# Asif Islam

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## Summary

Machine learning and Deep learning enthusiast with a broad skill set in software, programming, robotics, and automation. Proficient in Python, MATLAB, TensorFlow, PyTorch, Librosa and several machine learning libraries. Have experience in computer vision, audio signal processing and enhancement, federated learning, and biomedical image processing. Developed novel solutions that merge technical and design aspects, with recognition through research publications and awards in robotics and AI competitions. Skilled in problem-solving, research and, collaboration, and looking for a challenging research role to further explore machine learning solutions.

## Technical Skills

**Programming Languages**: Python, C, C++, MATLAB

**Deep Learning Frameworks**: TensorFlow, PyTorch

**Libraries & Tools**: NumPy, Pandas, Scikit-learn, OpenCV, Git, Docker, Librosa, TorchVision, MediaPipe

**Robotics & Automation**: ROS- Noetic, ROS2, DroneKit, Arduino, Raspberry PI (Linux)

**Software**: PSpice, Proteus, Psychopy, Keil MDK, Anaconda Navigator, VS Code, Simulink, MySQL, Microsoft Office (Word, Excel, Powerpoint)

**Web Development**: HTML, Django, CSS

**Graphic Design, Video Editing & 3D Modeling**: Photoshop, AutoCAD, ANSYS

**Hardware Proficiency**: Embedded System, Embedded System Programming

## Awards

**IEEE R10 Robotics Competition** 2023
*Champion* *Bangkok, Thailand*
- Developed an autonomous Drone that can detect Mosquito breeding zone and descend upon detection without any ground control while avoiding obstacles

**IEEE SPS 5MICC** 2023
*1st Runner Up* *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** 2023
*Champion* *IEEE Global*
- Pitched an idea that won the title of “Best Transformative Business Idea”
- Idea is related to combating climate change

**IEEE WIE Big Idea Pitch Competition** 2024
*Champion* *IEEE Global*
- Pitched an idea that won the title of “Best Innovation Pitch”
- Idea is related to combating climate change

**IEEE HTC Silver Award** 2024
*Silver Award* *IEEE R10 HTC*
- Awarded for innovation entitled CHINHO: An AI based Smart Wearable Sign Language Interpreter for People with Hearing and Speech Disability

**Harvard HSIL Hackathon** 2025
*National Champions* *Harvard Global*
- Awarded for the innovative idea of using Agentic AI, federated learning and Brain Computer Interface to develop empathetic AI therapist for people with Mental Disorder

## Education

**Saint Joseph Higher Secondary School** — Dhaka, Bangladesh
*Secondary School Certificate* — *2016*
• GPA: 5.00 out of 5.00

**Notre Dame College** — Dhaka, Bangladesh
*Higher Secondary Certificate* — *2018*
• GPA: 5.00 out of 5.00

**Bangladesh University of Engineering and Technology** — Dhaka, Bangladesh
*B.Sc. in Electrical and Electronic Engineering (Major: Communication and Signal Processing)* — *April 2019 – May 2024*
• CGPA: 3.36 out of 4.00

## Undergraduate Thesis

**Deep Learning Solutions for Sign Language Recognition**
*CAPRes50-GAN: A Real-Time Approach for Word-Level Sign Language Recognition Exploiting GAN-based Classifier*

## Club Activities

**Science Club Moderator** — 2014 – 2015
*Scintilla Science Club, Saint Joseph Higher Secondary School* — *Dhaka, Bangladesh*
**Science Fair Projects** — 2010 – 2015
*Scintilla Science Club, Saint Joseph Higher Secondary School* — *Dhaka, Bangladesh*
**Srap Book Competitions** — 2010 – 2015
*Scintilla Science Club, Saint Joseph Higher Secondary School* — *Dhaka, Bangladesh*

## Certifications

• TOEFL ibt Test - 2024, **Score: 104**

• Certificate for being an assistant technical secretary of ICCIT - 2024

• HTC Silver Award for innovation entitled CHINHO: An AI based Smart Wearable Sign Language Interpreter for People with Hearing and Speech Disability - 2024

• Showcasing and presenting the winning drone of Robotics Competition on workshop arranged by British Council - 2024

• National Steam Olympiad - 2024

• IEEE R10 Robotics Competition Champion - 2023

• IEEE SPS 5-Minute Video Clip Contest (5-MICC) - 2023

• 100 percent attendance certificate from Notre Dame COllege - 2018

• BAS Science Olympiad - 2017

• National Biology Olympiad - 2015

• Other certifications including the listed ones are available on LinkedIn or upon request

## Publications

### 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). IEEE, pp. 1474–1477, Dec. 01, 2024. 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 (TENSYMP). IEEE, Sep. 2024, p. 1–6. [Online]. Available: http://dx.doi.org/10.1109/TENSYMP61132.2024.10752112

• 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, A. Islam, A. Nath, M. Haque, R. Roy, M. Islam and C. Shahnaz, "**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). IEEE, pp. 299–302, Nov. 29, 2024. doi:10.1109/raaicon64172.2024.10928380

