

FELIX ZHOU

@ changfengzhou990302@gmail.com

uwaterloo.ca/~cfzhou

in felix-zhou

felix990302

EXPERIENCE

Undergraduate Research Assistant

University of Waterloo

May 2021 – August 2021

Vancouver, BC

- Researched **approximation algorithm** frameworks for a variety of NP-hard problems by employing novel **linear programming rounding** techniques
- Explored the **minimum norm matroid median** problem which generalizes the k -means and k -centre problems

Undergraduate Research Assistant

University of Waterloo

August 2020 – April 2021

Waterloo, ON

- Designed a **scheduling algorithm** to optimally allocate office time based on **3-dimensional matchings** while leveraging **integer programming** through **Gurobi**
- Produced novel results on the computational complexity of nucleolus within **cooperative b -matching games**
- Presented recent breakthroughs 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 bug-finding time by to 50%
- 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 backend 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 multiclient 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

PROJECTS

VM

CS246E: Objected Oriented Programming (Advanced)

November 2018

github.com/felix990302/vm

- Actualized a **C++14** clone of the command line text editor **vim** from scratch
- 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, \LaTeX , MATLAB, Gurobi

EDUCATION

Bachelor of Mathematics

University of Waterloo

Sept 2017 – August 2022

Double Major in Combinatorics & Optimization and Computer Science

Minor in Pure Mathematics

94% Faculty Average

PUBLICATIONS

"On the Complexity of Nucleolus Computation for Bipartite b -Matching Games". *Submitted for Review*

COURSEWORK

Probability, Statistics

Calculus 3, Linear Algebra 2, Graph Theory

Algorithm Design, Graph-Theoretic Algorithms
Convex Optimization, Semidefinite Optimization
Combinatorial Optimization

ACHIEVEMENTS

Mathematics Undergraduate Research Award

University of Waterloo

May 2021

for excellent academic performance and research capabilities

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