Curriculum Vitae (Last update: 17 September 2023)

Kam Chuen (Alex) Tung

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Education	2019 - now	PhD in Computer Science Advisor: Professor Lap Chi Lau Expected graduation: August 2024	University of Waterloo
	2015 - 2019	BSc in Mathematics (minor: French) Graduated with First Class Honor	The Chinese University of Hong Kong (CUHK)

Research Interest		Spectral graph theory and algorithms for directed graphs and hypergraphs

Research Publications	2023	*Fast Algorithms for Directed Graph Partitioning Using Flows and Reweighted Eigenvalues* Lap Chi Lau, Kam Chuen Tung, Robert Wang arXiv preprint: https://arxiv.org/abs/2306.09128
	2022	*Cheeger Inequalities for Directed Graphs and Hypergraphs Using Reweighted Eigenvalues* Lap Chi Lau, Kam Chuen Tung, Robert Wang Accepted to STOC 2023
	2022	*Cheeger Inequalities for Vertex Expansion and Reweighted Eigenvalues* Tsz Chiu Kwok, Lap Chi Lau, Kam Chuen Tung Accepted to FOCS 2022

Related Experience	2023	**Research Internship** at National Institute of Informatics (NII), Japan - Research on spectral sparsification of directed graphs and Cheeger inequalities for submodular transformations, with Prof. Yuichi Yoshida **Video Presentation** at STOC 2023 - Video presentation of my accepted paper for one of the top conferences in Theoretical Computer Science **Poster Presentation** at DIMACS workshop 2023 - Workshop on "Modern Techniques in Graph Algorithms"
	2022	**Presentation** at Canadian Mathematical Society Winter Meeting 2022 **Presentation** at FOCS 2022 - 20-minute presentation of my accepted paper, at one of the top conferences in Theoretical Computer Science
	2019 - now	**TA / IA (Instructional Apprentice)**, University of Waterloo - Grading, holding office hours, holding tutorials (3 terms), setting up automated testing (5 terms) - Overwhelmingly positive feedback from instructors

	2019 - now	**Scientific Committee Head**, Hong Kong Olympiad in Informatics - Propose, select, and test problems for local OI contests - Over 80 problems authored since 2015 - Help prove algorithm correctness and brainstorm better algorithms

Selected Awards and Honors	2023	**Cheriton Type I Scholarship**, University of Waterloo
	2019 - 2021	**Go-Bell Scholarship**, University of Waterloo
	2017, 2018	**Simon Marais Mathematics Competition** - 2017: 2nd (pairs), 2018: 3rd (pairs)
	2015 - 2018	**Dean's Honours List**, CUHK
	2018	**Professor Charles K. Kao Research Exchange Scholarship**, CUHK

Selected Coursework	2020	**Quantum Information Processing** - Quantum algorithms, Fourier analysis	University of Waterloo
	2020	**Computer Graphics** - Perspective, lighting, ray tracing, shader - Programming assignments using OpenGL	University of Waterloo
	2019	**Machine Learning** - Statistical learning and simple ML models	CUHK
	2018	**Introduction to Artificial Intelligence** - Research project on bandit problem	CUHK
	2018	**Capstone Project** - A reading of "Ergodic Theory and Its Applications to Number Theory"	CUHK

Languages	Natural	English, Cantonese, Mandarin (intermediate), French (B1+)
	Programming	C++, LaTeX, Python, MATLAB, HTML, JavaScript, CSS, Java

Hobbies	Competitive Programming	Codeforces: alex20030190 Google Code Jam: top 1000 (8 times), top 100 (3 times)
	Choir	7 years and counting (current voice part: tenor)
	Sports	Jogging, Football (soccer), Rock climbing, Boxing
	Puzzles	Sukodu, Logic puzzles, Cryptic puzzles, Escape rooms Champion of 2022 Key Clues Challenge

Related Experience (older)	2016 - 2019 2015 - 2016	**Competition Committee Head**, Hong Kong Olympiad in Informatics **Competition Committee Member** - Additional duty: taught algorithms and other topics in CS
	2017, 2019	**TA**, Enrichment Programming for Young Mathematical Talents - Ran tutorials for an introductory course on differential geometry (2017) and number theory (2019), for secondary school students - Designed entrance tests and course exams
	2019	**Financial Mathematics Reading Group**, CUHK - Stochastic process in financial models
	2017 - 2019	**Number Theory Reading Group**, CUHK

		- Analytic number theory: prime number theorem, modular forms, p-adic analysis, etc.
	2018	**TA**, CUHK Department of Mathematics - Helped develop online assignments that supported
	2018	**Research Assistant**, CUHK Department of Mathematics - Helped formulate conjectures in relation to Brascamp-Lieb inequalities, with the aid of computer experiments
	2018	**Research Intern**, Lawrence Berkeley National Laboratory - Implemented and tested new numerical algorithms for solving sparse symmetric indefinite linear systems - Involved extensive use of MATLAB and Python

Selected Awards and Honors (older)	2015 - 2017	**ACM International Collegiate Programming Contest** - 2016: 2nd in regionals, 41st in World Finals - 2017: 3rd in regionals, 35th in World Finals
	2015	**Hang Lung Mathematics Awards (Honorable Mention)** - Topic: Two Methods for Investigating the Generalized Tic-tac-toe
	2013 - 2015	**International Olympiad in Informatics** (Silver, Silver, Silver)
	2015	**International Mathematical Olympiad** (Honorable Mention)