Zahin Wahab

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Linkedin GitHub Google Scholar Website

Education

M.Sc. in Computer Science and Engineering
Bangladesh University of Engineering and Technology — April 2021 - Present
CGPA: 4.00 on a scale of 4.00
Thesis concentration: Software Engineering, Programming Language

B.Sc. in Computer Science and Engineering
Bangladesh University of Engineering and Technology — Feb 2016 - Feb 2021
CGPA: 3.91 on a scale of 4.00 (*Major CGPA:* 3.96)
Position: 5^{th} in the graduating class of 142 students
Thesis concentration: Bioinformatics, Computational Biology

Higher Secondary Certificate
Dhaka Board — 2013 - 2015
GPA: 5.00 on a scale of 5.00

Secondary School Certificate
Dhaka Board — 2011 - 2013
GPA: 5.00 on a scale of 5.00

Research Interests

Software Engineering, Programming Language, Systems & Security

Publications

- Mahim Mahbub, **Zahin Wahab**, Rezwana Reaz, M Saifur Rahman, Md. Shamsuzzoha Bayzid, wQFM: Highly Accurate Genome-scale Species Tree Estimation from Weighted Quartets, Bioinformatics, 2021, btab428, `https://doi.org/10.1093/bioinformatics/btab428`

Research Experience

wQFM: Species Tree Estimation from Weighted Quartets — B.Sc. thesis
Concentration: Bioinformatics, Phylogeny
Summary: wQFM takes a set of estimated gene trees as input and generates a set of weighted quartets and combines these weighted quartet trees into a tree on the full set of taxa using a heuristic aimed at finding a species tree of minimum distance to the set of weighted quartet trees.
Status: Published in Oxford Bioinformatics, 2021
Supervising Faculties: Dr. Rezwana Reaz, Dr. M. Saifur Rahman, Dr. Md. Shamsuzzoha Bayzid
Collaborator: Mahim Mahbub
- Designed and implemented novel partitioning scheme on data distribution for improved accuracy.
- Performed extensive statistical analysis on distribution of weights to extract optimal) features.
- Developed new code base for enhanced running time.
- Experimented with various datasets, both simulated and biological.
- Designed new weighting scheme to handle stars introduced due to polytomy in gene trees.

Notable Projects

GPS Spoofing Detection in VANETs using ML *M.Sc. coursework*

Summary: Detection of GPS Spoofing attack in a VANET from three consecutive BSM packets using the VeReMi dataset

- Performance comparison with existing two consecutive BSM approach on KNN, Naive Bayes, Decision Tree and Random Forest models
- Analyzing how three consecutive BSM approach beats the existing two consecutive BSM approach

A Comparison of Modern JVM Based Garbage Collectors *M.Sc. coursework*

Summary: A study of the performance of three JVM based garbage collectors: G1GC, ZGC and Shenandoah

- Observed performance variation with modifying heap sizes by analyzing log files using GCEasy
- Comparing their performance on several big-data benchmarks from two Benchmark Suites: Renaissance and DaCapo, on OpenJDK Java version 11.0.15

Hotel and Flight Booking System *B.Sc. coursework*

Summary: Dynamic Web Platform for booking of hotels and flights to be used primarily by tourists

- Users can surf through selective hotel and flight options.
- They can confirm booking using payment system like credit/debit card.
- They can cancel their booking any time they like as permitted by hotel/airline concerned.

DHCP Starvation Attack *B.Sc. coursework*

Summary: Simulation of a DHCP Starvation attack by broadcasting spoofed DHCP request packets

- Created raw sockets using socket() system call in Linux.
- Spoofed the chadrr (Client Hardware Address) field in DHCP Discover packet.
- Created and sent Spoofed DHCP discover packets until all IP addresses are used up.
- Process is repeated until WIFI is forced to shutdown.

