Matthew S. Scott

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Education

PhD in Applied Mathematics, *University of British Columbia* 2023-2027 (expected)
Supervisors: Yaniv Plan, Ozgur Yilmaz

MSc in Applied Mathematics, *University of British Columbia* 2021-2023
Thesis: *Generative Compressed Sensing with Fourier Measurements*

BSc, Joint Honours Mathematics and Physics, *McGill University* 2017-2021
First Class Honours; minor in Computer Science; GPA 3.89/4.00; NSERC USRA (2020)

Research

Convex optimization: duality, convex separation, facial reduction, average-case analysis.

- **M. S. Scott** (sole author), *Convexity from order: a theory of faces and generalized separation*, major revisions at Journal of Convex Analysis, Nov 2026.
- **M. S. Scott** (sole author), *Bilateral facial reduction: qualification-free subdifferential calculus and exact duality*, major revisions at Set-Valued and Variational Analysis, Aug 2026 (preprint Oct 2025).
- M. P. Friedlander, S. Kubal, Y. Plan, **M. S. Scott**, *Average-case thresholds for exact regularization of linear programs*, minor revisions, second round at SIAM Journal on Optimization, Aug 2026 (preprint Oct 2025).

Compressed sensing with generative neural networks: high-dimensional probability, inverse problems, sample complexity and sampling schemes, robustness to noise, complexity of neural networks.

- Y. Plan, **M. S. Scott**, O. Yilmaz, *Exact signal recovery from generative priors with sigmoid output activation*, submitted to Sampling Theory, Signal Processing, and Data Analysis, Oct 2026.
- Y. Plan, **M. S. Scott**, O. Yilmaz, *Partially deterministic sampling for compressed sensing with denoising guarantees*, submitted to Information and Inference: A Journal of the IMA, Mar 2026.
- Y. Plan, **M. S. Scott**, X. Sheng, O. Yilmaz, *Denoising guarantees for optimized sampling schemes in compressed sensing*, SIAM Journal on Mathematics of Data Science, Jun 2026 (preprint Apr 2025).
- A. Berk, S. Brugiapaglia, Y. Plan, **M. S. Scott**, X. Sheng, O. Yilmaz, *Model-adapted Fourier sampling for generative compressed sensing*, Oral at NeurIPS 2023 Workshop on Deep Learning and Inverse Problems, Dec 2023.
- A. Berk, S. Brugiapaglia, B. Joshi, Y. Plan, **M. S. Scott**, O. Yilmaz, *A coherence parameter characterizing generative compressed sensing with Fourier measurements*, IEEE Journal on Selected Areas in Information Theory, Sep 2022.

Programming projects

- **Latex Exporter**, 4,700+ downloads, 44 stars (TypeScript). An Obsidian plugin that infers a paper's LaTeX structure from the note graph: wikilinks become citations or references, embedded notes become theorems with proofs.
- **Cracker Craft**, 10k+ Google Play Store downloads (C#, Unity). Design your own firework!
- **Research numerics** (PyTorch, pandas, seaborn). Numerical experiments for signal recovery with sparse and generative priors.

Work experience

Teaching Assistant, Research Assistant and Small Class Instructor, *University of British Columbia* 2021-present

- Small class instructor for MATH 100/180 in 2023, 2024 and 2025.

Research Assistant in Computer Science, *McGill University (Prakash Panangaden)* Summer 2020

- Computational improvements to Yaida's FDR optimizer, and application to actor-critic RL.

Machine Learning Intern, *Decathlon Canada* Summer 2018

- Built a recurrent-network sales forecaster that beat 4 of 5 in-house models, the only one predicting long term.

Mobile App Developer, *GoRush* Summer 2017

- Sole developer of an on-demand lawn-mowing app (JavaScript, Meteor, MongoDB).