Computer Science and Engineering

- CGPA: 4.0/4.0
- University Gold Medal Awardee (awarded to the highest CGPA holder of the batch)
- Prime Minister Gold Medal Awardee (awarded to the highest CGPA holder of each faculty of the batch)
- University Merit Scholarship and Dean's List Award in Each Year

Bangladesh University of Engineering and Technology February 2025 (Expected)
M.Sc. in Computer Science and Engineering

- CGPA: 4.0/4.0
- Ongoing Thesis: Leveraging and Correcting Weighted Quartet Distributions for Enhanced Species Tree Inference from Genome-Wide Data

RESEARCH EXPERIENCE

- **Leveraging and Correcting Weighted Quartet Distributions for Enhanced Species Tree Inference from Genome-Wide Data (April 2022 - Present)**
  Working under Dr. Md. Shamsuzzoha Bayzid on:
  - Exploring a wide array of methods for inferring weighted quartets and critically assessing their impact on the downstream species tree estimation process
  - Developing an effective algorithm that learns the distribution of weighted quartets for specific patterns to identify Gene Tree Estimation Error and adjusts the weights of the quartets accordingly to better reflect their relative importance
- **Branch Support Estimation on Distance-Based Phylogenetic Placements (March 2021 - April 2022)**
  Working under Dr. Siavash Mirarab and Dr. Md. Shamsuzzoha Bayzid on:
  - Implementing methods to calculate branch support for distance-based phylogenetic placements using non-parametric bootstrapping; integrating it to the popular phylogenetic placement tool APPLES [GitHub]
  - Devising and implementing a fast linear-algebraic implementation
- **Enhanced Partitioning for the QFM Method (October 2024 - Present)**
  Working under Dr. Mohammad Saifur Rahman on:
  - Exploration of alternate heuristic scoring functions to enhance the partitioning algorithm of QFM
- **Automatic Test Case Generation and Execution for Android Applications using Machine Learning (July 2023 - January 2024)**
  Working as an RA under Dr. Anindya Iqbal and in collaboration with Samsung Research Bangladesh on:
  - Automated black box testing of Android apps using UI exploration
  - Automatic test case execution and verdict generation for Android applications using LLMs
- **Automatic High-Level Test Case Generation from Use Case with Large Language Models (January 2024 - November 2024)**
  Working under Dr. Anindya Iqbal on:
  - Constructing a novel use case to test case dataset
  - Fine-tuning LLMs with the dataset to generate high-level test cases from use cases with impressive accuracy

PUBLICATIONS

- **Navid Bin Hasan**, Metin Balaban, Avijit Biswas, Md. Shamsuzzoha Bayzid, Siavash Mirarab, "Distance-Based Phylogenetic Placement with Statistical Support," *Biology*, 11(8):1212, 2022
- **Navid Bin Hasan**, Avijit Biswas, Metin Balaban, Siavash Mirarab, Md. Shamsuzzoha Bayzid, "Fast and accurate branch support calculation for distance-based phylogenetic placements," *RECOMB-CG 2022*

MANUSCRIPTS UNDER REVIEW

- **Navid Bin Hasan**, Sohaib, Md. Shamsuzzoha Bayzid, "QT-WEAVER: Correcting quartet distribution improves phylogenomic analyses despite gene tree estimation error," under review in *RECOMB*, 2025 [bioRxiv]
- **Navid Bin Hasan** et al., "Leveraging weighted quartet distributions for enhanced species tree inference from genome-wide data," under review in *Genome Biology and Evolution*, 2024 [bioRxiv]
- "Automatic High-Level Test Case Generation using Large Language Models," under review at a peer-reviewed conference, 2025

WORK EXPERIENCE

Department of CSE, Bangladesh University of Engineering and Technology — Dhaka
Lecturer — July 2022 - Present

Department of CSE, Brac University — Dhaka
Lecturer — May 2022 - July 2022

Samsung Research Bangladesh-BUET Collaboration Research Project — Dhaka
Part-time Research Assistant — July 2023 - January 2024

TEST SCORES

- **TOEFL iBT:** 119/120 (August 2024)

TECHNICAL SKILLS

Languages	Python, C, C++, Java, Javascript, Bash, Flex/Bison, MySQL, NoSQL
Frameworks/Tools	Git, PyTorch, LaTeX, VueJS, NextJS, NS2, Nachos
Libraries	Pandas, Matplotlib, Seaborn, Numpy, SKLearn, Vuetify

PROJECTS

CSFlow (Javascript, VueJS) [GitHub]

- Academic platform for CSE undergrads in BUET to discuss academic topics, share resources, theses, projects

Compiler (Flex, Bison) [GitHub]

- Implementation of a compiler for a subset of the C language. Implemented symbol table in CPP, lexical analyzer in Flex, Syntax and Semantic Analyzer in Bison, and intermediate assembly code (8086) generator

ADDITIONAL EXPERIENCE

- Juror at Blockchain Olympiad Bangladesh 2024 (Artificial Intelligence Category)
- Technical team member on the Class XI admission system under the IEIMS project conducted by BANBEIS, Bangladesh, 2024
- Technical team member on Conducting question set generation, result processing, allocation, and report generation for the Medical and Dental Admission Tests, Bangladesh, 2024
- Member and coordinator, Programming Contest Committee, Department of CSE, BUET
- Back-end developer of the official website of the Chief Engineer's Office, BUET [Website]
- Member of various VAPT teams of BUET on different national-scale projects
- Team member in investigating a critical data loss incident in a government construction permit system, 2023