GENEVIEVE E. FLASPOHLER

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EDUCATION

Massachusetts Institute of Technology & *September 2016–September 2022*
Woods Hole Oceanographic Institution Joint Program

Ph.D. Candidate in Electrical Engineering and Computer Science & Applied Ocean Engineering
Advised by: John W. Fisher III and Nicholas Roy
Balancing Exploration and Exploitation: Task-Targeted Exploration for Scientific Decision-Making

Technical areas: Sequential decision-making, POMDPs, Bayesian experimental design and statistics, scientific machine learning, reinforcement learning, uncertainty quantification, robotics.

S.M. in Electrical Engineering and Computer Science *September 2016–September 2018*
Advised by: Yogesh Girdhar and Nicholas Roy, GPA: 5.00/5.00
Thesis: Statistical Models and Decision-Making for Robotic Scientific Information Gathering

University of Michigan *September 2012–June 2016*
B.S.E. in Computer Engineering, GPA: 3.98/4.00, *Summa Cum Laude*

CURRENT POSITIONS

***n*Line Inc.—Independent Auditors of the World's Critical Infrastructure**
Berkley, CA *September 2022–Present*

Chief Data Officer

I mobilize data to support the development of critical infrastructure. Decision-making should be informed by measurement; however, monitoring infrastructure is infamously difficult. Starting with electrical grids in sub-Saharan Africa, I develop low-cost solutions—spanning the spectrum from sensors to algorithms—that provide robust estimates of power outages and grid losses that can be used to target grid improvement and improve grid resilience.

Massachusetts Institute of Technology
Cambridge, MA *September 2022–Present*

Visiting Scientist, Electrical Engineering and Computer Science

INDUSTRY EXPERIENCE

***n*Line—Machine Learning Research Consultant**
Berkeley, CA *September 2022–September 2023*

- Developed graph discovery algorithms to infer underlying power grid topology from sensor readings.
- Worked collaboratively to develop sensor deployment plans for Ghana, Sierra Leone, Kenya and Nigeria.

Microsoft Research—Machine Learning and Statistics Research Internship
Cambridge, MA *May 2020–August 2020*

- Developed online learning algorithms for subseasonal weather and climate forecasting
- Combined physics-based numerical weather prediction and deep-learning based forecasting models
- Worked with Lester Mackey (MSR), Judah Cohen (Atmospheric and Environmental Research) and the Microsoft Research AI for Earth team

Esri, Environmental Systems Research Institute—Software Internship
Washington, D.C. *May 2019–August 2019*

· Developed spatial statistics package for exploratory correlation analysis on multiple geographic scales
· Collaborated with local governments to assess UN Sustainable Development Goals using spatial data

FANUC Robotics America—Robotics Internship
Rochester Hills, MI *May 2014–August 2014*

· Built web interface for FANUC robots, presented at International Manufacturing Technology Show

JOURNAL AND CONFERENCE PUBLICATIONS

1. **Flaspohler, G.**[1], Preston, V.[1], Michel, A. PM., Fisher, J.W., & Nicholas Roy. (2022). *Robotic Planning under Uncertainty in Spatiotemporal Environments for Expeditionary Science.* Reinforcement Learning and Decision-Making (RLDM), 2022.

2. Mouatadid, S., Orenstein, P., **Flaspohler, G.**, Oprescu, M., Cohen, J., Wang, F., Knight, S., Geogdzhayeva, M., Levang, S., Fraenkel, E., & Lester Mackey (2021). *Learned Benchmarks for Subseasonal Forecasting.* arXiv preprint arXiv:2109.10399.

3. **Flaspohler, G.**, Orabona, F., Cohen, J., Mouatadid, S., Oprescu, M., Orenstein, P., & Lester Mackey (2021). *Online Learning with Optimism and Delay.* Proceedings of the 38th International Conference on Machine Learning (ICML), 2021.

4. **Flaspohler, G.**, Roy, N., & John W. Fisher III (2020, December). *Belief-Dependent Macro-Action Discovery in POMDPs using the Value of Information.* Advances in Neural Information Processing Systems (NeurIPS), 2020.

5. **Flaspohler, G.**, Caruso, F., Mooney, T. A., Katija, K., Fontes, J., Afonso, P., & Shorter, K. A. (2019, December). *Quantifying the Swimming Gaits of Veined Squid (Loligo forbesi) using Bio-logging Tags.* Journal of Experimental Biology (JEB), 2019.

6. **Flaspohler, G.**[1], Preston, V.[1], Michel, A. PM., Girdhar, Y., & Nicholas Roy. (2019, September). *Information-Guided Robotic Maximum Seek-and-Sample in Partially Observeable Continuous Environments.* IEEE Robotics and Automation Letters (RA-L), 2019.

7. Girdhar, Y., Cai, L., Jamieson, S., McGuire, N., **Flaspohler, G.**, Suman, S., & Brian Claus. (2019, May). *Streaming Scene Maps for Co-Robotic Exploration in Bandwidth Limited Environments.* Robotics and Automation (ICRA), 2019 IEEE International Conference on. IEEE, 2019.

8. Doherty, K., **Flaspohler, G.**, Roy, N., & Yogesh Girdhar. (2018, September). *Approximate Distributed Spatiotemporal Topic Models for Multi-Robot Terrain Characterization.* Intelligent Robots and Systems (IROS), 2018 IEEE/RSJ International Conference on. IEEE, 2018.

