Laura Greenstreet

Im a PhD student at Cornell co-advised by David Shmoys and Andrea Lodi. My research focuses on developing AI and optimization methods with applications in biology, including fishery sciences, ecology, and genomics. Previously, I worked with Carla Gomes to develop methods to track aquaculture development from satellite imagery, with Claire Kremen to scale an analysis of functional connectivity to the global level, and with Geoffrey Schiebinger on optimization methods for single-cell genomics.

Education

2021 - Present **Ph.D. Computer Science**, Cornell University
Research areas: Optimization, Deep Learning, AI/ML for Science

2020 **B.Sc. Honours Computer Science, Mathematics Minor**,
University of British Columbia

Publications

- 2025 F.S. Pacheco, S.A. Heilpern, C. DiLeo, ..., **L. Greenstreet**, et al. *Towards sustainable aquaculture in the Amazon.* Nature Sustainability, 2025. https://doi.org/10.1038/s41893-024-01500-w
- 2025 Li, H., P. Cote, M. Kuoch, J. Ezike, ..., **L. Greenstreet**, et al. *The dynamics of hematopoiesis over the human lifespan.* Nature Methods, 2025. https://doi.org/10.1038/s41592-024-02495-0
- 2025 Massri, A.J., A. Berrio, A. Afanassiev, **L. Greenstreet**, et al. *Single-Cell Transcriptomics Reveals Evolutionary Reconfiguration of Embryonic Cell Fate Specification in the Sea Urchin Heliocidaris erythrogramma.* Genome Biology and Evolution, 2025. https://doi.org/10.1093/gbe/evae258
- 2023 **Greenstreet, L.**, A. Afanassiev, Y. Kijima, M. Heitz, S. Ichiguro, et al. *DNA-GPS: A Theoretical Framework for Optics-Free Spatial Genomics and Synthesis of Current Methods.* Cell Systems, 2023. https://doi.org/10.1016/j.cels.2023.08.005
- 2023 T.M. Nolan, N. Vukasinovic, C.W. Hsu, J. Zhang, ⋯, **L. Greenstreet**, et al. *Brassinosteroid gene regulatory networks at cellular resolution in the Arabidopsis root.* Science, 2023. https://doi.org/10.1126/science.adf4721
- 2023 Mirka, R., **L. Greenstreet**, M. Grimson, C.P. Gomes. *A New Approach to Finding 2 x n Partially Spatially Balanced Latin Rectangles*, CP, 2023.
- 2022 Brennan, A., R. Naidoo, **L. Greenstreet**, Z. Mehrabi, N. Ramankutty, C. Kremen. *Functional Connectivity of the Worlds Protected Areas.* Science, 2022. https://doi.org/10.1126/science.abl8974
- 2022 **Greenstreet, L.**, N.J.A. Harvey, V. Sanches Portella. *Efficient and Optimal Fixed-Time Regret with Two Experts.* ALT, 2022. https://doi.org/10.48550/arXiv.2203.07577
- 2021 Zhang, S., A. Afanassiev, **L. Greenstreet**, T. Matsumoto, G. Schiebinger. *Optimal transport analysis reveals trajectories in steady-state systems.* PLOS Computational Biology, 2021. https://doi.org/10.1371/journal.pcbi.1009466
- 2021 Li, H., J. Ezike, A. Afanassiev, **L. Greenstreet**, et al. *Single Cell Analysis Elucidates the Maturation of Human Stem and Progenitor Cell Function from Fetal through Adult Hematopoiesis.* Blood, 2021. https://doi.org/10.1182/blood-2021-151090
- 2021 Shahan R., C. Hsu, T.M. Nolan, B.J. Cole, I.W. Taylor, **L. Greenstreet**, et al. *A single cell Arabidopsis root atlas reveals developmental trajectories in wild type and cell identity mutants.* Developmental Cell, 2021. https://doi.org/10.1016/j.devcel.2022.01.008

