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: 3.65/4.0*

- 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

TECHNICAL SKILLS

Languages: C, HTML/CSS, Java, JavaScript, Node.js, Next.js, Python, R, React.js, SQL(PostgreSQL & SQLite)
Developer Tools: AWS, Azure, CI/CD, Docker, Excel, GitHub, Google Colab, Jupyter, Linux, RStudio, REST API
Frameworks and Libraries: Bootstrap, Django, Firebase, Flask, Java Swing, MongoDB, Matplotlib, Pandas, PyTorch, Redux, Scikit-learn, TensorFlow

EXPERIENCE

Research Assistant **Apr. 2024 – Present**

University of Toronto Department of Economics — 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**.

Full-Stack Web Developer Intern **Apr. 2024 – August. 2024**

Global Health Core *Toronto, ON*

- Collaboratively 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 including medical reports, imaging, and medication details. Utilized **Redux** to create a user-friendly interface for effective health information management.
- Translated basic user cases into working prototypes and complex models with data structures to meet the requirements and solve customer-facing bugs.

Software Developer Intern **Jan. 2024 – Apr. 2024**

0Barriers Foundation *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.

Data Analyst **Sep. 2023 – Apr. 2024**

University of Toronto, Department of Political Science — Supervisor: Lynette H. Ong *Toronto, ON*

- Conducted **sentiment analysis** on personal diaries to analyze the impact of government policy under Covid lockdown, using dense neural network with **Linear Discriminant Analysis**.
- Performed **logistic regression analysis** using **R** to quantify impact of state repression methods on citizen response.

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.

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.

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.

NBA MVP Predictor | *Python, Machine Learning, Pandas, Requests, BS4* **Apr. 2023**

- Web scrapped and pre-processed 30 years of NBA player statistics using **BS4, Pandas, Request** and **NumPy**.
- Developed **Linear Regression Model** to predict the MVP on a given season with over **80%** test accuracy.
- Improved test accuracy by **5%** by adding categorical predictors with **Random Forest Regressor**.

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.

LANGUAGES

English: Fluent
Cantonese: Native
Mandarin: Fluent