# Mercy Doan

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## Education

**Queen's University, Bachelor of Computing (Honors)** Sep. 2020 – Apr. 2025
*Specialization in Computing/Mathematics, focus in Data Science* *Kingston, ON*
**Areas of Study**: Data Analysis, Artificial Intelligence, Machine Learning, Reinforcement Learning, Evolutionary Computing

## Projects

**NLP-Enhanced Thought-to-Text with EEGs** | *Python* Sep. 2024 - Mar. 2025
- Led a team of 5 to classify EEG readings to natural text using word prediction to derive coherent output
- Recorded datasets, built combined CNN/RNN models with 98% accuracy, won best pitch at Camp QMIND 2024

**Research Projects** | *MATLAB, Python* Sep 2023 - Apr 2024
- Queen's Hyperloop Design: (Best research paper, EHW 2024) Determine optimal travel networks between cities
- Snake: Develop and compare reinforcement learning algorithms (Q-Learning, SARSA) to play the game Snake
- Cancer Detection: Perform non-negative matrix factorization to classify tumor cells based on mass spectrometry

**Tech Leadership Volunteering** | *Python, HTML/CSS/JS* May 2021 - Present
- Oversaw 7 teams of 50+ students as Vice President of the Queen's Computing Students' Association, and led UI/UX development of a new website: all were resources used by 1.5k+ undergraduate students
- Developed and finetuned AI tools using audio and text data for an international translation group, recognized by national European media, and with 1M+ overall online impressions

**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)

## Experience

**AI Developer** July 2024 – Sep. 2024
*Conflict Analytics Lab* *Kingston, ON*
- Integrated law documents into a vector database for retrieval augmented generation of legal information
- Built and tested LLM chat interface (OpenJustice) with knowledge graphs on Azure with React

**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, research, and technical workshops
- Educated students on AI theory, ML libraries, GitHub, 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

**Computing and Math Teaching Assistant** Sep. 2021 – Present
*Queen's School of Computing, Queen's Mathematics and Statistics Department* *Kingston, ON*
- Wrote course materials, provided office hours, and marked assignments for 200+ students weekly
- Courses include AI, Data Analytics, Discrete Math, Software Specifications, and Intro to Computer Science I/II

## Technical Skills

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