

Courtney Y. Paquette (née Kempton)
Montreal, QC, Canada
yumiko88@uw.edu • <https://cypaquette.github.io/>

EDUCATION

University of Washington

Seattle, WA

09/11-08/17

- PhD in Mathematics in continuous optimization

Completed June 2017

Thesis: *Structure and complexity in non-convex and nonsmooth optimization*

Advisor: Dmitriy Drusvyatskiy

University of Washington

Seattle, WA

09/07-06/11

- Majors: Mathematics and Business Administration (emphasis in Finance)
- Mathematics GPA: 3.94, Business GPA: 3.93, Cumulative GPA: 3.93
- Summa Cum Laude in Finance, Magna Cum Laude with Honors in Mathematics

POSITIONS

Assistant Professor, McGill University

09/20-present

Mathematics and Statistics

Montreal, QC, Canada

Research Scientist-Google Brain

Montreal, QC, Canada

09/19-present

NSF Postdoctoral Fellowship, University of Waterloo

Combinatorics and Optimization Department

Waterloo, ON

07/18-09/19

- Advisor: Stephen Vavasis

Lehigh University-Industrial and Systems Engineering

Bethlehem, PA

01/18-07/18

- NSF TRIPODS Postdoctoral position
- Advisor: Katya Scheinberg

Ohio State University-Mathematics

Columbus, OH

08/17-12/17

- Ross Assistant Professor (Postdoctoral position)

University of Washington-Mathematics

Seattle, WA

09/11-08/17

- Graduate Student

AWARDS

- CIFAR AI Chair (2019-2024, \$500,000)
- NSF Postdoctoral fellowship (July 2018-present)
- Tanzi-Egerton Fellowship Award (2016)
- Excellence in Teaching Award (UW Math department) (2012)
- Nominated for Excellence in Teaching (university-wide award) (2012)

TEACHING

Teaching at McGill University

- Math 315 (Ordinary differential equations), undergraduate, Fall 2020
- Math 560 (Numerical optimization), graduate, Winter 2021

Graduate instructor-Nonlinear optimization (ISE 417)

Lehigh University, Bethlehem PA

01/18-/06/18

- Taught a graduate course in the basics of numerical optimization- optimality conditions for unconstrained and constrained, first-order and second-order method, and programming.

Calculus instructor (Math 1152)

Ohio State University, Columbus OH

08/17-12/17

- Taught three sections of second semester of calculus
- Used traditional and online course material for online and traditional students

Lead Teaching Assistant

University of Washington, Seattle WA

06/16-08/17

- Organize and coordinate a 5 day TA orientation for incoming math graduate students
- Advises incoming graduate students on skills in teaching as a TA Mentor
- Supervises first year graduate students

Research Experience for Undergraduates (REU) Teaching Assistant

University of Washington, Seattle WA

Summers '11, '12, '15

- Assisted groups of 2-3 students in projects related to inverse problems

Teaching Assistant

University of Washington, Seattle WA

09/11-08/17

- Teaches own class for a sophomore-level Differential Equations Class as well as a TA for the introduction calculus series

PAPERS

Papers are arranged in reverse chronological order, according to the date they are submitted to the arXiv

- C. Paquette, Kiwon Lee, F. Pedregosa, E. Paquette. *SGD in the Large: Average-case Analysis, Asymptotics, and Stepsize Criticality*. (2021) arXiv: (submitted to COLT)
- C. Paquette, B. van Merriënboer, F. Pedregosa, and E. Paquette. *Halting time is predictable for large models: A Universality Property and Average-case Analysis*. (2020) arXiv: <https://arxiv.org/abs/2006.04299> (submitted to Foundations of Computational Mathematics)
- S. Baghal, C. Paquette, and S.A. Vavasis. *A termination criterion for stochastic gradient for binary classification*. (2020) arXiv: <https://arxiv.org/abs/2003.10312> (submitted to J. Machine Learning (JMLR))
- C. Paquette and S.A. Vavasis. *Potential-based analyses of first-order methods for constrained and composite optimization*. (2019) arXiv: <https://arxiv.org/pdf/1903.08497.pdf> (submitted to Math. Prog)
- C. Paquette and K. Scheinberg. *A stochastic line-search method with convergence rate*. SIAM J. Optim. (30) (2020) no. 1, pgs 349-376 <https://doi.org/10.1137/18M1216250>
- D. Davis, D. Drusvyatskiy, K.J. MacPhee, and C. Paquette. *Subgradient*

methods for sharp weakly convex functions. To appear in J. Optim. Theory App. (2018) <https://arxiv.org/pdf/1803.02461.pdf>