Bioinformatics Geospatial Theory

- 2020 Massri, A.J., **L. Greenstreet**, A. Afanassiev, A. Berrio Escobar, G.M. Wray, G. Schiebinger, D.R. McClay. *Developmental Single-cell transcriptomics in the* Lytechinus variegatus *Sea Urchin Embryo.* Development, 2020. https://doi.org/10.1242/dev.198614

Workshops and Presentations

- 2025 **Greenstreet, L**, E.Y. Lai, K. Lin, G.A. Rodriguez-Arelis, R. Ng. *Developing a Smart Electric Vehicle Strategy: From Data to Decisions.* ICDE Workshop on Data-Driven Smart Cities.
- 2023 **Greenstreet, L**, F. Pacheco, J. Fan, M. Eichemberger Ummus, et al. *Detecting Aquaculture with Deep Learning in a Low-Data Setting.* AGU Fall Meeting Abstracts.
- 2023 **Greenstreet, L**, J. Fan, F. Siqueira Pacheco, Y. Bai, M. Eichemberger Ummus, et al. *Detecting Aquaculture with Deep Learning in a Low-Data Setting.* SigKDD 2023 Fragile Earth Workshop.
- 2020 **Greenstreet, L**, and E. Lai. *Developing a Data-Driven Electric Vehicle Strategy in Surrey, BC.* SigKDD 2020 Social Impact Session.

Awards

2025	**Siegel PiTech PhD Impact Fellowship**, Department of Computer Science, Cornell University
2022-2024	**Graduate Teaching Award x4**, Department of Computer Science, Cornell University
2020	**Undergraduate Summer Research Award**, Natural Sciences and Engineering Research Council of Canada (NSERC)
2019	**Data Science for Social Good Fellowship**, UBC Data Science Institute
2018	**Stanley M Grant Scholarship in Mathematics**, UBC Department of Mathematics

Technical Skills

3+ Years Experience: Python, Git, Linux

1-3 Years Experience: R, Julia, Matlab, Java, SQL

Libraries/Tools: Pytorch, QGIS, Postgres, Gurobi

Experience: deep learning: CNNs, GNNs, VAEs, transformers, contrastive learning, manifold learning, mathematical programming, SQL

Research Experience

05/2025 - 08/2025	**Fellow - Siegel PiTech PhD Impact Fellowship**, Department of Computer Science, Cornell University
05/2024 - 08/2024	**Graduate Research Assistant**, Cornell University
05/2023 - 01/2024	**Graduate Research Assistant**, Computational Sustainability Lab, Department of
05/2022 - 08/2022	Computer Science, Cornell University
05/2020 - 08/2021	**Research Assistant**, Schiebinger Lab, Department of Mathematics, University of British Columbia
09/2019 - 09/2020	**Research Assistant**, WoRCS Lab, Institute for Resources, Environment, and Sustainability, University of British Columbia
05/2019 - 08/2019	**Fellow - Data Science for Social Good Program**, University of British Columbia Data Science Institute

Teaching Experience

FA23, SP23, SP24	**Head Teaching Assistant**, Cornell University, Ithaca, NY CS 2700 - Excursions in Computational Sustainability CS 4700/4701 - Foundations/Practicum in Artificial Intelligence
FA22, SP22, SP25	**Teaching Assistant**, Cornell University, Ithaca, NY CS 4820 - Introduction to Analysis of Algorithms CS 4220 - Numerical Analysis: Linear and Nonlinear Problems CS 3220 - Computational Mathematics for Computer Science

Community Involvement

2024	**Organizer**, AI for Science Seminar
2023	**Organizer**, NeurIPS Computational Sustainability Workshop
2023	**Mentor**, BURE Undergraduate Research Program, Cornell
2023-2024	**Assistant Organizer**, AI for Science Program, Cornell
2020-2021	**Mentor**, Data Science for Social Good Program, UBC Data Science Institute