

PERSONAL AND CONTACT INFORMATION

Citizen of Canada and Singapore
Email: marcel_goh@yahoo.ca
Webpage: marcelgoh.ca

5872 Esplanade Avenue
Montreal, QC H2T 3A3
+1 (825) 440-0681

EDUCATION

Ph.D. Mathematics

McGill University

Supervisor: Hamed Hatami.

September 2023 – present

Montréal, QC, Canada

M.Sc. Mathematics

McGill University

Supervisor: Luc Devroye. CGPA: 4.00/4. Thesis: Structural properties of conditional Galton–Watson trees.

May 2021 – August 2022

Montréal, QC, Canada

B.Sc. Joint Honours Mathematics and Computer Science

McGill University

Minor: Linguistics. CGPA: 3.84/4.

September 2017 – April 2021

Montréal, QC, Canada

Exchange semester

Faculty of Mathematics and Physics, Charles University

Grade: 1 on all courses (highest score attainable).

February – June 2019

Prague, Czech Republic

AWARDS AND FUNDING

NSERC Canada Graduate Scholarship – Doctoral (\$115,000)

September 2023 – August 2026

FRQNT Bourse de doctorat en recherche (\$100,000)

[Declined]

NSERC Canada Graduate Scholarship – Master’s (\$17,500)

May 2021 – April 2022

NSERC Undergraduate Student Research Award (\$7,125)

May – August 2020

Governor General’s Academic Medal – Bronze

June 2015

RESEARCH INTERESTS

Additive combinatorics, enumerative combinatorics, analysis of random discrete structures.

PAPERS

- P6.** (with Jonah Saks) On the homology of several number-theoretic set families. *Enumerative Combinatorics and Applications* 4,2 (2024), #S2R12, 11 pp. [arXiv:2206.12535]
- P5.** (with Jad Hamdan and Jonah Saks) The lattice of arithmetic progressions. *Australasian Journal of Combinatorics* 84,3 (2022), 357–374. [arXiv:2106.05949]
- P4.** (with Luc Devroye and Rosie Y. Zhao) On the peel number and the leaf-height of a Galton–Watson tree. *Combinatorics, Probability and Computing* 32,1 (2023), 68–90. [arXiv:2106.14389]
- P3.** (with Anna M. Brandenberger, Luc Devroye, and Rosie Y. Zhao) Leaf multiplicity in a Bienaymé–Galton–Watson tree. *Discrete Mathematics and Theoretical Computer Science* 24,1 (2022), #7, 16 pp. [arXiv:2105.12046]
- P2.** (with Anna M. Brandenberger and Luc Devroye) Root estimation in Galton–Watson trees. *Random Structures and Algorithms* 61,3 (2022), 520–542. [arXiv:2007.05681]
- P1.** (with Rosie Y. Zhao) Arithmetic subsequences in a random ordering of an additive set. *Integers: Electronic Journal of Combinatorial Number Theory* 21 (2021), #A89, 19 pp. [arXiv:2012.12339]

REPORTS AND THESES

- R5.** Structural properties of conditional Galton–Watson trees. M.Sc. thesis, McGill University (Montréal, Québec, August 2022), vi + 75 pp.
- R4.** Finding regularity in Tlingit verb prefixes. Semester project report, McGill University (Montréal, Québec, April 2021), 7 pp.
- R3.** Grid-building algorithms on manifolds. Summer research report, McGill University (Montréal, Québec, August 2020), 10 pp.
- R2.** Typechecking proof scripts: making interactive proof assistants robust. Honours project report, McGill University (Montréal, Québec, December 2019), 10 pp.
- R1.** The OPythn programming language. Software project report, Charles University (Prague, Czech Republic, June 2019), 10 pp.

PUBLISHED FICTION

- F3.** “Senang Diri,” *Existene* **42,2** (2023), 17–25.
- F2.** “The Vigil,” *Ricepaper Magazine* (2023), online.
- F1.** “Mountain Pass,” *Prairie Journal of Canadian Literature* **79** (2023), 48–55.

