Courtney Y. Paquette (née Kempton)
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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: https://arxiv.org/abs/2102.04396 (submitted)

- C. Paquette, B. van Merrienboer, 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)

- S. Baghal, C. Paquette, and SA Vavasis. *A termination criterion for stochastic gradient for binary classification.* (2020*)* arXiv: https://arxiv.org/abs/2003.10312 (submitted)

- C. Paquette and SA.Vavasis. *Potential-based analyses of first-order methods for constrained and composite optimization.* (2019*)* arXiv: https://arxiv.org/pdf/1903.08497.pdf (submitted)

- C. Paquette and K. Scheinberg. *A stochastic line-search method with convergence rate.* SIAM J. Optim. 30 (2020) no. 1, 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.* J. Optim. Theory Appl. (179) (2018)

no. 3 pgs 962-982 https://doi.org/10.1007/s10957-018-1372-8

- D. Davis, D. Drusvyatskiy, and C. Paquette. *The nonsmooth landscape of phase retrieval.* IMA J. Numer. Anal. 40 (2020) no.4 2652-2695 https://doi.org/10.1093/imanum/drz031

- 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. 178 (2019), no. 1-2, Ser. A, 503-558 https://doi.org/10.1007/s10107-018-1311-3

- D. Drusvyatskiy and C. Paquette. *Variational analysis of spectral functions simplified*. J. Convex Analysis. 25 (2018) no. 1, 119-134.

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,* 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)

- *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 Adapative Stochastic Optimination 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