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

Major : Communication and Signal Processing (*CSP*)
CGPA : **3.89/4.00** up to 7th semester
Class Position : **2nd** in *CSP major*

Relevant Coursework: Artificial Intelligence and Machine Learning — Digital Image Processing I — Digital Signal Processing — Control System I — Random Signals and Processes — Microprocessors and Embedded System — Digital Electronics — Electronic Circuits I & II — Probability and Statistics

RESEARCH INTERESTS

Applying Machine Learning and Deep Learning techniques in the fields of

- Computer Vision
- Natural Language Processing
- Biomedical Signal Processing
- Medical Imaging Processing
- Autonomous Vehicle
- Multimodal models VLMs

PUBLICATIONS

1. ***"Multilingual Voice-Controlled Smart Wheelchair with Advanced Features"***. Accepted for publication in 4th ECCE Conference, 2025. [paper]
2. ***"Skin Cancer Semantic Segmentation"***. Accepted for publication in 4th ECCE Conference, 2025. [paper]

RESEARCH EXPERIENCE

Undergraduate Thesis Student 2024 - Present
Department of EEE, Bangladesh University of Engineering & Technology
Supervisor : Dr. Kamrul Hasan
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 **TriCrossAttenion**, **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.

AWARDS and COMPETITIONS

- Multiple **University Merit** and **Dean's List** scholarships at BUET.
- 57^{th} in the public leaderboard of DL Sprint - BUET CSE Fest 2024, Bengali AI Math Olympiad an LLM based competition.
- Best Notebook Award at the DL Sprint - BUET CSE Fest 2022, Bengali ASR Competition.
- 1^{st} Runner-Up of Undergraduate Project Idea Contest at 25^{th} ICCIT 2022, Bangladesh. [Certificate]

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

Autonomous Inventory Robot Github
In this project, we developed a Inventory Bot which can take real time voice command and bring the object mentioned in the voice command using real time object detection by **YOLOv** then grabbing the object with necessary **ARM** movement finally bring it back to the base with **LFR**.

Deep-Learning-based-Breast-Cancer-Classification-Using-VGGIN Github
In this project, I trained the VGGIN model on the BreakHis histopathology dataset achived **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
ML algorithms like Decision Tree Classifier, Random Forest and CNN based deep learning method were used to classify the electrical fault from the BUS voltage and current data.

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 track 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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