Mercy Doan

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Education

Queen's University, Bachelor of Computing (Honors) Sep. 2020 – Apr. 2025
Specialization in Computing and Mathematics, focus in Data Analytics/Statistics (3x Dean's Honor List) Kingston, ON
Areas of Study: Data Science, Data Analytics, AI/ML, Algorithms, Statistics, Information Theory

Experience

Computing and Math Teaching Assistant Sep. 2021 – Present
Queen's School of Computing, Queen's Mathematics and Statistics Department Kingston, ON
- Developed course materials and provided office hours and feedback for 200+ students weekly
- Courses include Introduction to Computer Science I/II, Software Specifications, Discrete Math, and AI
- Dicussed interesting math puzzles weekly with first year students to foster an engaging and creative environment

Math Tutor Sep. 2023 – Present
ClubZ Tutoring Whitby, ON
- Provided weekly math tutoring for high school math up to Grade 12
- Created educational materials and developed learning strategies catered to each student's needs

NLP Director of Design May 2022 – Present
QMIND (Queen's University Artificial Intelligence Club) Kingston, ON
- Guided 8 project managers to build NLP projects through leadership and research workshops
- Educated students on using GitHub, machine learning libraries, and NLP techniques (statistical models, Ensemble methods, deep learning, LSTMs, Transformers, supervised/unsupervised regression/classification, etc.)

Cybersecurity Researcher May 2022 – Sep. 2022
Google ExploreCSR Kingston, ON
- Analyzed and applied research papers on autonomous vehicle security, software development life cycles, vulnerability detection, and machine learning techniques used in cybersecurity
- Proposed new ways to improve an autonomous vehicle software security and development method by using regression and deep learning to prioritize vulnerability metrics

Projects

Cancer Cell Detection | *MATLAB* Sep. 2023 - Present
- Analyze non-negative matrix factorization methods for classifying malignant cell data
- Visualize and evaluate data clustering efficiency using Davies-Bouldin Index

Snake Game with Reinforcement Learning | *Python* Mar. 2023 - Present
- Trained a RL agent to play the game 'Snake' with Q-Learning and SARSA
- Optimized hyperparameters using grid search

Queen's Hyperloop Design | *Python* Sep. 2023 - Present
- Trained an A* algorithm to optimize travel routes between cities

Security Vulnerability Detection with Transformers | *Python (HuggingFace, SciKitLearn)* Sep. 2022 - Mar. 2023
- Led a team of 4 to build a NLP model that detects security vulnerabilities in code based on CWE metrics
- Trained, finetuned, and compared Transformer, neural network, and probabilistic models on 250k samples of labeled PHP code, and was selected to present results at CUCAI (Canadian Undergraduate Conference on AI)

Data Analytics Projects | *MATLAB, Python (Keras, TensorFlow, PyTorch)* Jan. 2022 - May 2023
- Reported on 10 data analytics projects using methods such as PCA, LDA, SVMs, perceptrons, dimensionality reduction, constrained/unconstrained optimization, variable selection, regularization, and artificial neural networks
- Built computer vision models for number and clothing item classification, achieving up to 97% accuracy

Technical Skills

Languages: Python, Java, Javascript (React, Node.js), CSS, HTML, MATLAB, R, Bash, C, SQL, PHP
Frameworks/Technologies: Anaconda, Git/GitHub, Figma, Canva, Jira, MS Office, Supabase, WordPress
Libraries: Pandas, NumPy, HuggingFace, SciKitLearn, TensorFlow, Keras, PyTorch, OpenCV, Discord, Bootstrap