

# FELIX ZHOU

**Mathemagician & Engineer** working with tranformation, analysis, and storage of structured and unstructured data

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## EXPERIENCE

### IOT Engineering Intern

#### California Things

📅 May 2019 – Present

📍 Redwood City, CA

- Lead an engineering team in implementing a multi-client read-write lock for **mongodb** using asynchronous networking in both **Swift** and **C** with a **Python** interface to prevent data races
- Leveraged **Elliptic-Curve Cryptography** and **Stream Cyphers** to ensure client data security
- (unable to disclose further details due to a signed NDA)

### Software Engineering Intern

#### Encircle Inc.

📅 April 2018 – August 2018

📍 Kitchener, ON

- Introduced **WebSockets** and **Observables** to load and update data asynchronously in real-time, improving efficiency by 5x
- Implemented email feature to send reports through **Model-Daemon Method**, removing need to exit app in user workflow
- Improved user experience with **functional React** Components, reducing re-rendering for smoother user experience

## PROJECTS

### Pleter

📅 May 2019

📍 github.com/felix990302/word\_completion

- Designed a concurrent autocompletion engine using a variation of **range trees** consisting of a **compressed trie** and sorted arrays in **C++**
- accounted for race conditions and deadlocks using fine-grained read-write lock hierarchies
- Incorporated **gprof** as profiler for optimizations including a static **fixed-size allocator** to achieve **20x** speedup

### VM

#### CS246E: Objected Oriented Programming (Advanced)

📅 November 2018

📍 github.com/felix990302/vm

- Actualized a **C++14** clone of the command-line text editor **vim**
- Followed **Object-Oriented Principles** and **Design Patterns** like **Decorator** and **Visitor** to produce modular and extensible code
- Implemented undos and redos through the **Command** pattern to minimize space complexity

### Goose or Not

#### Hack the North

📅 September 2018

📍 github.com/felix990302/GooseOrNot

- Created an **Online Learning** application which recognizes geese with **Flask** and **TypeScript-React**
- Designed a **PostgreSQL** database with **ORM** to improve extensibility
- Combined **NNLIB** and **XGBoost** for classification with **90% accuracy**
- Deployed several **Heroku** instances with **PgBouncer** and **NGINX** for load balancing and increased transaction throughput

*Inspired by Silicon Valley Season 4 Episode 4*

## PROFICIENCIES

C, C++, Swift, Java,  
Python 3, Typescript, Scheme, Haskell,  
R, MATLAB, LaTeX, MIPS

TensorFlow, XGBoost, Keras,  
scikit-learn, SciPy, NumPy,  
PostgreSQL, SQLAlchemy, MongoDB,  
React, React-Native, Flask,

Linux, Bash, Git, Phabricator, Docker

## EDUCATION

### B.S. Computer Science

#### University of Waterloo

📅 Sept 2017 – August 2022

- Combinatorics and Optimization Double Major
- Pure Mathematics Minor
- 3.93 GPA
- Advanced Math and CS courses

## ACHIEVEMENTS

### 96th Percentile LeetCode

📅 2018

global rankings

### Term Dean's Honours List

#### University of Waterloo

📅 September 2017 – Present

for academic average above 90%

### Gold Medal

#### Burnaby Clef Festival

📅 June 2015

for piano performance of Polonaise in A major

### Gold Medal

#### Basketball BC Zone Championships

📅 April 2014

## INTERESTS

Music Theory, Quantum Information, Food