

Angkon Deb

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SUMMARY

Electrical and Electronic Engineering professional with experience in AI, deep learning, robotics, and automation. Proficient in Python, MATLAB, TensorFlow, and PyTorch, with research experience resulting in peer-reviewed publications and participation in competitive technical projects. Interested in translating theory into practical systems and contributing to education and collaborative research.

EDUCATION

M.Sc. in Electrical and Electronic Engineering
Bangladesh University of Engineering and Technology
Major: Communication and Signal Processing

September, 2024–**Ongoing**
Dhaka, Bangladesh

CGPA: 4.0 out of 4.0 (**Upto 2nd Semester**)

B.Sc. in Electrical and Electronic Engineering
Bangladesh University of Engineering and Technology
Major: Communication and Signal Processing

April 2019 – May 2024
Dhaka, Bangladesh

CGPA: 3.74 out of 4.0

Undergraduate Thesis: Speech Enhancement under heavy colored noise (Up to -15dB SNR) with both supervised and unsupervised Deep Learning methods

- Achieves up to 0.98 STOI and 4.4 PESQ for supervised methods and 0.95 STOI with 4.2 PESQ for unsupervised ones.

PUBLICATIONS

Google Scholar Link

- <https://scholar.google.com/citations?user=H3siLB4AAAAJ&hl=en>

Published

- **A. Deb**, Asaduzzaman, R. Roy, A. Islam, C. Shahnaz and M. Saquib, "N2N2N: A Clean Data Independent Speech Enhancement Approach with Modified cGAN," TENCON 2024 - 2024 IEEE Region 10 Conference (TENCON), Singapore, Singapore, 2024, pp. 1474-1477, doi: 10.1109/TENCON61640.2024.10903013.
- **A. Deb**, R. Roy, A. Islam, I. Islam, A. Musabbir, M. S. S. Rian and C. Shahnaz, "Enhancing Communication for the Deaf and Hard-of-Hearing: A Custom Deep Learning Model-Based Approach for Real-Time Sign Language Recognition and Translation," 2024 IEEE 12th Region 10 Humanitarian Technology Conference (R10-HTC), Kuala Lumpur, Malaysia, 2024, pp. 1-6, doi: 10.1109/R10-HTC59322.2024.10778790.
- **A. Deb**, R. Roy, M. S. Sadik Rian, A. Islam, and C. Shahnaz, "Dpmas-net: A privacy-preserving deep learning model for emg-based hand gesture recognition with time-frequency domain features," in 2024 IEEE Region 10 Symposium (TENSYP). IEEE, Sep. 2024, p. 1-6. [Online]. Available: <http://dx.doi.org/10.1109/TENSYP61132.2024.10752112>
- **A. Deb**, S. I. Ahmed, A. Islam, M. Haque, S. A. Fattah and C. Shahnaz, "A Real-time Automatic Dengue Breeding Zone Detection and Prevention Scheme based on MobileNetV2 Enabled Autonomous Drone," 2023 26th International Conference on Computer and Information Technology (ICCIT), 2023, pp. 1-6, doi: 10.1109/ICCIT60459.2023.10441054.
- **A. Deb**, R. Roy, I. Islam, A. Islam and C. Shahnaz, "Bio-Markers Presence Detection Using Transfer and Ensemble Learning on Optical Coherence Tomography of Retinal Imagery," 2024 6th International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT), 2024, pp. 915-920, doi: 10.1109/ICEEICT62016.2024.10534519.
- **A. Deb** et al., "VOIS+: A Video Over Intercom Service with Home Automation Features for Advanced Security and Safety," 2024 IEEE 3rd International Conference on Robotics, Automation, Artificial-Intelligence and Internet-of-Things (RAAICON), Dhaka, Bangladesh, 2024, pp. 299-302, doi: 10.1109/RAAICON64172.2024.10928380.