IROS 2018 Best Paper Award Finalist

9. **Flaspohler, G.**, Roy, N., & Yogesh Girdhar. (2018, May). *Near-optimal irrevocable sample selection for periodic data streams with applications to marine robotics.* Robotics and Automation (ICRA), 2018 IEEE International Conference on. IEEE, 2018.

10. **Flaspohler, G.**, Roy, N., & Yogesh Girdhar. (2017, September). *Feature discovery and visualization of robot mission data using convolutional autoencoders and Bayesian nonparametric topic modeling.* Intelligent Robots and Systems (IROS), 2017 IEEE/RSJ International Conference on. IEEE, 2017.

INVITED PRESENTATIONS AND WORKSHOP PUBLICATIONS

1. **Flaspohler, G.** (2022, August). *Learned Benchmarks for Subseasonal Forecasting.* Presentation at the ASA Joint Statistical Meeting. Washington D.C., USA.

2. **Flaspohler, G.** (2022, July). *Online Learning with Optimism and Delay.* Invited presentation in the statistical machine learning session at the IMS Annual Meeting on Probability and Statistics. London U.K.

3. **Flaspohler, G.** (2021, July). *Autonomous Trajectory Planning for Mapping Deep Sea Hydrothermal Plumes.* Presentation in the session on Advancing Ocean Exploration Technology at the Ocean Sciences Meeting.

4. **Flaspohler, G.** (2021, May). *Online Learning with Optimism and Delay.* Presentation and short publication at the NeurIPS Time Series Workshop, 2021.

5. **Flaspohler, G.** (2020, December). *Machine Learning for Scientific Discovery.* Presentation at the MIT Quest for Intelligence Student Seminar.

6. **Flaspohler, G.** (2019, December). *Autonomous Sensing and Scientific Machine Learning for Monitoring Greenhouse Gas Emissions.* Publication at the NeurIPS Workshop on Tackling Climate Change with Machine Learning 2019, Vancouver, BC.

7. **Flaspohler, G.** (2019, October). *Tutorial on Gaussian Process Regression for Spatial and Temporal Environmental Data.* Presentation at the Computational Sustainability Doctoral Consortium 2019, Carnegie Mellon University, PA.

8. **Flaspohler, G.**[1], Preston, V.[1], Michel, A. PM., Girdhar, Y., & Nicholas Roy. (2019, November). *Information-Guided Robotic Maximum Seek-and-Sample in Partially Observable Continuous Environments.* Presentation at Intelligent Robots and Systems (IROS), 2019 IEEE/RSJ International Conference on. IEEE, 2019.

9. **Flaspohler, G.** (2018, September). *Models and Decision-making for Scientific Robots.* Presentation at the Computational Sustainability Doctoral Consortium 2018, Cornell University, NY.

10. **Flaspohler, G.** (2017, December). *Feature discovery and visualization of robot mission data using convolutional autoencoders and Bayesian nonparametric topic modeling.* Presentation at the NeurIPS Workshop on Women in Machine Learning Workshop 2017, Long Beach, CA.

11. **Flaspohler, G.**, Silva, T., Mooney, A., & Girdhar, Y. (2017, June). *Classifying dolphin whistles using convolutional neural networks.* Presentation at the meeting of the Acoustical Society of America 2017, Boston MA.
    Best Student Presentation in Applied Ocean Engineering Runner-up.

12. **Flaspohler, G.** (2017, February). *Enabling curious Bayesian marine robotic exploration.* Presentation at MIT Robocon 2017, Cambridge MA.

13. **Flaspohler, G.**[1], Adkins, J.[1], & Prabal Dutta. (2015, September). *Ving: Bootstrapping the Desktop Area Network with a Vibratory Ping.* In Proceedings of the 2nd International Workshop on Hot Topics in Wireless (pp. 21–25). ACM.

TEACHING AND OUTREACH EXPERIENCE

Environmental Data Science Journal, *Communications Editor*

Computational Sustainability Doctoral Consortium, *Co-organizer(2019) and mentor (2020)*

MIT EECS Communication Lab, *Scientific Communication Fellow* *September 2019-Present*

Teaching: Massachusetts Institute of Technology *Cambridge, MA*

6.419: Applied Statistics, Computation, and Applications *September–December 2019*

Teaching: University of Michigan *Ann Arbor, MI*

EECS 281: Advanced Algorithms and Data Structures in C++ *January 2016–June 2016*

ENGR 100: Introduction to Human Centered Design *January 2013–June 2015*

AWARDS AND GRANTS

1. Microsoft Research Climate PhD Fellowship (September 2021)
2. NeurIPS Outstanding Reviewer (Oct 2021).
3. Microsoft AI for Earth, summer research fellowship (May 2020)
4. National Science Foundation Graduate Research Fellowship, $102,000 plus tuition (2016–Present)
5. University of Michigan's Engineering Distinguished Achievement Award, $500 (May 2016)
6. University of Michigan's EECS William L. Everett Student Award of Excellence, $500 (May 2016)
7. University of Michigan's EECS Scholar, $500 (May 2016)
8. NSF REU Undergraduate Research Award, $1,500 (May 2015)
9. University of Michigan's Electrical Engineering and Computer Science Outstanding Achievement Award, $500 (May 2015)
10. University of Michigan's Marian Sarah Parker Prize, $1,000 (May 2015)
11. University of Michigan's Darl F. and Lorene O. Caris Dean's Merit Scholarship full-ride, $130,000 (September 2012–May 2016)