TONMOY HOSSAIN

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Summary

- First-Year Ph.D. student in Computer Science at the University of Virginia
- Former Lecturer at the Department of Computer Science and Engineering, Ahsanullah University of Science and Technology (AUST)
- Completed B.Sc. from the Department of Computer Science and Engineering, Ahsanullah University of Science and Technology (AUST)
- Research experience in Machine Learning Applications, Computer Vision, and Image Analysis

Education

University of Virginia **Virginia, United States**
1st-Year Ph.D. Student in Computer Science *August 2021 - Present*

Ahsanullah University of Science and Technology **Dhaka, Bangladesh**
B.Sc. in Computer Science and Engineering (CSE) *May 2015 - July 2019*
GPA: 3.842 on a scale of 4.00 (3rd position out of 152 students)

Teaching Experience

Lecturer
Department of Computer Science and Engineering **August 2019 - August 2021**
Ahsanullah University of Science and Technology

Research Interests

Machine Learning, Deep Learning & its applications, Computer Vision, and Image Processing

Publications

- **Tonmoy Hossain**, Sujan Sarker, Sejuti Rahman, Md Atiqur Rahman Ahad (2021) **"Skeleton-Based Human Action Recognition on Large-Scale Datasets"**. In Vision, Sensing and Analytics: Integrative Approaches. Intelligent Systems Reference Library, vol 207. Springer, Cham.

- Saiful Islam, Aurpan Dash, Ashek Seum, Amir Hossain Raj, **Tonmoy Hossain**, Faisal Muhammad Shah, **"Exploring Video Captioning Techniques: A Comprehensive Survey on Deep Learning Methods"**, *SN Computer Science* 2, no. 2 (2021): 1-28.

- Shithi Maitra, **Tonmoy Hossain**, Khan Md. Hasib and Fairuz Shadmani Shishir, **"Graph Theory for Dimensionality Reduction: A Case Study to Prognosticate Parkinson's,"** *2020 11th IEEE Annual Information Technology, Electronics and Mobile Communication Conference* (IEMCON), Vancouver, BC,

Canada, 2020, pp. 0134-0140, doi: 10.1109/IEMCON51383.2020.9284926. **Best Paper Award** under *Data Mining and Data Analytics and Big Data* Category.

o Sarker, Sujan, Sejuti Rahman, **Tonmoy Hossain**, Syeda Faiza Ahmed, Lafifa Jamal, and Md Atiqur Rahman Ahad. **"Skeleton-Based Activity Recognition: Preprocessing and Approaches."** *Contactless Human Activity Analysis: 43.*

o Sifat Ahmed, **Tonmoy Hossain**, Oishee Bintey Hoque, Sujan Sarker, Sejuti Rahman, Faisal Muhammad Shah, "**Automated COVID-19 Detection from Chest X-Ray Images : A High Resolution Network (HRNet) Approach**", SN Computer Science 2, no. 4 (2021): 1-17.

o Ashek Seum, Amir Hossain Raj, Shadman Sakib, and Tonmoy Hossain, **"A Comparative Study of CNN Transfer Learning Classification Algorithms with Segmentation for COVID-19 Detection from CT Scan Images."** In *2020 11th International Conference on Electrical and Computer Engineering (ICECE), pp. 234-237. IEEE, 2020.*

o Faisal Muhammad Shah, Sajib Kumar Saha Joy, Farzad Ahmed, **Tonmoy Hossain**, Mayeesha Humaira, Amit Saha Ami, Shimul Paul, Md Abidur Rahman Khan Jim, Sifat Ahmed, "**A Comprehensive Survey of COVID-19 Detection using Medical Images**", SN Computer Science 2, no. 6 (2021): 1-22.

o Faizah Binte Naquib, Sharika Tabassom, Fariha Elahee, Farhana Mim, **Tonmoy Hossain**, and Kazi A. Kalpoma. "Modified Maximum Curvature Method (MMCM) and Logistic Regression: A Hybrid Architecture for Finger Vein Biometric Recognition System."23rd International Conference on Computer and Information Technology (ICCIT 2020), pp. 1-7. IEEE. **3rd Best Paper Award**

o Fariha Elahee, Farhana Mim, Faizah Binte Naquib, Sharika Tabassom, **Tonmoy Hossain** and Kazi A Kalpoma, **"Comparative Study of Deep Learning based Finger Vein Biometric Authentication Systems,"** *2020 2nd International Conference on Advanced Information and Communication Technology (ICAICT), Dhaka, Bangladesh, 2020, pp. 444-448, doi: 10.1109/ICAICT51780.2020.9333515.*

o Fairuz Shadmani Shishir, **Tonmoy Hossain** and Faisal Muhammad Shah, **"EsharaGAN: An Approach to Generate Disentangle Representation of Sign Language using InfoGAN,"** *2020 IEEE Region 10 Symposium (TENSYMP), Dhaka, Bangladesh, 2020, pp. 1383-1386, doi: 10.1109/TENSYMP50017.2020.9230946.*

