JEFFREY KAM

hykam@uwaterloo.ca ⋄ UWaterloo ID: 20716434

INTERESTS

I am interested in graph theory and graph algorithms research, with a particular interest in structural graph theory, graph drawing, and graph colouring. In addition, I am also keen on quantum computing and hope to learn more through courses like quantum information processing and algebraic graph theory in the future.

EDUCATION

University of Waterloo   Sep 2017 - Present
Currently in term 4A

· Candidate for B.Math. in Combinatorics & Optimizations and Computer Science
· Minor in Pure Mathematics

Relevant Courses
Taken already / Expected before Summer 2021.

· Graph-theoretic Algorithms - CS762
· Algorithms for Graph Minors - CO749
· Algebraic Graph Theory - CO444 (expected)
· Integer Programming - CO452 (expected)
· Introduction to Graph Theory - CO342
· Network Flow Theory - CO351
· Algorithms - CS341
· Statistical and Computational Foundations of Machine Learning - CS485
· Groups and Rings - PMATH347
· Algebraic Number Theory - PMATH441
· Complex Analysis - PMATH352 (expected)
· Formal Languages - CS462 (expected)

Relevant Projects

· **Bounded Queue-number in Planar Graphs (CS762)** -
Explore a recent proof by Dujmović et al for a 20-year old conjectjure on whether the queue-number of planar graph is bounded.
· **Tangles in Graph Minor X (CO749)** -
Explore a new notion of connectivity in graph that arises in the Graph Minor project by Robertson and Seymour.

PUBLICATION

· **UBCIS: Ultimate Benchmark for Container Image Scanning**,
with Shay Berkovich and Glenn Wurster
Published in 13th USENIX Workshop on Cyber Security Experimentation and Test (CSET 20).
https://www.usenix.org/conference/cset20/presentation/berkovich

· **bioSyntax: Syntax Highlighting For Computational Biology**,
with A. Babaian, et al.
Published in BMC Bioinformatics 19, 303 (2018).
https://doi.org/10.1186/s12859-018-2315-y

RESEARCH EXPERIENCE

University of Waterloo - Symbolic Computation Group May 2020 - Sep 2020
Undergraduate Research Assistant *Waterloo, Canada*

· Experiment with J-ideal and Smith Normal Form using SAGE.
· Understand relationships between matrix normal forms and ideals.

BlackBerry - Security Research Group Janurary 2020 - April 2020
Security Research Intern *Waterloo, Canada*

· Researched and designed a universal benchmark to quantitatively measure the effectiveness and accuracy of container image scanners
· Analyzed techniques of image inspection and vulnerability scanning through open source technologies
· Designed a universal import framework for Anchore Engine to extend our scanning capabilities
· Researched on utilizing machine learning for fuzzing algorithmic complexity vulnerabilities (ACV)
· Presented to the security research group on current developments of machine-learning-based fuzzing and fuzzing techniques for ACVs, along with potential problems, experiments, and optimizations.

WORK EXPERIENCE

GTS Sep 2020 - Present
Software Engineering Intern *New York, US*

· Working on performant C++ and Python code for the core trading engine

Zenefits May 2019 - Aug 2019
Software Engineering Intern *Vancouver, Canada*

· Developed new permission services in Django with extensive unit tests to guard against unauthorized edits of review data
· Designed a sequeitial document update service using a distributed messsage queue system Celery

Horizn May 2018 - Aug 2018
Web Developer Intern *Toronto, Canada*

· Built Laravel components for internal app and wrote Python scripts to transfer clients' data in AWS
· Wrote automation scripts to scrape data from files and database and compile them into json files

AWARDS

· First place in HackSeq 2017 bioinformatics competiton in UBC
· Honourable mention in Canadian Computing Competition Hong Kong 2017
· University of Waterloo President's Scholarship

SKILLS

Programming	Python, C++, SAGE, Scheme
Tools	Git, C++ tools (i.e. GCC, GDB, Valgrind), Docker, Linux, Jupyter