

Justin Leung

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Skills

Programming: Python, Javascript, Java, R, C++, SQL

Frameworks: React, Node.js, Express, MongoDB, PostgreSQL, Pandas, Matplotlib, Scikit-learn, Scrapy, OpenCV

Tools: Git, Android Studio, Jupyter Notebook, Vim, Bash

Experience

WatVis (Data Visualization Research Group), University of Waterloo

Waterloo, ON

Undergraduate Research Assistant

Jan. 2021 – Present

- Currently enhancing frontend client for Jupyter Notebook code search tools.

Software Analysis and Intelligence Lab (SAIL), Queen's University

Kingston, ON

Data Science Research Intern

Apr. – Aug. 2020

- Built an error-robust web crawler using **Python (Scrapy)** to generate an original 100GB+ article dataset.
- Generated 20+ key insights with data visualizations made with **Pandas, Matplotlib (Python)**.
- Applied classification models and analyzed feature importance with **Scikit-learn (Python)**.
- Reduced feature extraction time by more than half using Python's multiprocessing library.
- Wrote **SQL** queries on **Google BigQuery** to explore cross-website relationships with large-scale text search.

Software Analysis and Intelligence Lab (SAIL), Queen's University

Kingston, ON

Data Science Research Intern

Jul. – Aug. 2019

- Developed a data preprocessing pipeline using **R** to extract 100+ features from 19.3M message dataset.
- Conducted exploratory data analysis using ggplot2 R to investigate 3 major research questions.
- Trained six classifier models on 86K chat rooms, evaluated using precision, recall, AUC.
- Collaborated with PhD and postdocs to write a 35-page academic paper with LaTeX.

Selected Projects

See [personal website](#) for all 15+ project demos and code repositories.

Universe Simulation Android App | Java, Android Studio 📱

- Built a **Java** physics simulation app; applied Euler integration to solve n-body systems of forces.
- Published on the Google Play Store with **4.2K+ installs, 800+ active users**.
- Implemented graphics using native Android SDK and designed UI layout with **XML**.
- Conducted comprehensive unit testing using **junit**.

Full Stack Stock Portfolio Dashboard | PostgreSQL, React, Express, Node.js, JavaScript 📱

- Implemented live stock data fetching, transactions and user data stored on a **PostgreSQL** database.
- Created **RESTful APIs** for communication between **React.js** client and **Express/Node** server.
- Processed stock data using **pandas (Python)** library.
- Visualized data using **D3.js**, and frontend styling with **React-Bootstrap**.

Full Stack COVID Vaccine Queue | MongoDB, Express, React, Node.js, JavaScript 📱

- Built a **React.js** client with **Chart.js** data visualizations to estimate users' vaccination date and position in queue.
- Stored, queried user data with **MongoDB** database connected with a **Express** server.
- Collaborated with 3 team members to produce submission to Hack the North.

Cellular Automata Visualization | JavaScript, React, Bootstrap, D3.js, Three.js 📱

- Built simulation webapp using **React.js**, styled with **Bootstrap**.
- Implemented live population data graphs using **D3.js** and 3D rendering with **Three.js**.

Extracurriculars

UWaterloo Aerial Robotics Group (UWARG)

Waterloo, ON

Computer Vision Core Member

Oct. – Dec. 2020

- Gained familiarity with OpenCV and real-time object detection systems in Python.
- Helped rewrite legacy project codebase from C++ to Python, integrated streaming pipeline with GStreamer.

Education

University of Waterloo

Waterloo, ON

Bachelor of Computer Science (Honours Co-op)

2020 – Expected 2025

- Cumulative Grade Average: **92% (Dean's Honours)**
- Relevant Coursework: Algorithm Design (Advanced level), Functional Programming (Advanced level)