

Shourov Joarder

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EDUCATION

Bangladesh University of Engineering & Technology (BUET)

February 2020 - Present

Final year B.Sc. Student in Electrical and Electronic Engineering

CGPA : **3.89** out of 4.00 up to 7th semester

Major : Communication and Signal Processing

Supervisor : [Dr. Kamrul Hasan](#)

Relevant Coursework: Artificial Intelligence and Machine Learning — Digital Image Processing I — Digital Signal Processing — Control System I — Microprocessors and Embedded System — Probability and Statistics

RESEARCH EXPERIENCE

Undergraduate Thesis Student

2024 - Present

Department of EEE, Bangladesh University of Engineering & Technology

My ongoing thesis is research on the development of a state-of-the-art **unsupervised** end-to-end deep learning method for **Strain Elastography(SE)** through the estimation of the displacement field (similar to the estimation of optical flow in CV). SE is a medical imaging technique that determines the tissue region strain that helps detect/classify the tumor/lesion region from the surrounding tissue by their strain.

Progress:

- Implemented [ReUSENet](#) paper in Pytorch.
- Developed a model consisting a new encoder with **TriCrossAttention**, **Convolutional-LSTM** based decoder and a novel loss for Displacement Field Estimation in Strain Elastography from RF sequence and implemented this in Pytorch.
- My proposed model achieves results close to SOTA and beats the [ReUSENet](#) (implemented) in terms of SNR, CNR and NRMSE metrics.

RESEARCH INTERESTS

Applying Machine Learning and Deep Learning techniques in the field of Computer Vision, Autonomous Vehicle, Natural Language Processing, Medical Imaging and Biomedical Signal Processing and working with Multimodal models like VLMs.

AWARDS and COMPETITIONS

- 57th in the public leaderboard of [DL Sprint - BUET CSE Fest 2024](#), Bengali AI Math Olympiad and LLM based competition.
- Best Notebook Award at the [DL Sprint - BUET CSE Fest 2022](#), Bengali Automatic Speech Recognition Competition.
- 1st Runner up of Undergraduate Project Idea Contest of STUDENT-LED CON 2022 of Co-located Conferences at 25th ICCIT 2022, Bangladesh.

SKILLS

- **Programming:** C, C++, Python, MATLAB, Assembly, Verilog.
- **Frameworks & Libraries:** Pytorch, Jupyter, Mamba, Pandas, NumPy, Matplotlib, Scikit-Learn, TensorFlow, OpenCV, YOLO.
- **Software and Tools:** Raspberry Pi, Arduino, Proteus, Pspice, Quartus, Keil, MS WORD, EXCEL, PowerPoint.
- **App Development:** Android Studio, Kotlin (Basic).
- **Design Tools:** AutoCAD (Basic).

PROJECTS

Deep-Learning-based-Breast-Cancer-Classification-Using-VGGIN [Github](#)

In this project, I trained the VGGIN model on the BreakHis histopathology dataset achieved 99.628% accuracy on the test dataset. VGGIN is a deep learning model combining VGG-19 and the Inception module.

Voice Controlled Wheelchair for Disabled Patients [Github](#)

We developed a method to control a wheelchair with only the patients voice commands. Our wheelchair takes voice commands from the patients in any language and in any accent and moves accordingly.[\[Video\]](#).

Machine Learning Based Electrical-Fault-Classification-with-GAF-image [Github](#)

To classify the electrical fault from the BUS voltage and current data two approaches were implement in this project. Firstly, ML algorithms like Decision Tree Classifier and Random Forest were used and in the second approach the same thing was done by Deep Learning method using CNN architecture.

Extracting Audio from Muted Video [Github](#)

The main objective of this project was to extract the audio signal from a muted video using signal processing methods in MATLAB. This was originally a project by Abe Davis, MIT [\[Visual Microphone\]](#).

Car Theft Detection and Prevention with Automatic GPS Tracking [Github](#)

This is a IoT based project, GSM and GPS technology was used to tack and send the car location and ESP32-CAM module was used to capture the photo of the thief and shut the car down.[\[Video Presentation\]](#).

Single Phase Transformer Simulator [Github](#)

Developed a simulator which simulates a single phase transformer. The simulator was designed by MATLAB GUI and the back-end code was also done in MATLAB.

EXTRA CURRICULUM

- President, BUET Photographic Society
- President, BADHAN-(Ahsanullah Hall Unit, BUET)

REFERENCES

Dr. Kamrul Hasan
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