• A. Uzzaman, 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 International Conference on Computer and Information Technology (ICCIT), pp. 3554-3559, Dec. 20, 2024. doi: 10.1109/ICCIT64611.2024.11022373

• K. T. Hasan, N. M. Shaon, S. K. Munia, T. Tasmin, A. Deb, A. Islam, "**Bidirectional Energy Flow in Vehicle-to-Grid and Grid-to-Vehicle Systems with Solar Integration: A Simulink-Based Approach,**" 2024 International Conference on Electrical and Computer Engineering (ICECE), Dec. 18, 2024. doi: 10.1109/ICECE64886.2024.11024690

### Accepted

• A. Raisa, S. B. T. Arefin, S. Ahmed, A. Islam, M. Ferdous, "**Design of Super-hydrophobic coatings using Nanotechnology for Anti-icing application in Aircraft wing: A systematic review,**" 3rd International Conference on Mechanical Engineering and Applied Sciences, 2025 : Article accepted for Oral Presentation

### Current Works

• A. Deb, A. Islam, R. Roy, and C. Shahnaz, "**CAR-UNet: A ConvNext and Attention Aided Residual UNet-based Deep Learning Model for Single Channel Noisy Speech Enhancement,**" Being reviewed to be submitted in Journal

• A. Islam, A. Deb, R. Roy, C. Shahnaz, and G. Sharma "**CAPRes50-GAN: A Real-Time Approach for Word-Level Sign Language Recognition Exploiting GAN-based Classifier,**" To be submitted in the Journal of IEEE Transactions on Multimedia

• A. Islam, F. Ishtiaque "**NeuroPilot: BCI SYSTEM FOR ENHANCING CONCENTRATION LEVELS TO IMPROVE ONLINE LEARNING FOR STUDENTS,**" POC ready and merged with industry for tests, being reviewed to be submitted in Journal

## Experience

**Research Engineer** 2025 – present
*Advanced Intelligent Multidisciplinary System Lab (AIMS Lab) Research Lab* *United International University, Bangladesh*
- Working on projects related to Brain Computer Interface and Machine Learning
- Developed real-time EEG signal processing for attention classification with feedback mechanism

**Assistant Technical Secretary** 2024 – 2024
*ICCIT 2024* *Cox's Bazar, Bangladesh*
- Aided in the coding of programs necessary to automate the conference submissions and final checks
- Directed hybrid technical sessions arranged by ICCIT

**Publicity Coordinator** 2023 – 2024
*IEEE BUET Student Branch* *Dhaka, Bangladesh*
- Aided in organizing functions of IEEE SPS
- Volunteered in Conferences arranged by ICCIT and PES

**Intern** 2023–2023
*Bangladesh Satellite Company Ltd* *Dhaka, Bangladesh*
- Conducted analysis on satellite technologies
- Attended workshops on SOCC, NOCC etc.

## Projects

**GPS Tracker and Location Database System for BUET Students** Jan- 2021
*Communication System-I Project* *Arduino, RasPI, Wireless-Comm, Web Development*
- Monitors the current location of BUET buses with a short delay.

- Provides precise bus arrival information (90%+)

**DL-based Automatic License Plate Detection System** Jan 2021

*Digital Signal Processing Lab* *Python, PyTorch, YOLO, Transfer Learning, MATLAB*

- Utilizes advanced deep learning algorithms(YOLO, ResNet) for accurate license plate detection.
- Ensures reliable and precise detection in various conditions.(85%+)

**Smart Trash Collector Integrated with AI** Jan- 2022

*Communication System-II Project* *Arduino, RasPI, Wireless-Comm, Robotics, AutoCAD, Fusion*

- Employs artificial intelligence to optimize trash collection processes.
- Automatically sorts waste into appropriate categories (recyclables, organic, etc.).

**Single Board Oscilloscope, Freq-Gen, DC source Module** Jan- 2023

*Power Electronics Lab* *Arduino, Sensor, Microchip*

- Developed an affordable single board that combines multiple functions.
- Oscilloscope-Provides real-time visualization of electrical signals.
- Generates precise frequencies for testing and experimentation.
- Offers adjustable DC voltage for various applications.
- Supplies a stable 12V output.
- Supplies a stable 5V output.

**Smart Bike accident detection and Alarm system** Jan- 2023

*Microprocessor and Embedded System Lab* *Embedded System, Sensor, Microchip*

- Utilizes sensors to detect bike accidents in real-time.
- Sends immediate alerts to emergency contacts and authorities upon detection of an accident.

**Delivery Drone with Arduino** Jan- 2024

*Robotics and Automation Lab* *Arduino, Sensor, Robotics and Automation*

- Utilizes Arduino for precise control and navigation of the drone.
- Equipped with sensors to detect and avoid obstacles in real time.

## REFERENCES

**Dr. Celia Shahnaz**

*Professor, Department of EEE, BUET, Bangladesh* *celia@eee.buet.ac.bd , celiashahnaz@gmail.com*

**Dr. Shaikh Anowarul Fattah**

*Professor, Department of EEE, BUET, Bangladesh* *fattah@eee.buet.ac.bd*