Md. Billal Hossain

PhD Candidate, CS, The University of Texas at Dallas

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Education

PhD in Computer Science 08/2023 - Present
The University of Texas at Dallas

- Research Interest:
  Algorithms and Theory, Computational Geometry, Geometric Approximation

MSc in Computer Science & Engineering 08/2019 - 03/2022
Chittagong University of Engineering & Technology

- 2nd among 42, CGPA: 3.92/4.00

BSc in Computer Science & Engineering 03/2014 - 12/2018
Chittagong University of Engineering & Technology

- 2nd among 103, CGPA: 3.89/4.00

Work Experience

Research Assistant, Dept. of Computer Science 08/2023 - Present
The University of Texas at Dallas

Assistant Professor, Dept. of Computer Science & Engineering 06/2022 - 08/2023
Chittagong University of Engineering & Technology

Lecturer, Dept. of Computer Science & Engineering 07/2019 - 06/2022
Chittagong University of Engineering & Technology

Research Assistant, Dept. of Computer Science & Engineering 12/2018 - 07/2019
Chittagong University of Engineering & Technology

Software Engineering Intern 11/2017 - 12/2017
Appscode Inc

Publications

See the complete list of publications on [google scholar].

[1] **M. B. Hossain** and M. S. Arefin, "Developing a framework for next point-of-interest recommendation from spatiotemporal data", in *2022 International Conference on Advancement in Electrical and Electronic Engineering (ICAEEE)*, 2022, pp. 1–5.

[2] **M. B. Hossain**, M. S. Arefin, I. H. Sarker, M. Kowsher, P. K. Dhar, and T. Koshiba, "Caran: A context-aware recency-based attention network for point-of-interest recommendation", *IEEE Access*, vol. 10, pp. 36 299–36 310, 2022.

[3] **M. B. Hossain**, M. S. Arefin, and M. A. Habib, "Developing a framework for acquisition and analysis of speeches", in *Progress in Advanced Computing and Intelligent Engineering*, C. R. Panigrahi, B. Pati, P. Mohapatra, R. Buyya, and K.-C. Li, Eds., Singapore: Springer Singapore, 2021, pp. 51–61.

[4] M. Rahman, M. S. Arefin, **M. B. Hossain**, M. A. Habib, A. Kayes, *et al.*, "Towards a framework for acquisition and analysis of speeches to identify suspicious contents through machine learning", *Complexity*, vol. 2020, 2020.

[5] M. Rahman, **M. B. Hossain**, M. S. Arefin, M. I. Khan, *et al.*, "A secured electronic voting system using blockchain", in *International Conference on Intelligent Computing & Optimization*, Springer, 2020, pp. 1295–1309.

Projects

- **A framework for acquisition and analysis of speeches.**
  - Developed an android app that can record speeches along with the recorder's location and then send the data to a server where the speech is converted into text using Google STT API.
- **Facial expression recognition using deep convolutional neural network.**
  - It is a machine learning project that can identify seven basic facial expressions (Anger , Disgust, Fear , Happiness, Sad, Surprise and Neutral) of a person from a static image. It was implemented using OpenCV, Tensorflow, and TFLearn libraries in Python.
- **A simple online judge.**
  - Since I enjoy problem-solving, I tried to make an online judge where one can practice problems or participate in a contest. It was implemented using PHP, Javascript, HTML, CSS, and MySQL.
- **Snake Game.**
  - Simulation of the popular snake game using OpenGL in C++. It was done as part of my Computer Graphics course.

Teaching

I have been teaching in the department of CSE, CUET for more than 3 years. You can see the entire course list with the course content on my [website]

Structured Programming (C)

Object Oriented Programming (C++)

Algorithms Design & Analysis

Data Structure

Competitive Programming

Software Development Project

Digital Systems Design

Technical Skills

- **Programming Language:** C++, Python, Java, Matlab, VHDL
- **Web Development:** HTML, CSS, JavaScript, MySQL, Jekyll
- **Frameworks:** PyTorch, Keras, Tensorflow, TFLearn
- **Tools:** Jupyter, Latex, Git, Sublime Text, Android Studio

Competitive Programming

Solved more than 2500+ problems in various online judges. I still participate in many online contests like Codeforces regular rounds, Facebook hacker cups, Google code jams, etc.

- **Codeforces:** Solve Count: 1,800+, Max Rating: 2098 (Candidate Master) [Profile:]
- **LightOJ:** Solve Count: 120+ [Profile:]

- **UVa:** Solve Count: 120+ [Profile:]
- **LeetCode:** Solve Count: 160+, Top 2.02% overall ranking [Profile:]

Achievements

- **Progressed to the 2nd round**, Meta Hacker Cup, 2021.
- **Progressed to the 2nd round**, Google Code Jam, 2021.
- **41st position**, LeetCode Weekly Contest 227, Year - 2021. (41st out of 11,077 participants)
- **77th position**, Codeforces Round 647 (Div. 2) - Thanks, Algo Muse! (77th out of 10,252 participants)
- **1st Runner Up**, CUET CSE Fest - Programming Contest, 2018. (Total 60 teams)
- **Champion**, CUET CSE Fest - Programming Contest, 2017. (Total 57 teams)
- **1st Runner Up**, National Collegiate Programming Contest, 2017. (Total 150 teams)
- **4th position**, IUT 9th ICT Fest - Programming Contest, 2017. (Total 117 teams)
- **10th position**, ACM ICPC Regional Dhaka Site, 2016. (Total 123 teams)
- **5th position**, Inter University Programming Contest Organized by BSCCL, 2016. (Total 49 teams)
- **4th position**, DIU ACM ICPC World Finals Warm-up Contest, 2016. (Total 39 teams)
- **7th position**, IUT 8th ICT Fest - Programming Contest, 2016. (Total 102 teams)

Certifications

- **Deep Learning specialization by deeplearning.ai, Coursera.** [Certificate:]
  - Completed all the 5 courses of deep learning specialization. Built neural network architectures such as Convolutional Neural Networks, Recurrent Neural Networks, LSTMs, Transformers, and learned how to make them better with strategies such as Dropout, BatchNorm, and Xavier/He initialization.
- **Spoken Language Processing in Python, DataCamp.** [Certificate:]
  - Learned how to process spoken language in Python. Visualized raw audio output and learned how to load, transform and transcribe audio files.

Co-curricular Activities

- **Competitive Programming Trainer, CUET Computer Club** 2017 - 2023
  - Train and coach students to improve their programming skills.
- **Moderator, CUET Computer Club** 2019 - 2023
  - Arrange programming competitions, project showcasing, Hackathon, etc.
- **Treasurer, ACM Student Chapter, CUET** 2021 - 2022
  - Arrange workshops, competitions, seminars, and talks on different trending topics.
- **Moderator, CUET Career Club** 2020 - 2023
  - Arrange career-centric talks, seminars, workshops, etc.
- **Organizer** 2017
  - Organized NCPC-2017, and CUET CSE Fest-2017

Hobby

Sports Programming | RTS Games | Chess