Samien Shaheed

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EDUCATION

University of Nottingham **Selangor, Malaysia**

B.Sc in Computer Science **(GPA: 3.8)** *Sep 2021 - Jul 2024*

- *Awarded High Achievers Scholarship and shortlisted to the Dean's List*
- ***Published a research paper in The Journal of Acoustic Society of America**. (Temporal patterns in Malaysian rainforest soundscapes demonstrated using acoustic indices and deep embeddings trained on time-of-day estimation)*

EXPERIENCE

Square InformatiX Limited **Dhaka, Bangladesh**

Software Engineer Intern *Oct 2024 – Present*

- Led a team of interns to develop an Inventory Management System ERP using Laravel and PHP, using **CI/CD pipelines** on GitHub Actions for testing and deployment.
- Designed a **database architecture** that allows end users to generate meaningful data and reports, such as stock levels, item receiving vs issuing trends, and defective item trends to facilitate detailed stock analysis.
- Built scalable **RESTful APIs** for the system's backend using the **MVC Framework** to handle processes like retrieving stock levels, tracking warranty details, and low-stock alerts.

University of Nottingham **Selangor, Malaysia**

AI Research Intern *May 2022– Sep 2022*

- Implemented Fourier Neural Operators (FNO) to improve computation time for Radio Frequency Ablation (RFA) treatment simulations using **PyTorch**.
- Created custom data generation scripts on **MATLAB** to generate synthetic datasets to facilitate further research into RFA simulations using FNOs.
- Developed and integrated custom training optimizers, including an Adam optimizer variant, to improve model convergence during FNO training by 30%.

PROJECTS

Temporal Pattern Recognition of rainforests using audio data | *PyTorch, TorchAudio, Raven Pro*
(Accepted for publication in the Journal of Acoustic Society of America)

- Developed and implemented a deep learning framework utilizing Convolutional Neural Networks (CNNs) for EcoAcoustic analysis using **PyTorch** and **TorchAudio**.
- Conducted extensive data pre-processing, data augmentation and model optimization on large EcoAcoustic datasets, including Mel-spectrogram generation, feature curation, and activation pattern analysis for ecological monitoring.
- Successfully demonstrated the model's ability to detect unique features such as rainfall detection, insect activity and bird behaviour over 24 hours and across a year.

Adaptive Learning E-Platform with Gamification | *React.js, Django, Scikit-Learn*

- Implemented a Python-based AI backend to support adaptive learning and personalized learning paths for students using Bayesian knowledge tracing (BKT) to track learning progress and skill mastery.
- Designed a **recommender system using the TF-IDF algorithm and Cosine Similarity** to suggest the most suitable learning resources based on students' progress.
- Integrated the backend with **React.js** through **Django** to provide real-time feedback on student performance, resulting in a consistent and responsive user experience.
- Increased student engagement and retention rates by incorporating gamification features such as achievements, badges, and an in-game XP system, using Human-Computer Interaction (HCI) principles.

Snake Game AI with Genetic Algorithms & Neural Networks | *Java, Processing 4 IDE*

- Developed an AI agent using a hybrid Neural Networks and Genetic Algorithms model to play the classic Snake Game.
- Used **Processing 4 IDE** and **Java** to develop a custom game environment to investigate different neural network architectures and mutation rates for optimal performance.
- Analyzed training results and performance metrics like high scores and time between points to evaluate the agent's efficiency, iteratively refining parameters for improved gameplay outcomes.

SKILLS

Programming Languages: Python, Java, Javascript, MySQL, PHP, HTML, CSS, C#, C Programming, MATLAB
Frameworks & Libraries: PyTorch, TensorFlow, Pandas, Matplotlib, Seaborn, React.js, Django, Express.js, Node.js
Tools: Git, Raven Pro, Google Colab