

VINCENT LIU

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EDUCATION

Simon Fraser University

BSc. Computing Science (Geographic Information Science Major), 3.65/4.33 GPA

EXPECTED APR 2026

Burnaby, BC, Canada

- **Selected Coursework:** Data Structures, Database Systems, Web Development, Computational Data Science, Affective Computing, Visual Computing, Geographic Information Science, Remote Sensing, Spatial Data Analysis/Modeling

EXPERIENCE

Apple Inc. - Software Engineering Intern @ Maps

MAY 2025 - AUG 2025

React, Redux, TypeScript, MapKit JS, Deck.gl

Cupertino, CA, USA

- Merged open-source updates of Kepler.gl, containing new features such as **DuckDB** and an **AI Assistant**, into the internal Apple-adapted version of the tool.
- **Refactored** Kepler.gl's open-source codebase into **modular, importable components** to integrate with a proprietary geospatial visualization platform, ensuring **long-term maintainability** with future Kepler releases.
- **Developed** a plugin that **connected** Kepler's visualization features with the platform's **state management** and **persistence** systems, enabling general-purpose, self-service data exploration and analysis.

Apple Inc. - Software Engineering Intern @ Maps

MAY 2024 - AUG 2024

React, Redux, TypeScript, MapKit JS, Deck.gl

Cupertino, CA, USA

- **Integrated** Apple's MapKit JS into Kepler.gl, an industry-leading **open-source** tool for the geo-spatial analysis of large datasets.
- **Enhanced** the application with advanced 2D-3D visualizations, split map views, and custom Apple-themed visualization palettes in **collaboration with design teams**.
- **Developed** and executed an integration plan to **refactor** existing mapping frameworks using the **adapter** design pattern, enhancing the **scalability, maintainability**, and **API extensibility** of the application.
- Managed weekly deliverables, put the application into **production**, and presented the application to Leadership, demonstrating **performance improvements**, enhancements to **codebase architecture**, and refined **visual design**.

PERSONAL PROJECTS

MOODMIRROR 🔄

JAN 2025

Swift, Agora, Python, Flask, TensorFlow, OpenCV

nwHacks 2025

- Developed a **cross-platform** Swift app to infer emotions from facial expressions captured through video calls or the device camera, using a TensorFlow **ML model** hosted on a Flask server.
- Integrated the Agora SDK to support **one-on-one video calling**, enhancing real-time interaction capabilities between clients.
- Designed an **ML pipeline** to classify facial expressions into emotional categories, displaying results on the client.
- Created a **REST API** for the communication between the client and server, facilitating classification delivery within seconds.

CRASH-STRADAMUS

DEC 2024

Pandas, SciPy, Matplotlib, scikit-learn, Rasterio, Python

Computational Data Science - Simon Fraser University

- Performed **ETL** processes on NASA elevation and Open Data Vancouver datasets, creating extensive geo-spatial datasets and enabling municipal-level geo-spatial filtering.
- Conducted **statistical analyses** and created **visualizations** to reveal relationships between crash frequency, transit-station proximity, elevation, traffic-signal type, and weather, contributing to safety insights and actionable recommendations.
- Built predictive models using **Random Forests** and **Neural Networks**, enhancing performance with entity embeddings to predict a location's crash count based on environmental factors, while uncovering trends influenced by these factors.

JOBJUG 🔄

MAY 2024

React, JavaScript, Tailwind, Python, Flask, OpenAI API, Gmail API, MongoDB

StormHacks 2024

- Created a job application tracker that **automatically categorizes** applications into their respective hiring-process stages.
- Used the **Gmail API** to extract job application emails, and then provided them to the **OpenAI API** for **classification**.
- Built a **REST API**, using Python and Flask, to store users and their tracked job applications in a **MongoDB database**.
- Implemented a **dashboard** that displays and sorts categorized job applications into three columns, with each column representing a hiring-process stage.

TECHNICAL SKILLS

Languages: JavaScript, TypeScript, HTML/CSS, Python, SQL, MATLAB, C, C++

Technologies/Frameworks: React, Redux, Deck.gl, MapKit JS, Node.js, Express, Flask, Pandas, GeoPandas, Polars, PySpark, PyTorch, Scikit-learn, SciPy, MongoDB, Postgres, QGIS, ArcGIS API