FELIX ZHOU

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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** (*accepted for publication*)

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 **50%**
- Created a **validation framework** in **C++** to quantify the performance of bug-finding services with statistical methods such as **cross entropy** and **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** system
- Lead the creation of a **MongoDB** network semaphore with asynchronous networking in **Swift** to prevent data races

PROJECTS

VM github.com/felix990302/vm

- Re-implemented the text editor *Vim* from scratch in **C++14**
- Followed **Object-Oriented Principles** and **Design Patterns** like **Decorator** and **Visitor** for modular and extensible code

SKILLS

C, C++, Python, MATLAB, Scheme, LaTeX, MapReduce, Gurobi, *nix, Shell, Git

RESEARCH

- Approximation Algorithms
- Computational Game Theory

"On the Complexity of Nucleolus Computation for Bipartite b-Matching Games". *Symposium on Algorithmic Game Theory, 2021*

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% Faculty Average

COURSEWORK

Algebraic Graph Theory,
Measure Theory, Functional Analysis,
Quantum Information Theory,
Advanced Algorithm Design,
Combinatorial Optimization,
Semidefinite & Convex Optimization

ACHIEVEMENTS

Mathematics Undergraduate Research Award ($6000)
May 2021
for outstanding research capacity

NSERC Undergrad Student Research Award ($4500)
September 2020
for exceptional research aptitude

Howard and Marita Boyd Scholarship ($1500)
September 2020
for academic excellence and commitment to volunteerism

President's Research Award ($1500)
September 2020