ARIEL GOODWIN

657 Frank H.T. Rhodes Hall ◇ Ithaca, NY 14853
607 · 319 · 9989 ◇ awg77@cornell.edu ◇ Website

EDUCATION

Ph.D. Applied Mathematics 2022 - 2027 (Expected)
Cornell University, Center for Applied Mathematics

· Cornell Fellowship, GPA: 4.09/4.00

B.Sc. Joint Honours Math and Computer Science 2018 - 2022
McGill University, Department of Mathematics

· Sir Edward Beatty Memorial Scholarship in Mathematics, Dr. Feng Qian Scholarship in Computer Science, Excellence Bursary in Computer Science, GPA: 3.98/4.00

WORK AND RESEARCH EXPERIENCE

NSF Mathematical Sciences Graduate Internship Summer 2023
National Renewable Energy Laboratory

· Developed and analyzed a Riemannian version of an existing algorithm for constrained optimization
· Applied differential geometry to the optimal power flow problem, yielding novel insights into the geometry of feasible power flows and relaxations of the problem

NSERC Undergraduate Student Research Award Summer 2021
McGill University

· Explored algorithms and techniques from optimization for solving entropy-regularized inverse problems
· Tested the framework on image deblurring problems, and derived formulas for solving key subproblems

NSERC Undergraduate Student Research Award Summer 2020
McGill University

· Studied theory and algorithms for efficiently computing projections onto the epigraphs of convex functions
· Performed numerical experiments, designed algorithms, and proved convergence results

PUBLICATIONS AND PRESENTATIONS

Vaisbourd, Y., Choksi, R., Goodwin, A., Hoheisel, T., Schönlieb, C.-B. "Maximum Entropy on the Mean and the Cramér Rate Function in Statistical Estimation and Inverse Problems: Properties, Models, and Algorithms", arXiv:2211.05205, 2022

Friedlander, M. P., Goodwin, A., and Hoheisel, T. "From perspective maps to epigraphical projections", *Mathematics of Operations Research*, 2022

Nonsmooth Optimization Session (contributed talk), International Conference on Continuous Optimization (ICCOPT 2022), "The Maximum Entropy on the Mean Method for Linear Inverse Problems and Beyond", Lehigh University, Bethlehem, PA, 2022

SKILLS AND INTERESTS

Programming Languages Julia, Python, C++, C, OCaml, Java, MATLAB
Technologies LaTeX, UNIX, Microsoft Office

· Excellent oral and written communication skills
· Interested in optimization, probability, geometry, algorithms, machine learning, and data science