

K. M. NAIMUL HASSAN

Personal Website

Department of Electrical and Electronic Engineering (EEE),
Bangladesh University of Engineering and Technology (BUET), Dhaka-1205, Bangladesh



RESEARCH INTERESTS

Deep Learning
Conversational AI
Signal Processing
Ubiquitous Computing

EDUCATION

M.Sc. in Electrical & Electronic Engineering (EEE) July 2021-Present

- Expected to be completed within June 2023
- Major in Communication & Signal Processing
- Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

B.Sc. in Electrical & Electronic Engineering (EEE) February 2016-February 2021

- Major in Communication & Signal Processing
- Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

H.S.C. in Science 2023-2015

- Notre Dame College, Dhaka, Bangladesh

S.S.C. in Science 2011-2013

- Mymensingh Zilla School, Mymensingh, Bangladesh

WORK EXPERIENCE

Graduate Fellow

Department of Electrical & Electronic Engineering (EEE), Bangladesh University of Engineering and Technology (BUET)
December 2021-Present

Research Assistant (RA)

Department of Electrical & Electronic Engineering (EEE), Bangladesh University of Engineering and Technology (BUET)
July 2021-November 2021

PUBLICATIONS

International Conference Proceedings

- **Hassan, K. M. N.** and Haque, M.A., "SS+CEDNet: A Speech Privacy Aware Cough Detection Pipeline by Separating Sources", 2022 10th IEEE R-10 Humanitarian Technology Conference (R-10 HTC). (*Accepted*).
- **Hassan, K. M. N.** 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.

- **Hassan, K. M. N.**, Biswas, S.K. and Uddin, M. F., "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.
- **Hassan, K. M. N.**, Anwar, M.S., Siam, M.S.I. and Shahnaz, C., 2019, November. A Dual-Purpose Refreshable Braille Display Based on Real Time Object Detection and Optical Character Recognition. In 2019 IEEE International Conference on Signal Processing, Information, Communication & Systems (SPICSCON) (pp. 78-81). IEEE.
- Qayyum, A.B.A.A., Anika, A., Miah, M.M.M., Rahman, M.M., **Hasan, K. M. N.**, Islam, M.T., Shouborno, S.A.I., Shadiq, M.F. and Haque, M.A., 2019, November. Direction of Arrival Estimation through Noise Suppression: A Novel Approach using GSC Beamforming and Room Acoustic Simulation. In 2019 IEEE International Conference on Signal Processing, Information, Communication & Systems (SPICSCON) (pp. 104-108). IEEE.

Journal Publications

- **Hassan, K. M. N.**, Biswas, S.K. and Uddin, M. F., "Peak Load Reduction in Smart Grid by a Hybrid Algorithm for ON-OFF Scheduling of Large Scale Air Conditioning System", Elsevier Sustainable Energy, Grids and Networks. (*Submitted*).
- Uddin, M. F., **Hassan, K. M. N.**, and Biswas, S.K., "Peak load minimization in smart grid by optimal coordinated ON-OFF scheduling of air conditioning compressors." Sustainable Energy, Grids and Networks 28 (2021): 100545.
- Qayyum, A.B.A.A., **Hassan, K. M. N.**, Anika, A., Shadiq, M.F., Rahman, M.M., Islam, M.T., Imran, S.A., Hossain, S. and Haque, M.A., 2020. DOANet: a deep dilated convolutional neural network approach for search and rescue with drone-embedded sound source localization. EURASIP Journal on Audio, Speech, and Music Processing, 2020(1), pp.1-18.

AWARDS/HONORS

Recipient, Post-graduate Fellowship

2021-Present

Bangladesh University of Engineering and Technology (BUET)

- Post-graduate fellowship (M.Sc.)
- Department of Electrical and Electronic Engineering (EEE)

Second Runner-up

2020

IEEE Signal Processing (SP) Cup

- Unsupervised abnormality detection by using intelligent and heterogeneous autonomous systems
- Team: BUET Andromeda
- 45th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2020, Barcelona, Spain
- [Recorded Presentation of the final round](#)
- [Competition Overview Magazine](#)

First Runner-up

2019

IEEE Video and Image Processing (VIP) Cup

- Activity Recognition from Body Cameras
- Team: BUET Ravenclaw
- 26th IEEE International Conference on Image Processing (ICIP) 2019, Taipei, Taiwan
- [Competition Overview Magazine](#)

Champion in Bangladesh Section & World Finalist

2019

Innovation Challenge, IEEE YESIST12-2019

- Project- Third Eye: A braille display based on real time object detection
- Team: BUET Phoenix
- Final at Stamford University, Hua Hin, Thailand

World Rank-10

2019

IEEE Signal Processing (SP) Cup

- Search & rescue with drone-embedded sound source localization
- Team: BUET Sonorous

Champion

2017

Inter University Poster Presentation, Esonance 2017, Islamic University of Technology

- Project name: PowerGym
- Team: BUET Unsullied

Recipient, Scholarship of Merit

2011-2021

Intermediate and Secondary Education Board, Bangladesh

- Government scholarship for outstanding result in Higher Secondary Certificate (H.S.C), Secondary School Certificate (S.S.C) and Junior School Certificate (J.S.C) examinations

Recipient, Scholarship of Merit

2008-2011

Primary Education Board, Bangladesh

- Government scholarship for outstanding result in Primary School examination

PROJECTS

Ongoing Projects

- Intelligent Dialogue Management of SocialBot
- Audio Source Separation
- Audio Event Detection
- Audio Representation Learning
- Synthetic Speech Attribution

Notable Earlier Projects

- Identifying Amyotrophic Lateral Sclerosis (ALS) from raw EMG Signal
- Peak load minimization of air conditioners connected to a Smart Grid (SG)
- Search & Rescue with Drone-Embedded Sound Source Localization
- Activity Recognition from Body Cameras
- Refreshable Braille Display Based on Real Time Object Detection and Optical Character Recognition
- Electrical Power Consumption Profile Modelling of Air Conditioner for Smart Grid Load Management
- Unsupervised abnormality detection by using intelligent and heterogeneous autonomous systems
- Real Time English (British) Sign Language to Bengali Sign Language Translation System

TECHNICAL STRENGTHS

Computer Languages

C, C++, Python, MATLAB, AMPL, Octave

Deep Learning API & platforms

PyTorch, Keras, Tensorflow, Kaggle, Google Colab

Version Control Systems

GitHub, GitLab

Documentation

LaTeX, Microsoft Word

Circuit Simulators

Proteus

EXTRA CURRICULAR ACTIVITIES

IEEE Signal Processing Society BUET SB Chapter

Vice-Chairperson

2019-2021

IEEE SPS Bangladesh Section

Member

2017-Present

IEEE Bangladesh Section

Student Member

2017-Present

REFERENCES

Dr. Mohammad Ariful Haque

Professor

Department of EEE, BUET

arifulhoque@eee.buet.ac.bd

Dr. Md. Forkan Uddin

Professor

Department of EEE, BUET

mforkanuddin@eee.buet.ac.bd

Dr. Celia Shahnaz

Professor

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celia@eee.buet.ac.bd