Md Abrar Fahim

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Experience

Master's Thesis - Investigation into Audio Detection using Supervised and Unsupervised Learning, University of Surrey — Apr 2024 – Sept 2024

- Designed and implemented multiple convolutional models using PyTorch for audio detection.
- Results were analysed through performance metrics and plots like confusion matrix and t-SNE plots.
- Achieved 57.10% accuracy for supervised learning, outperforming the unsupervised model with its lower misclassification rate, with potential for model improvement.

Course Representative - Electronic and Computer Engineering, University of Nottingham — Oct 2019 – Jul 2023

- Facilitated communication between students and faculty, ensuring feedback from both sides was addressed.
- Collaborated with faculty to improve teaching structure and module content during meetings.
- Lecture engagement improved for 50% of modules, through positive feedback from 73% of students.

Bachelor Thesis - Investigation of Noise Mitigation in Acoustic Signals, University of Nottingham — Oct 2022 – May 2023

- Developed a Feed-Forward Neural Network that reduced noise in acoustic signals using Matlab.
- Analysed results through mean squared error, standard deviation, and frequency response plots, achieving a test dataset error of 0.005, making the model very accurate.
- Model performance was superior to traditional noise filtering methods like high-pass and low-pass filters, showing that it is the better method for applications like Spatially Resolved Acoustic Spectroscopy (SRAS).

Additional Projects

Natural Language Processing Project, University of Surrey – Surrey — Mar 2024 – May 2024

- Developed a sequence classification and detection model. Using Django framework, the model could be accessed on the Internet, where its failure rate was 1.15% during endpoint testing, displaying high accuracy.

Autonomous Vehicle Development, University of Nottingham – Nottingham — Sep 2019 – Jun 2020

- Developed an autonomous vehicle capable of object detection and navigation. Raspberry Pi and Arduino used for motor controls, and I2C protocol used to establish communication between them. OpenCV used for camera. The vehicle had an object detection error of 10%, showing a successful deployment.

Skills

Programming Languages: Python, C, C#, C++, Java, Matlab, PHP, HTML, Bash

Tools/Frameworks: PyTorch, OpenCV, MySQL, Ltspice, Scikit-Learn, Unity

Technical Skills: Machine Learning, Neural Networks, Supervised and Unsupervised Learning, Data Analysis

Education

University of Surrey, MSc Artificial Intelligence — Feb 2024 – Feb 2025

- Achieved: Merit

University of Nottingham, BEng Electronic and Computer Engineering — Sept 2019 – Jul 2023

- Achieved: Second Class, Division Two

Brunel University, Engineering with an Integrated Foundation Year FSK — Sept 2018 – Jul 2019

- Achieved: Passed Foundation Year modules

Extra-Circulars and Activities

Event Coordinator - Bangladeshi Society, Brunel University – London — Sept 2018 – Jun 2019

- Organised and coordinated activities for members of the society, resulting in a 20% increase in membership.

References

- Wenwu Wang - Professor of Signal Processing and Machine Learning, University of Surrey
  Email: w.wang@surrey.ac.uk