- D. Davis, D. Drusvyatskiy, and C. Paquette. *The nonsmooth landscape of phase retrieval*. To appear in IMA J. Numer. Anal. (2018) <https://arxiv.org/pdf/1711.03247.pdf>
- C. Paquette, H. Lin, D. Drusvyatskiy, J. Mairal, and Z. Harchaoui. *Catalyst Acceleration for Gradient-Based Non-Convex Optimization*. 22nd International Conference on Artificial Intelligence and Statistics (AISTATS 2018) <http://proceedings.mlr.press/v84/paquette18a.html>
- D. Drusvyatskiy and C. Paquette. *Efficiency of minimizing compositions of convex functions and smooth maps*. Math. Program. (2018) <https://doi.org/10.1007/s10107-018-1311-3>
- D. Drusvyatskiy and C. Paquette. *Variational analysis of spectral functions simplified*. Journal of Convex Analysis. 25(1), 2018.

INVITED TALKS

- *Halting Time is Predictable for Large Models: A Universality Property and Average-case Analysis*, colloquium (invited talk), [Operations Research Center Seminar](#), Sloan School of Management, Massachusetts Institute of Technology (MIT), Boston, MA (February 2021)
- *Halting Time is Predictable for Large Models: A Universality Property and Average-case Analysis*, colloquium (invited talk), [Operations Research and Information Engineering](#) (ORIE), Cornell University, Ithaca, NY (February 2021)
- *Halting Time is Predictable for Large Models: A Universality Property and Average-case Analysis*, Applied Mathematics Seminar (contributed talk), [Applied Mathematics](#), McGill University, Montreal, QC (January 2021)
- *Halting Time is Predictable for Large Models: A Universality Property and Average-case Analysis*, Optimization and ML Workshop (contributed talk), [Canadian Mathematical Society \(CMS\)](#), Montreal, QC (December 2020)
- *Halting Time is Predictable for Large Models: More Topics*, Tea talk (contributed talk), Google Brain, Montreal, QC (November 2020)
- *Halting Time is Predictable for Large Models: More Topics*, ML+OPT graduate student seminar (contributed talk), [Paul G. Allen School of Computer Science](#), University of Washington, Seattle, WA (November 2020)
- *Halting Time is Predictable for Large Models: A Universality Property and Average-case Analysis*, UW Machine Learning Seminar (invited talk), [Paul G. Allen School of Computer Science](#), University of Washington, Seattle, WA (November 2020)
- *Halting Time is Predictable for Large Models: A Universality Property and Average-case Analysis*, colloquium (invited talk), [Industrial Engineering](#), University of Pittsburgh, Pittsburgh, PA (November 2020)
- *Halting Time is Predictable for Large Models*, MTL ML-OPT (contributed talk), [MILA Optimization seminar](#), MILA, Montreal, QC (October 2020)

