

FELIX ZHOU

Mathemagician & Engineer analyzing, transforming, and organizing structured and unstructured data

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EXPERIENCE

Undergraduate Research Assistant

University of Waterloo

August 2020 – Present

Waterloo, ON

- Designed a **scheduling algorithm** to allocate office time based on **3-dimensional matchings** while leveraging **integer programming** through **Gurobi**
- Researches computational complexity of solution concepts such as the nucleolus within **cooperative b-matching games**
- Presented recent results in **computational game theory** during weekly readings

Software Engineering Intern

Google LLC

Jan 2020 – April 2020

Mountain View, CA

- Improved a **distributed graph algorithm** which pinpoints build-breaking commits, reducing engineering time
- Created a generalized **validation framework** in **C++** to evaluate improvements through statistical methods like **cross entropy**, **rank probability score**, and **ℓ -p norms**, quantifying the performance of breakage finding services
- Implemented an efficient data pipeline through **BigQuery** and **MapReduce** which supports the evaluation framework using automated testing data

IOT Engineering Intern

Level Home Inc.

May 2019 – December 2019

Redwood City, CA

- Designed and implemented back-end features to support an invisible **smart lock** system, allowing users to remotely control entrance to doors without affecting aesthetics of their home
- Lead an engineering team in implementing a multi-client read-write lock for **monogodb** 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

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

PROFICIENCIES

C, C++, Python 3

Typescript, Scheme, Haskell,

Gurobi, R, MATLAB, LaTeX

SQL, BigQuery, MapReduce

TensorFlow, XGBoost, Keras,

Scikit-Learn, SciPy, NumPy,

PostgreSQL, SQLAlchemy, MongoDB,

Git, Phabricator, Docker

EDUCATION

B.S. Computer Science

University of Waterloo

Sept 2017 – August 2022

- Double Major with Combinatorics & Optimization
- Minor in Pure Mathematics
- 3.94 GPA
- Advanced Math and CS courses

ACHIEVEMENTS

Howard and Marita Boyd Scholarship

University of Waterloo

January 2021

for academic excellence and demonstrated commitment to volunteerism

Undergraduate Student Research Award

NSERC

September 2020

for excellent academic record and research aptitude

President's Research Award

University of Waterloo

September 2020

President's Scholarship of Distinction

University of Waterloo

September 2017

for entrance average above 95%