Yun Xing

University of Waterloo BMath Student
Combinatorics and Optimization Student, 3B standing

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Summary of Skills

Proficient in:

- Python (NumPy & Pandas),
- R, MATLAB, C
- Latex and Overleaf
- Spreadsheets and Dashboards

Familiar with:

- HTML, JavaScript, Markdown
- Maple, SageMath

Other skills:

- Exceptional communication skills developed through presentations as a model developer
- Good time management developed through working in multiple projects in different roles
- Solid research skill gained from a work term as research assistant, being creative in solving new problems

Education

University of Waterloo

- Candidate for bachelor's degree of Mathematics in Combinatorics and Optimization
- Minor in Economics
- Strong in academics, having 92+ in all courses and 93+ in all math courses
- Expected graduation in Spring 2025

Relevant Courses

- **STAT 340 Stochastic Simulation**
  (Monte Carlo /Randomized sampling)
- **CO442 Graph Theory**
  (Main research interests)
- **CO351 Network Flow**
  (Algorithms for application of flow theory)
- **CO452 Integer Programming**
  (Mathematical programming problems)
- **CO450 Combinatorial Optimization**
  (Optimize combinatorial problems)

Hobbies

- Soccer (I like Man City.)
- Cities: Skylines 2!!!
- Animations and ACGN culture
  (cannot function without ACGN!)

Main Work Experiences

Undergraduate Research Assistant (2023.5 – 2023.8)

- Full-time research role in Department of Combinatorics and Optimization at Waterloo, under supervision of Prof. Spirkl
- Discover topics in algorithms and structural graph theory
- Use MATLAB to stimulate part of the research
- Prove a series of theorems on complete directed graphs and plan to publish these results as a paper in 2024

Data and Reporting Analyst at University of Waterloo (2023.1 – 2023.4)

- Primarily use Excel (pivot tables) and Power BI (dashboards)
- Clean data and generate (automated) weekly Co-op stats reports
- Personal Project in this role : Dashboards in Power BI that reflects students' preferences and performances in different work model

Economic Model Developer at Impossible Metals (2022.5 – 2022.8)

- Establish the economic model in Google Sheet for the entire mining project, considering both economics in operation and economics in mining machine design
- Use macros to run Monte Carlo simulations on the model and do sensitivity study of parameters
- Optimize parameters in the model to enhance business performance
- Use python to accelerate these macros, improve about 80% in terms of time efficiency

Major Course Projects

Graph/Game Theory Algorithms in Python/MATLAB

- An algorithm for maximum matching (MATH239 Intro to combinatorics)
- Randomized Tournament Graph without certain structure (Research)
- A program that gives the Sprague-Grundy number for impartial games (CO456 Game Theory)

Link to these projects on GitHub: https://github.com/y39xing/XY-CONSTRUCTION-Algorithm

Card gacha simulation game in C (CS 136 Elementary Algorithm Design)

- Build a game with simple interface in C in order to simulate a card gacha
- Available to run Monte Carlo simulations on the game
- Card name and card rarity can be customized

Link to this project on GitHub: https://github.com/y39xing/Gacha

Volunteering

- Guide at Shanghai Science and Technology Museum (2020)
- Librarian at Shanghai Hongkou District Library (2019)
- Museum docent at Shanghai Bank Museum (2019)