

# 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

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Deep Learning  
Conversational AI  
Signal Processing

## EDUCATION

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**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

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### 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

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### 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

<b>Recipient, Post-graduate Fellowship</b> <i>Bangladesh University of Engineering and Technology (BUET)</i>	2021-Present
<ul style="list-style-type: none"> <li>· Post-graduate fellowship (M.Sc.)</li> <li>· Department of Electrical and Electronic Engineering (EEE)</li> </ul>	
<b>Second Runner-up</b> <i>IEEE Signal Processing (SP) Cup</i>	2020
<ul style="list-style-type: none"> <li>· Unsupervised abnormality detection by using intelligent and heterogeneous autonomous systems</li> <li>· Team: BUET Andromeda</li> <li>· 45th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2020, Barcelona, Spain</li> <li>· <a href="#">Recorded Presentation of the final round</a></li> <li>· <a href="#">Competition Overview Magazine</a></li> </ul>	
<b>First Runner-up</b> <i>IEEE Video and Image Processing (VIP) Cup</i>	2019
<ul style="list-style-type: none"> <li>· Activity Recognition from Body Cameras</li> <li>· Team: BUET Ravenclaw</li> <li>· 26th IEEE International Conference on Image Processing (ICIP) 2019, Taipei, Taiwan</li> <li>· <a href="#">Competition Overview Magazine</a></li> </ul>	
<b>Champion in Bangladesh Section &amp; World Finalist</b> <i>Innovation Challenge, IEEE YESIST12-2019</i>	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**

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### **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**

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### **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

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**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

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**Dr. Mohammad Ariful Haque**

Professor

Department of EEE, BUET

arifulhoque@eee.buet.ac.bd

**Dr. Md. Forkan Uddin**

Professor

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**Dr. Celia Shahnaz**

Professor

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