

PERSONAL INFORMATION

 [Personal website](#)  [Email](#)  [Google Scholar](#)  [GitHub](#)  [LinkedIn](#)

RESEARCH INTERESTS

■ Applied Machine Learning/Deep Learning ■ Audio Informatics ■ Healthcare ■ Signal Processing
■ Ubiquitous Computing ■ Conversational AI

EDUCATION

Bangladesh University of Engineering and Technology (BUET)

M.Sc. in Electrical and Electronic Engineering (EEE)

July 2021-Present

Expected to be completed before June 2023

Major in Communication & Signal Processing

B.Sc. in Electrical and Electronic Engineering (EEE)

February 2016-February 2021

Major in Communication & Signal Processing

RELEVANT COURSEWORK

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

Department of EEE, BUET

Graduate Fellow

December 2021-Present



Research Assistant

July 2021-November 2021

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**, S. Biswas and M. F. Uddin, "Peak Load Reduction in Smart Grid by a Hybrid Algorithm for ON-OFF Scheduling of Large Scale Air Conditioning System," Sustainable Energy, Grids and Networks. (*Submitted*).

■ 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**, Post-graduate fellowship (M.Sc.), 2021-Present

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](#)

Champion in Bangladesh section & world finalist, Innovation Challenge, IEEE YESIST12, 2019

Final at Stamford University, Hua Hin, Thailand

Global rank-10th, IEEE Signal Processing (SP) Cup, 2019

Champion, Inter University Poster Presentation, Esonance, 2017

Islamic University of Technology (IUT)

SELECTED
PROJECTS

Detection and classification of sound events in medical environments

M.Sc. Thesis- Working on the development of a standalone platform for the detection and classification of audio events in medical environments.

Synthetic Speech Attribution

Developing DNNs for detecting algorithms used to generate synthetic speech.

Intelligent dialog management of social-bots

Working primarily as a dialog architect for developing an intelligent dialog manager for open domain social-bots.

Identifying Amyotrophic Lateral Sclerosis (ALS) from raw EMG Signal

Developed a 1-D dilated CNN for identifying ALS from raw EMG Signal. A project for the Biomedical Signals, Instrumentation and Measurement course.

Search & Rescue with Drone-Embedded Sound Source Localization

Developed DNNs to predict the azimuth and elevation of sound source captured by the microphone array embedded with a drone. This project was also part of the efforts in the IEEE SP Cup 2019.

Activity recognition from body cameras

Research conducted for the IEEE VIP cup 2019- implemented a privacy aware office activity recognition model from the first-person-view video data.

Refreshable braille display based on real time object detection and optical character recognition

A dual purpose refreshable braille display- an object detection model and an OCR engine is integrated with the hardware prototype. This project was part of the Communication Systems course and the Innovation Challenge, IEEE YESIST12 2019.

Unsupervised abnormality detection by using intelligent and heterogeneous autonomous systems

Research project for the IEEE SP Cup 2020- developed an LSTM autoencoder and a convolutional autoencoder for detecting anomaly from sensor and video surveillance data respectively.

Real-time English (British) sign language to Bengali sign language translation system

Modeled a CNN for translating British sign language digits to that of Bengali sign language; part of the Digital Signal Processing course.

TECHNICAL
STRENGTHS

Operating Systems : MacOS, Windows, Linux.

Languages : C, C++, Python, MATLAB, AMPL, Octave, 8086 Assembly, Verilog, HTML.

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