- Asaduzzaman, **A. Deb**, A. Biswas, R. Roy, A. Islam and C. Shahnaz, "WnD-UNET: A Waveform and Discrete Wavelet Coefficient-Based 1D Deep Learning Model for Single-Channel Noisy Speech Enhancement," 2024 27th International Conference on Computer and Information Technology (ICCIT), Cox's Bazar, Bangladesh, 2024, pp. 3554-3559, doi: 10.1109/ICCIT64611.2024.11022373.
- K. T. Hasan, N. M. Shaon, **A. Deb**, S. K. Munia, T. Afrin and A. Islam, "Bidirectional Energy Flow in Vehicle-to-Grid and Grid-to-Vehicle Systems with Solar Integration: A Simulink-Based Approach," 2024 13th International Conference on Electrical and Computer Engineering (ICECE), Dhaka, Bangladesh, 2024, pp. 779-784, doi: 10.1109/ICECE64886.2024.11024690.
- A. Deb**, C. Shahnaz and M. Saquib, "A Joint Optimization Guided Deep Learning Model based on CNN and Channel-Wise Transformers for Robust Sleep Stage Classification from EEG Signal," 2025 47th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Copenhagen, Denmark, 2025, pp. 1-7, doi: 10.1109/EMBC58623.2025.11252945.

Under Review -(Journal)

- **A. Deb**, R Roy, C. Shahnaz, W.P. Zhu, and M. O. Ahmed "CAR-UNet: A ConvNeXT and Attention Aided Residual UNet-based Deep Learning Model for Monaural Speech Enhancement"- IEEE Transactions on Audio, Speech and Language Processing
- **A. Deb**, C. Shahnaz, and M. Saquib "SLOTH-Net: An STFT-based Multi-branch Optimized Transformer Head Network for Sleep Stage Classification from EEG Signal" - IEEE JBHI
- **A. Deb**, R Roy, A. Islam and C. Shahnaz "pFLOCT: A Personalized Federated Learning Framework for Heterogeneous OCT Data Classification Using Adaptive Clustering and Weight Optimization" - IEEE Access
- **A. Deb**, C. Shahnaz, and S. A. Fattah "DecodeMI-Net: Multi-Perspective Neural Network with Channel-Wise Attention for Motor Imagery EEG Decoding" - IEEE Access

Ready to be submitted (Journal)

- **A. Deb**, A. Islam, R Roy, C. Shahnaz, and G. Sharma "CAPRes50-GAN: A Word-Level Sign Language Recognition Approach for Real-Life Scenarios Exploiting GAN-Based Classifier"- IEEE Transactions on Multimedia

TECHNICAL SKILLS

Programming: Python, C/C++, MATLAB

AI & Deep Learning: PyTorch, TensorFlow, Transformers, RNNs, GANs, Computer Vision, Federated Learning, Differential Privacy

Scientific Computing: NumPy, Pandas, Scikit-learn, OpenCV, Librosa

Robotics & Embedded Systems: ROS2, ROS Noetic, Arduino, Raspberry Pi, DroneKit

Tools & Platforms: Git, Docker, Simulink, AutoCAD, Azure

AWARDS

IEEE R10 Robotics Competition

Champion

2023

Bangkok, Thailand

- Developed an autonomous Drone that can detect Mosquito breeding zone and descend upon detection without any ground control

IEEE SPS 5MICC

1st Runner Up

2023

Kuala Lumpur, Malaysia

- Awarded for integrating AI with robotics for autonomous operation
- Developed Project helps the local community and reduces health hazard

IEEE WIE Big Idea Pitch Competition

Champion

2023

IEEE Global

- Pitched an idea that won the title of "Best Transformative Business Idea"
- Idea is related to combating climate change

IEEE GLOBECOM Student Competition

Honorable Mention

2025

IEEE ComSoc Society

- **Project Name:** FLORAI: Flood Rescue Operation Management Using LoRa-based Positioning and AI-based Directives
- Advisor: Celia Shahnaz

HULT PRIZE

Global Finalist

2022

Karachi Section

- Pitched a startup which is closely related to preserving the cultural products of Bangladesh

TRAVEL GRANTS

- IEEE R10 Robotics Competition, Bangkok, Thailand (2023).
- IEEE SPS 5MICC, ICIP 2023, Kuala Lumpur, Malaysia (2023).
- 46th IEEE EMBS International Conference (EMBC), Copenhagen, Denmark (2025).