Audio Spectrum Visualizer *B.Sc. coursework*

Summary: A project to demonstrate frequency spectrum visualization from real time audio via time domain to frequency domain conversion on Atmega32 micro-controller

- Simulates a real time audio signal to frequency spectrum.
- Transformation of audio on Atmega32 Micro-controller using Discrete Fourier Transform (DFT).
- Inputs taken from Electret Microphone Breakout Circuit.
- Outputs the amplitude plotted on two Dot Matrices (shape: 8X8) consist of uniformly distributed 16 frequency bins over 0-4 kHz.

Simplified C-Compiler *B.Sc. coursework*

Summary: Developed a full-fledged compiler for a subset of C language

- Lexical Analysis using Flex
- Syntactic Analysis using Bison (yacc)
- Intermediate code generated for 8086
- Implemented various optimizations while generating intermediate code such as removing NOPs, efficient usage of temporary variables, etc.

Network Models Simulation using NS-2 *B.Sc. coursework*

Summary: Simulated various networking models, parameters by observing different metrics using NS-2

- Performed simulations for Wired and Wireless 802.15.4 static network, cross-network-simulations between wired and static wireless mode, Satellite and LTE networks.
- For wired and wireless modes, variation of basic parameters such as number of nodes, flows, packet rate, coverage area, speed of nodes were considered.
- Measured metrics such as network throughput (average, instantaneous and per-node), end-end delay, packet delivery and drop ratios, energy consumption, residual energy per node and queue variation.
- Experimented with various modified simulation scenarios such as congestion algorithm, queue size variation using Random Early Detection (RED) queue, Re-transmission Timeout (RTO) calculation, AODV routing protocol.

Work experience

BRAC University *July 2021 - Present*

Department of Computer Science and Engineering *Dhaka, Bangladesh*

- Conducted theory courses including Numerical Methods, Computer Architecture, Artificial Intelligence, and System Analysis Design
- Conducted sessional courses including Numerical Methods and Artificial Intelligence
- Followed Outcome-Based-Education (OBE) concepts while designing new course materials

United International University *Feb 2021 - June 2021*

Department of Computer Science and Engineering *Dhaka, Bangladesh*

- Conducted theory courses including Digital Logic Design
- Conducted sessional courses including Data Structure Laboratory, Digital Logic Design Laboratory, Artificial Intelligence Laboratory

Technical skills

Programming Language	C, C++, Java, Python, MATLAB, Assembly 80x86, BASH, Perl, SQL, PL/SQL
Databases	Oracle, MySQL, SQLite
Web Development	HTML, CSS, JavaScript
Frameworks	Django, JavaFX, OpenGL, Bootstrap
Environment	CodeBlocks, Microsoft Visual Studio, IntelliJ, NetBeans, PyCharm, Emu8086
Operating Systems	Linux, Windows, xv6
Embedded Systems	AVR Microcontroller (ATMega32), Arduino
Simulator	Logisim, Packet Tracer, Wireshark, NS-2, Autocad

Language proficiency Test Score

IELTS, May 2021 **Overall: 8** (Listening: 8.5, Reading: 8.5, Writing: 7, Speaking: 7)

Awards and Achievements

Dean's List, BUET	All completed levels of undergraduate program
Trust Fund Scholarship, BUET	Prof. Dr. Ahmad Ullah and Mrs. Chemanara Ahmad Ullah Trust Fund Scholarship for session 2016-17
University Merit Scholarship, BUET	All completed levels of undergraduate program
Technical Scholarship, BUET	2017-18, 2016-17, 2015-16
Admission Test Scholarship, BUET	2015-16
Best Girl Award, VNSC	Dr. H.B.M. Iqbal Crest for excellent result consistently for 10 years in 2012

References

Dr. Md. Shamsuzzoha Bayzid *shams_bayzid@cse.buet.ac.bd*
Associate Professor
Department of Computer Science and Engineering
Bangladesh University of Engineering and Technology

Dr. Rifat Shahriyar *rifat@cse.buet.ac.bd*
Professor
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