

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 at 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

- Developed an Inventory Management System using **Laravel and PHP**, replacing a previously manual process by automating the process of warehousing and tracking warranty.
- Designed a **database architecture** that allows end users to generate meaningful data and reports, such as stock levels, item receiving vs issuing trends, 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

Research Intern

May 2022– Sep 2022

- Implemented Fourier Neural Operators (FNO) to improve computation time for Radio Frequency Ablation (RFA) treatment simulations.
- 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

Deep EcoAcoustic Embeddings using Deep Learning based on time-of-day estimation

(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, successfully extracting temporal and ecological features from complex soundscapes.
- Conducted comprehensive **data pre-processing** and model optimization on large EcoAcoustic datasets, including Mel-spectrogram generation, **feature curation**, and activation **pattern analysis** for ecological monitoring.
- Achieved meaningful advancements in acoustic temporal pattern analysis, demonstrating innovative use of **supervised learning** techniques to identify ecological indicators like rainfall and insect activity.

Q-Learning Algorithm Development for Simulation Environments

- Utilized the **OpenAI Gym environment** to investigate the impact of discretization granularities on **Q-Learning** performance, enhancing understanding of state-action representation in reinforcement learning.
- Developed Python-based **reinforcement learning algorithms**, including dynamic state-space discretization and policy evaluation, to optimize learning efficiency in varying environments.
- Analyzed and visualized outcomes using libraries like NumPy, Matplotlib, and Seaborn, providing insights into the balance between discretization complexity and agent performance.

Adaptive Learning E-Platform with Gamification

- Implemented a Python-based AI back-end to support Adaptive Learning, for personalized learning paths for students by using **Bayesian Knowledge Tracing (BKT)** for tracking 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 student's progress.
- Integrated the back-end with **React.js** through **Django** and 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 principles of **Human-Computer Interaction (HCI)**.

SKILLS

Programming Languages: Python, MySQL, MATLAB, Java, PHP, Javascript, HTML, CSS, C#, C

Frameworks & Libraries: PyTorch, TensorFlow, Pandas, Matplotlib, Seaborn, Laravel, React.js, Django, Express.js, Node.js

Tools: Git, Power BI