PROFESSIONAL AND STUDENT ENGAGEMENT ACTIVITIES

ICCIT Conference

Cox's Bazar, Bangladesh

2024, 2025

Bangladesh Section

- **Assistant Technical Secretary**
- Involvement with the conference committee for managing technical events

Workshop Instructor

Organized by IEEE RAS BUET SB

2024-2025

BUET, Dhaka-1000

- Attended as one of the lead instructors
- Workshop topic: Hands-on IoT projects with ESP-32
- Skills: Community engagement, Student activities, Presentation, Robotics and IoT, Digital electronics.

Instructor

Introduction to ROS

2024

BUET, Dhaka, Bangladesh

- Conducted a lecture and hands-on experiments with ROS for final year undergrad students of EEE, BUET
- Slides and codes are available on Github

EXPERIENCE

Adjunct Lecturer

BRAC University, CSE

2025 - Present

Dhaka, Bangladesh

- Course content creation
- Conducting lectures and consultation

Guest Lecturer

South East University, EEE

2025 - Present

Dhaka, Bangladesh

- Course content creation
- Conducting lectures and consultation

Teacher Assistant (TA)

BUET, EEE

2024 -2025

Dhaka, Bangladesh

- Course content creation
- Conducting lectures occasionally
- Experiment design and guiding students

IEEE RAS Sectional Student Representative

IEEE RAS SAC

2024 - Present

Bangladesh Section

- Working with global IEEE RAS SAC
- Representing the students of Bangladesh for opportunities in Robotics and Automation

Assistant Technical Secretary

ICCIT-2024, ICCIT-2025, RAAICON-2025, BECITHCON-2025, WIECONECE-2025, SPICSCON2025, PEEIACON2025

- Engaged in Technical Activity management for organizing the conference.
- Implemented AI and ML for organizing the technical activities
- Got experience with real-life event management and resource handling.

Intern

Bangladesh Satellite Company Ltd

2023-2023

Dhaka, Bangladesh

- Conducted analysis on satellite technologies

- Attended Workshops on SOCC, NOCC etc.

Academic Advisor

SOHOPATHI

- Provided academic guidance and support to students
- Assisted in curriculum development and student assessment
- Organized educational workshops and seminars

2019 – 2020
Dhaka, Bangladesh

Graphic Designer

SOHOPATHI

- Designed graphics for educational materials and promotional content
- Developed branding and visual identity for the organization
- Collaborated with the marketing team to create engaging visual content

2019 – 2022
Dhaka, Bangladesh

CLUB ACTIVITIES

IEEE SPS Chair -BUET SB

IEEE BUET SB

Publication Secretary

Satyen Bose Science Club

Design Head

Buet Robotics Society

2023 – May, 2024

Dhaka, Bangladesh

2023 – 2024

Dhaka, Bangladesh

2023–2024

Dhaka, Bangladesh

CERTIFICATIONS

- Programming with MATLAB - 2020
- Python Crash Course by Google - 2020
- Deep Learning Specialization - 2020
- Graphic Design Specialization - 2020
- Beginner Archery Training Course by BKSP - 2014
- Other certifications including the listed ones are available on LinkedIn or upon request

REFERENCES

Dr. Celia Shahnaz

Professor, Department of EEE, BUET, Bangladesh

celia.shahnaz@gmail.com

Research Supervisor(2023-24), UG Thesis Supervisor (2023-24),

MSc. Thesis supervisor(2024-Present)

Dr. Shaikh Anowarul Fattah

Professor, Department of EEE, BUET, Bangladesh

fattah@eee.buet.ac.bd

Academic Mentor(2023-Present), Team Mentor and Supervisor (2023-24),

MSc. course teacher (ML and PR, 2024-25)