WORK AND VOLUNTEER EXPERIENCE (* indicates a paid position)

- *Course lecturer** **August 2024 – present**
McGill University *Montréal, QC, Canada*
Instructor for a section of MATH 240 Discrete Structures. Duties include preparing and delivering lectures, designing assignment and exam questions, and holding office hours.
- Co-Editor** **December 2023 – present**
Ahoy Literary Magazine *Montréal, QC, Canada*
Founding co-editor of a semiannual print magazine that publishes poetry, prose, and art. In charge of English short fiction submissions and the overall typesetting. Share duties with the other co-editors related to marketing, emails, and sales.
- *Teaching assistant** **September 2021 – April 2024**
McGill University *Montréal, QC, Canada*
Teaching assistant in the following courses. Duties include giving tutorials, holding office hours, and grading assignments and exams.
- Winter 2024, Fall 2023: MATH 240 Discrete Structures
 - Fall 2021: COMP 690 Probabilistic Analysis of Algorithms
- DRP Mentor** **January 2022 – April 2024**
Department of Mathematics and Statistics, McGill University *Montréal, QC, Canada*
Met with two undergraduate students as part of the Directed Reading Program on a weekly basis to give them an introduction to research-level mathematics in a casual setting. Focused on topics in extremal combinatorics related to the increasing triples problem, as well as topics related to Khovanskii’s theorem.
- *After school care supervisor** **January – June 2023**
Suzuki Charter School *Edmonton, AB, Canada*
Supervised and facilitated activities (e.g., arts and crafts, soccer, board games, drawing/colouring, movie days) for children in grades 1 through 6.
- *Software developer** **January – May 2023**
Levven *Edmonton, AB, Canada*
Developed firmware for the manufacture and function of in-home IoT gateways, smart switches, and related electronic products. Code primarily in C and Python. Contributed to the open-source Mongoose OS codebase.

***Visiting teaching assistant**
Bocconi University

July 2022
Como, CO, Italy

Teaching assistant for a two-week summer school on random structures and combinatorial statistics, which was organised by Bocconi University in collaboration with Oxford University and Imperial College London. Led problem sessions in the afternoons, with around forty graduate-level students were in attendance.

First responder
McGill Student Emergency Response Team

October 2017 – September 2021
Montréal, QC, Canada

On call on a weekly basis to provide emergency medical care at campus residences overnight as well as at university events such as frosh, sports games, and formals. Attended team training sessions twice a month to keep first-aid skills up-to-date. Most recent first responder certification: September 2020.

***Grader**
Department of Mathematics and Statistics, McGill University

September 2019 – April 2021
Montréal, QC, Canada

Grading of assignments in the following courses:

- Winter 2021: MATH 457 Honours Algebra 4
- Fall 2020: MATH 323 Probability, MATH 456 Honours Algebra 3
- Winter 2020: MATH 240 Discrete Structures
- Fall 2019: MATH 235 Algebra 1

***Helpdesk tutor**
Computer Science Undergraduate Society Helpdesk

September 2018 – April 2021
Montréal, QC, Canada

Held twice-weekly office hours to tutor students in a variety of undergraduate courses. Topics covered included elementary data structures and algorithms, command-line scripting, and functional programming. Recipient of the Tomlinson Engagement Award for Mentoring.

Vice President, Academic
Society of Undergraduate Mathematics Students

May 2019 – January 2020
Montréal, QC, Canada

Oversaw academic affairs within SUMS council and acted as liaison between the undergraduate community and mathematics faculty. Duties included representing the student body at department meetings, organising midterm and final review sessions, and helping students with academic concerns.

***Painter**
Bakir Contracting Corp.

May – August 2018
Edmonton, AB, Canada

Exterior painting (siding, decks, fences, trim, etc.) for residential clients.

***Infantryman**
Singapore Armed Forces

August 2015 – August 2017
Singapore

Held appointment of machine-gun team commander in the 3rd Battalion, Singapore Infantry Regiment. Led a six-person team consisting of a medic, signaller, sensor, and two-machine gunners within a rifle platoon. Most recent reserve training: December 2022.

***Tutor**
École Secondaire Beaumont Composite High School

September 2014 – June 2015
Beaumont, AB, Canada

Tutored various students in grades 4 through 11 in chemistry, physics, math, and French.

***Summer camp counsellor**
YoWoChAs Outdoor Education Centre

June – August 2014
Fallis, AB, Canada

Led children aged 4–15 through various activities (e.g. archery, canoeing, zipline) at a sleepaway camp.

SKILLS

Programming Languages

C, OCaml, Python, Java, PostScript, Haskell, Scheme Lisp, Standard ML, CWEB, MIXAL, MIPS Assembly.

Technologies

UNIX, Vim, T_EX, Git.

Languages

Fluent: English, French. Proficient: Mandarin, Italian.

OTHER

- Recipient of 0x\$3.40 in Knuth reward cheques.
- Contributed sequences A335562, A338550, A338993, A339941, A339942, A341822, A347580, A355145–A355147, and A360285 to the On-line Encyclopedia of Integer Sequences.