o Shithi Maitra, Nasrin Akter, Afrina Zahan Mithila, **Tonmoy Hossain,** and Mohammad Shafiul Alam, "**Apriori-backed Fuzzy Unification and Statistical Inference in Feature Reduction: An Application in Prognosis of Autism in Toddlers**", Accepted in 5th *International Conference on Advanced Computing and Intelligent Engineering (ICACIE 2020), Mauritius.*

o **Tonmoy Hossain**, Fairuz Shadmani Shishir and Faisal Muhammad Shah, **"A Novel Approach to Classify Bangla Sign Digits using Capsule Network,"** *2019 22nd International Conference on Computer and Information Technology (ICCIT 2019), Dhaka, Bangladesh, 2019, pp. 1-6, doi: 10.1109/ICCIT48885.2019.9038609.*

o **Tonmoy Hossain**, Fairuz Shadmani Shishir, Mohsena Ashraf, MD Abdullah Al Nasim and Faisal Muhammad Shah, **"Brain Tumor Detection Using Convolutional Neural Network,"** *2019 1st International Conference on Advances in Science, Engineering and Robotics Technology (ICASERT 2019), Dhaka, Bangladesh, 2019, pp. 1-6, doi: 10.1109/ICASERT.2019.8934561.*

o Shithi Maitra, **Tonmoy Hossain**, Abdullah Al-Sakin, Sheikh Inzamamuzzaman, Md. Mamun Or Rashid, Syeda Shabnam Hasan (2019). **"A Gender-Neutral Approach to Detect Early Alzheimer's Disease Applying a Three-layer NN"**. *International Journal of Advanced Computer Science and Applications. 10. 10.14569/IJACSA.2019.0100368.*

- Faisal Muhammad Shah, **Tonmoy Hossain**, Mohsena Ashraf, Fairuz Shadmani Shishir, MD Abdullah Al Nasim, Md. Hasanul Kabir. **"Brain Tumor Segmentation Techniques on Medical Images - A Review",** *International Journal of Scientific & Engineering Research, Volume 10, Issue 2, February-2019. ISSN 2229-5518* 📄

- Shithi Maitra, **Tonmoy Hossain**, Abdullah Al-Sakin and Faisal Muhammad Shah, **"Artificial Prognosis of Cardiac Disease using an NN: A Data-scientific Approach in Outlier Handling,"** *2019 4th International Conference on Electrical Information and Communication Technology* (EICT), *Khulna, Bangladesh, 2019, pp. 1-12, doi: 10.1109/EICT48899.2019.9068847.* 📄

- Fayza Amreen, Md. Golam Muktadir, **Tonmoy Hossain** and Nazmus Sakib **"A Proposal of Weight based Similarities Hybrid Algorithm on Social Media Posts through Crowdsourcing to Achieve High Performance Recommendation"**. *International Journal of Applied Information Systems (IJAIS) ISSN : 2249-0868 Foundation of Computer Science FCS, November 2019* 📄

Awards & Achievements

- "Dean's List of Honor" (based on B.Sc. result)
- 7th **Place** out of 200 students in the Inter University Math Olympiad 2019
- **Best Paper Award** in *The 11th Annual IEEE Information Technology, Electronics and Mobile Communication Conference* (IEEE-IEMCON 2020)
- 3rd **Best Paper Award** in *23rd International Conferenceon Computer and Information Technology* (*ICCIT 2020*)
- Undergraduate admission sub-committee member of Fall-2019 semester at Ahsanullah University of Science and Technology
- IT Support Subcommittee member at the 23rd International Conference on Computer and Information Technology (ICCIT - 2020)

Technical Skills

Languages: Python, C, C++, C#, JAVA, HTML5, PHP, XML, JavaScript, .net, 80x86 Assembly
Framework: CSS, OpenGL
Database: MySQL, SQLite, Oracle
Design Tools: NetBeans, Microsoft Visual Studio, PyCharm
Operating System: Windows, LINUX, Android
Hardware: ATMEL (AVR Programming)
Deep Learning Tools: Keras, PyTorch, TensorFlow
Others: PL/SQL, LaTeX

Presentation & Workshop

- Presented a paper on 2020 IEEE Region 10 Symposium (TENSYMP), Dhaka, Bangladesh
- Presented a paper on 4th International Conference on Electrical Information and Communication Technology (EICT 2019), Khulna, Bangladesh
- Presented a paper on 22nd International Conference on Computer and Information Technology (ICCIT 2019)
- Presented a paper on 1st International Conference on Advances in Science, Engineering and Robotics Technology (ICASERT 2019)
- Participated in "How Computer Program Works", organized by Innovation for Poverty Action associated with University of California, San Diego and Cornell University.