IAN QUAN

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EDUCATION

University of Toronto   **Sep. 2021 – May 2025**
Honors Bachelor of Science, Double Major in Computer Science and Statistics   *CGPA: 3.6/4.0*

- Dean's List Scholar 2021-2024
- Mathematical and Computational Sciences Department Honor Roll
- **Relevant Coursework:** Data Structures, Software Development, Database Management, Operating Systems, Systems Programming, Web Development, Computer Networks, Artificial Intelligence, Machine Learning, Neural Network and Deep Learning, Computer Vision, Applied Statistics, Regression Analysis

SKILLS

Languages: Python, JavaScript, Java, C
Database: MongoDB, PostgreSQL, MySQL, SQLite
Developer Tools: AWS, Azure, CI/CD, Docker, Linux
Development: Node.js, Django, Flask, REST API
Frontend Development: React.js, HTML/CSS, Next.js, Bootstrap, Tailwind, Redux

Spoken Languages: English, Cantonese, Mandarin
Project Management: Jira, Agile, Git, GitHub
Data Visualization: Tableau, IBM Cognos, Matplotlib
IDE: VS Code, PyCharm, Google Colab, Jupyter, RStudio
Data Science: Scikit-learn, TensorFlow, OpenCV, PyTorch, Pandas, R, Excel

EXPERIENCE

S&P Global   **Sep. 2024 – Dec. 2024**
Software Engineer Intern   *Toronto, ON*

- Scheduled to complete a 14 week internship in the S&P Global Ratings Software Development team in Fall 2024

Global Health Core   **Apr. 2024 – Aug. 2024**
Full-Stack Web Developer Intern   *Toronto, ON*

- Developed an interactive web application focused on enhancing global health accessibility. Utilized the **MERN stack** and integrated with **NoSQL** databases to optimize performance and scalability.
- Implemented a comprehensive patient dashboard that centralizes health data using **React.js** and **Material UI**. Utilized **Redux** to create a user-friendly interface for effective state management.
- Translated basic user cases into working prototypes and complex models with data structures to meet the requirements and solve customer-facing bugs.

University of Toronto, Department of Economics   **Apr. 2024 – Present**
Research Assistant — Supervisor: Loren Brandt   *Toronto, ON*

- Designed a **topic modeling** pipeline using **Python**, including **data preprocessing** on over **500** China policy documents, **word embedding**, and **BERT topic model training**.
- Discovered key trends and tracked economic policy focus in China using topic modeling, significantly reducing manual analysis time and providing quantitative insights.
- Enhanced model accuracy and meaningful topic extraction through **hyperparameter tuning** and **model coherence evaluation**.

0Barriers   **Jan. 2024 – Apr. 2024**
Software Developer   *Toronto, ON*

- Developed A11YLabs Simulation UI, a configurable WCAG violation scanning system designed for developers and accessibility testers. Utilized the **MERN** stack and deployed the application through **AWS S3**.
- Engineered a dynamic reporting module that allows users to export accessibility scan results in various formats (CSV, PDF, HTML). Integrated visual data insights and detailed issue breakdowns in reports to provide a comprehensive overview of accessibility compliance.
- Led the implementation of configurable parameters for webpage scans using **Puppteer**. This allowed for more thorough accessibility audits by simulating user interactions and bypassing authorization when necessary.

PROJECTS

MeetHomie | *Django, React.js, JavaScript, REST API, Material UI, Tailwind CSS*   **Jan. 2024**
- Developed a **full-stack** scheduling platform using **React.js** for front-end, **Django** and **RESTful API** for back-end, designed to streamline the organization of regular one-on-one meetings.
- Implemented a preference-based matching system by collecting preferences from host and invitee to optimize for mutual convenience.
- Integrated **JWT authentication** to ensure secure token-based user authentication, enhancing platform security.

Road Segmentation with U-Net | *Python, Keras, OpenCV, Tensorflow, PyTorch, Numpy*   **Apr. 2024**
- Trained a **U-Net encoder-decoder model** for road segmentation on KITTI dataset.
- Implemented a depth map fusion to incorporate 3D features during model training. Fused model outperformed the standard model in all key metrics, underscoring the benefit of incorporating depth data.
- Achived test accuracy with dice-coefficient of **91%** using depth fusion mask.

Hidden Markov Model on Stock Prediction | *Python, Machine Learning, Pandas, Numpy*   **Aug. 2024**
- Developed HMM to forecast stock prices for major companies like Apple, NVIDIA, and Amazon, achieving accurate predictions through rigorous model training and data preprocessing.
- Employed sliding window approach, with HMMs trained on 96 previous observations to predict the next 96 time step.
- Achieved below **8%** Mean Absolute Percentage Error MAPE

J2C Translator | *Python, NumPy, PyTorch, Pandas, NLP, Deep Learning, Data Science*   **Nov. 2023**
- Created the first Jyutping to Chinese Character translator with a test accuracy of **94%** using **Transformer Model**.
- Performed **data cleaning** and **word embedding** on over **18,000** training examples from Cantonese dialogue datasets.
- Improved validation accuracy by **17%** compared with the baseline model using **RayTune** for hyperparameter tuning.
- Designed a weighting mask to solve the homophone ambiguity problem in J2C translation, increasing **7%** in accuracy.

Student Partner Finder App | *Java, Java Swing, Agile*   **Apr. 2022**
- Developed an full-stack application using **Java Swing** for students to find study partners with the matching algorithm.
- Created a **matching learning algorithm** to analyze user's habits and study preferences.
- Processed user-inputted information in the back-end of the app to return a match based on the user's preference.
- Implemented **object-oriented programming** such as **inheritance** to create different user types and databases.

Personal Portfolio | *React.js, Node.js, JavaScript, Material UI, Tailwind CSS, Framer*   **Jan. 2022**
- Developed a personal portfolio website to showcase professional skills, projects, and personal interests.
- Utilized **React.js** for building a user-friendly interface with interactive components.
- Employed **Material UI** and **Tailwind CSS** to create a responsive and aesthetic design, ensuring a seamless user experience across various devices.