Resume – K. M. Naimul Hassan

Personal Information

Personal website | Email | Google Scholar | GitHub | LinkedIn

Research Interests

■ Auditory Attention Detection ■ Brain-Computer Interface ■ Applied Machine Learning/Deep Learning ■ Audio Informatics ■ Healthcare ■ Signal Processing

Current/Ongoing Research

An Audio-Video based Listening Study to Determine Physical and Neural Cues that Correlate with Speech Attention.
Supervisor : Dr. Donald Williamson

Education

Ph.D. in Computer Science and Engineering (CSE) *August 2023-Present*
The Ohio State University (OSU)
Supervisor : Dr. Donald Williamson

M.Sc. in Electrical and Electronic Engineering (EEE) *July 2021-July 2023*
Bangladesh University of Engineering and Technology (BUET)
Major in Communication & Signal Processing
Supervisor : Dr. Mohammad Ariful Haque

B.Sc. in Electrical and Electronic Engineering (EEE) *February 2016-February 2021*
Bangladesh University of Engineering and Technology (BUET)
Major in Communication & Signal Processing
Supervisor : Dr. Md. Forkan Uddin

Relevant Coursework

Introduction to Artificial Intelligence, Deep Learning, Machine Learning and Pattern Recognition, Biomedical Signal Processing, Advanced Multimedia Communication, Digital Signal Processing, Random Signal Processing, Digital Image Processing, Microprocessors and Embedded Systems, Control Systems, Probability and Statistics.

Professional Experience

Graduate Research/Teaching Associate (G-RA/TA) *August 2023-Present*
Department of CSE, The OSU

Graduate Fellow *December 2021-July 2023*
Department of EEE, BUET

Research Assistant (RA) *July 2021-November 2021*
Department of EEE, BUET

Publications

International Conference Proceedings

■ **K. M. N. Hassan** and M. A. Haque, "SS+CEDNet : A Speech Privacy Aware Cough Detection Pipeline by Separating Sources," 2022 IEEE 10th Region 10 Humanitarian Technology Conference (R10-HTC), 2022, pp. 32-37, doi : 10.1109/R10-HTC54060.2022.9929794.
Repository Paper

■ **K. M. N. Hassan** et al., "ALSNet : A Dilated 1-D CNN for Identifying ALS from Raw EMG Signal," ICASSP 2022 - 2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2022, pp. 1181-1185, doi : 10.1109/ICASSP43922.2022.9747366.
Repository Paper

■ **K. M. N. Hassan**, S. Biswas and M. F. Uddin, "Electrical Power Consumption Profile Modelling of Air Conditioner for Smart Grid Load Management," 2020 11th International Conference on Electrical and Computer Engineering (ICECE), 2020, pp. 178-181, doi : 10.1109/ICECE51571.2020.9393101.
Repository Paper

■ **K. M. N. Hassan**, S. K. Biswas, M. S. Anwar, M. S. Iman Siam and C. Shahnaz, "A Dual-Purpose Refreshable Braille Display Based on Real Time Object Detection and Optical Character Recognition," 2019 IEEE International Conference on Signal Processing, Information, Communication & Systems (SPICSCON), 2019, pp. 78-81, doi : 10.1109/SPICSCON48833.2019.9065110.
Repository Paper
■ A. B. A. Qayyum, A. Anika, M. M. M. Miah, M. M. Rahman, **K. M. N. Hassan** et al., "Direction of Arrival Estimation through Noise Suppression : A Novel Approach using GSC Beamforming and Room Acoustic Simulation," 2019 IEEE International Conference on Signal Processing, Information, Communication & Systems (SPICSCON), 2019, pp. 104-108, doi : 10.1109/SPICSCON48833.2019.9065151.
Paper

Journal Publications

■ **K. M. N. Hassan** and M. A. Haque, "ASFNet : Audio Spectrogram Fourier Network for Efficient Medical Sound Event Detection," IEEE/ACM Transactions on Audio, Speech, and Language Processing. *(under review).*
■ M. F. Uddin, **K. M. N. Hassan** and S. Biswas, "Peak load minimization in smart grid by optimal coordinated ONOFF scheduling of air conditioning compressors," Sustainable Energy, Grids and Networks, Volume 28, 2021, 100545, ISSN 2352-4677, https://doi.org/10.1016/j.segan.2021.100545.
Repository Paper
■ A. B. A. Qayyum, **K. M. N. Hassan**, A. Anika et al., "DOANet : a deep dilated convolutional neural network approach for search and rescue with drone-embedded sound source localization," J AUDIO SPEECH MUSIC PROC. 2020, 16 (2020). https://doi.org/10.1186/s13636-020-00184-2.
Repository Paper

Awards/Honors

Recipient, IEEE SPS Scholarship, 2024-Present
The IEEE Signal Processing Society (SPS) awards scholarships up to three years of consecutive support to students who have expressed interest and commitment to pursuing signal processing education and real-world career experiences.
Recipient, CSE Scarlet and Gray Award, 2023-Present
The CSE Scarlet and Gray Award (CSGA) is a 5-year program that provides a stipend, tuition, and fees for graduate studies during the academic year as one makes satisfactory progress in the Ph.D. program. The award will include some combination of research and teaching associateships over the course of the five years and is subject to making satisfactory progress in the program.
Department of CSE, The OSU.
Recipient, Post-graduate fellowship (M.Sc.), 2021-2023
For outstanding research profile.
Department of EEE, BUET.
Second runner-up, IEEE Signal Processing (SP) Cup, 2020
Final at IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2020, Barcelona, Spain.
Competition overview magazine
First runner-up, IEEE Video and Image Processing (VIP) Cup, 2019
Final at IEEE International Conference on Image Processing (ICIP) 2019, Taipei, Taiwan.
Competition overview magazine
World finalist & champion in Bangladesh section, Innovation Challenge, IEEE YESIST12, 2019
Final at Stamford University, Hua Hin, Thailand.
Champion, Inter-University Poster Presentation, Esonance, 2017
Islamic University of Technology (IUT).

Selected Projects

✓ Detection and classification of sound events in medical environments.
✓ Synthetic speech attribution - classification of algorithms used to generate synthetic speech.
✓ Intelligent dialog management of social-bots.
✓ Identifying Amyotrophic Lateral Sclerosis (ALS) from raw EMG Signal.
✓ Drone-embedded sound source localization for search & rescue.
✓ Privacy protected office activity recognition from first-person-view body camera videos.
✓ Refreshable braille display based on real-time object detection and optical character recognition.

✓ Unsupervised abnormality detection from sensors and video feeds of intelligent and heterogeneous autonomous systems.
✓ Real-time English (British) sign language digits to Bengali sign language digits translation.

Teaching Experience

Graduate Teaching Associate (GTA) *August 2023-Present*
Department of CSE, The OSU
CSE 1223 : Introduction to Computer Programming in Java *Autumn 2024, Spring 2024, Autumn 2023*

Technical Strengths

Operating Systems : MacOS, Windows, Linux.
Languages : C, C++, Python, MATLAB, AMPL, Octave, 8086 Assembly, Verilog, HTML, Java.
Document Preparation : LaTeX.
ML Frameworks & Libraries : PyTorch, Keras, Tensorflow, Numpy, Pandas, Scikit-learn.
Version Control : GitHub, GitLab.
Circuit Simulation and Design : Proteus, PSpice, Quartus, Tina-TI.

Volunteer Works

Vice-Chairperson, IEEE Signal Processing Society BUET SB Chapter, 2019-2021
Member, IEEE Signal Processing Society, 2017-Present
Student Member, IEEE, 2017-Present

References

Dr. Donald Williamson
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