FELIX ZHOU

felix990302 | felix-zhou | 0000-0003-4327-0492
~cfzhou | changfengzhou990302@gmail.com

EXPERIENCE

Undergraduate Research Assistant
University of Waterloo
May 2021 – August 2021 | Waterloo, ON

- Developed novel **linear programming rounding** methods towards **approximation algorithms** for NP-hard problems
- Explored the **minimum norm matroid median** problem which generalizes the k-medians and k-center problems

Undergraduate Research Assistant
University of Waterloo
August 2020 – April 2021 | Waterloo, ON

- Designed a **scheduling algorithm** to allocate office time under distancing constraints based on **3-dimensional matchings** modeled with **integer programming** in **Gurobi**
- Proved results on the computational complexity of nucleolus within **cooperative games** (*manuscript under review*)

Software Engineering Intern
Google LLC
Jan 2020 – April 2020 | Mountain View, CA

- Improved a **distributed graph algorithm** which pinpoints build breaking commits, reducing debug time by to **50%**
- Created a generalized **validation framework** in **C++** to quantify breakage finding performance with statistical methods like **cross entropy, rank probability score**
- Implemented a data pipeline using **BigQuery** and **MapReduce** to support the framework with testing data

IOT Engineering Intern
Level Home Inc.
May 2019 – December 2019 | Redwood City, CA

- Built backend features for a discreet **smart lock**, allowing users to remotely unlock doors without affecting aesthetics
- Lead the creation of a **MongoDB** network semaphore with asynchronous networking in **Swift** to prevent data races

PROJECTS

VM github.com/felix990302/vm

- Actualized a **C++14** clone of the text editor *vim* from scratch
- Followed **Object Oriented Principles** and **Design Patterns** like **Decorator** and **Visitor** for modular and extensible code

PROFICIENCIES

C, C++, Python 3
LaTeX, MATLAB, Gurobi

Approximation Algorithms
Computational Game Theory

EDUCATION

Honours Bachelor of Mathematics
University of Waterloo
Sept 2017 – August 2022

Double Major in Computer Science and Combinatorics & Optimization
Minor in Pure Mathematics
94% Average

PUBLICATIONS

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

COURSEWORK

Probability, Statistics, Graph Theory
Real Analysis, Linear Algebra 2
Lebesgue Integration & Fourier Analysis

Advanced Algorithm Design
Combinatorial Optimization
Semidefinite and Convex Optimization

ACHIEVEMENTS

Mathematics Undergraduate Research Award ($6000)
for outstanding academics and research capacity

NSERC Undergraduate Student Research Award ($4500)
for academic excellence and research aptitude

Howard and Marita Boyd Scholarship ($1500)
for academic excellence and demonstrated commitment to volunteerism

President's Research Award ($1500)