- *Halting Time is Predictable for Large Models: A Universality Property and Average-case Analysis*, [Soup and Science](#) (contributed talk), McGill University, Montreal, QC (September 2020)
- *Halting Time is Predictable for Large Models: More Topics*, Brain Spotlights (contributed talk), Google Brain, Montreal, QC (July 2020)
- *Halting Time is Predictable for Large Models: A Universality Property and Average-case Analysis*, Tutte Colloquium (invited talk), [Combinatorics and Optimization Department](#), University of Waterloo, Waterloo, ON (June 2020)
- *Halting Time is Predictable for Large Models: A Universality Property and Average-case Analysis*, colloquium (invited talk), [Center for Artificial Intelligence Design \(CAIDA\)](#), University of British Columbia, Vancouver, BC (June 2020)
- *Line searches*, Tea talk (contributed talk), Google Brain, Montreal, QC (February 2020)
- *Potential Functions*, Tea talk (contributed talk), Google Brain, Montreal, QC (November 2019)
- *An adaptive line search method for stochastic optimization*, Conference on Optimization, Fields Institute for Research in Mathematical Science, Toronto, ON (November 2019)
- *Algorithms for stochastic nonconvex and nonsmooth optimization*, St. Louis University Mathematics and Statistics Colloquium, St. Louis, MO (November 2019)
- *Stochastic Optimization: summer school talk*, University of Washington's ADSI Summer School on Foundations of Data Science, Seattle, WA (August 2019)
- *Algorithms for stochastic nonconvex and nonsmooth optimization*, Ohio State University Math Colloquium, Columbus, OH (February 2019)
- *Algorithms for stochastic nonconvex and nonsmooth optimization*, Brown University Applied Math Colloquium, Providence, RI (February 2019)
- *Algorithms for stochastic nonconvex and nonsmooth optimization*, McGill University Applied Math Seminar, Montreal, QC (February 2019)
- *Algorithms for stochastic nonconvex and nonsmooth optimization*, Duke University applied math seminar and analysis seminar, Durham, NC (January 2019)
- *Algorithms for stochastic nonconvex and nonsmooth optimization*, Google Brain, Montreal, QC (January 2019)
- *An adaptive line search method for stochastic optimization*, Young Researcher Workshop, [Operations Research and Information Engineering](#) (ORIE), Cornell University, Ithaca, NY (October 2018)
- *New Analysis of Adaptive Stochastic Optimization Methods via*

Supermartingales, DIMACS/NSF-TRIPODS conference, Bethlehem, PA (July 2018)

- *Generic acceleration schema beyond convexity*, INFORMS annual meeting (2017), Houston, TX (October 2017)
- *Minimizing convex composites*, Lehigh University Optimization Seminar, Bethlehem, PA (September 2017)
- *Proximal methods for minimizing convex compositions*, SIAM-optimization, Vancouver, BC (May 2017)
- *Catalyst for Gradient-based Nonconvex Optimization*, Inria-Grenoble Seminar, Grenoble (April 2017)
- *Generic acceleration schema beyond convexity*, Optimization and Statistical Learning, Les Houches (April 2017)
- *An accelerated algorithm for minimizing convex compositions*, West Coast Optimization Meeting, University of British Columbia (September 2016)

EXTRA-CURRICULAR

NSF TRIPODS/DIMACS: Organizer

Lehigh University, Bethlehem PA

08/2018

- Arranged and scheduled speakers for a 3 day conference as part of the NSF TRIPODS grant

NSF TRIPODS summer school: Organizer

Lehigh University, Bethlehem PA

08/2018

- Arranged and scheduled 40 students to participate in a 3 day summer school that covers optimization in machine learning, TensorFlow, and online learning

Opt-ML Seminar: Organizer

Lehigh University, Bethlehem PA

01/2018-06/2018

- Arranged and scheduled student and faculty speakers from multiple departments (computer science, electrical engineering, statistics, mathematics, and applied math)

Trends in Optimization Seminar: Organizer

University of Washington, Seattle

2016-2017

- Arranged and scheduled student and faculty speakers from multiple departments (computer science, electrical engineering, statistics, mathematics, and applied math)

UW AWM Chapter: Secretary and Organizer

University of Washington, Seattle

2015-2017

- Part of the leadership group that established the University of Washington's first AWM chapter
- Chief organizer of a campus outreach tutoring program to encourage undergraduate women to pursue mathematics

Graduate-level Research in Industrial Projects for Students (GRIPS, part of IPAM)

Berlin, Germany

Summer 2015

Research Intern-Supply Chain Management

- Designed and implemented six new heuristics in C to solve a supply chain model as part of a team of four
- Used machine learning clustering algorithms to analyze characteristics of solutions

INTERNSHIPS

Microsoft Corporation

Redmond, WA

06/10-09/10

SQL Server Strategy Intern (Financial Rotation Program Intern)

- Developed an intricate model in Excel to illustrate Microsoft's volume licensing trends from customer, revenue, and contract data
- Presented recommendations on both SQL Server's EAP and mobile strategy to the executive team
- Invented a metric to measure the success of SQL Server's EAP and forecasted its revenue over the next three years

State Farm Insurance

DuPont, WA

06/09-08/09

Planning and Analysis Summer Hire Intern

- Analyzed production data on young adults and formulated conclusions that were presented to a committee
- Processed two weekly property and casualty trend reports while also completing numerous special requests