Kathryn Wantlin

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Education

PRINCETON UNIVERSITY Princeton, NJ
Ph.D., Computer Science May 2028
M.S.E., Computer Science May 2023
Relevant Courses: Machine Learning & Pattern Recognition, Probabilistic Modeling, Artificial Mechanical Intelligence, Dynamics and Control of Multi-Agent Systems, Probabilistic Topics in RL, Information Theory, Computer Vision
Teaching Experience: Introduction to Machine Learning, Algorithms/Data Structures, Introduction to Computer Science

HARVARD UNIVERSITY Cambridge, MA
A.B., Computer Science, Economics Secondary, Chinese Language Citation May 2021
Relevant Courses: Machine Learning, Multi-Robot Systems, Autonomous Robot Systems, Embedded Systems, AI for Social Impact, Digital Fabrication, Data Visualization, Research Topics in HCI, Abstraction and Design in Computation
Teaching Experience: Multi-Robot Systems - Control, Communication, and Security (Graduate Level), Mathematics for Computation, Statistics, and Data Science

Skills

Programming: Python, Java, Javascript, ROS, C++, MATLAB, SQL
Machine Learning Frameworks: PyTorch, JAX

Publications

Barnett, Samuel A., **Wantlin, Kathryn,** Adams, Ryan P.
Measuring Cooperation with Counterfactual Planning
Conference on Game Theory and AI for Security (GameSec) 2025

Leonard, N.E., Cox, J., Trueman, D., Santos, M., **Wantlin, K.**, Han, I.X., Witzman, S., James, T.
Rhythm Bots: A Sensitive Improvisational Environment
Neural Information Processing Systems (NeurIPS) 2024, Creative AI Track
International Conference on Robotics and Automation (ICRA) 2022, Workshop on Robotics and Art

Preprints

Wantlin, Kathryn, Eysenbach, B.E.
Contrastive Learning for Zero-Shot Imitation

Wantlin, K., Wu, C., Huang, S.C., Banerjee, O., Dadabhoy, F., Mehta, V.V., Han, R.W., Cao, F., Narayan, R.R., Colak, E., Adamson, A. S., Heacock, L., Tison, G.H., Tamkin, A., Rajpurkar, P.
BenchMD: A Benchmark for Universal Learning on Medical Images and Sensors

Research Experience

MIT Center for Brains, Minds and Machines Massachusetts Institute Of Technology
Summer Course Aug. 2025
- Neuroscience + cognitive science + machine learning summer school

Princeton University/Google AI Princeton Princeton University
Graduate Research *w/ Prof. Elad Hazan* Jun. 2025 – Present
- Applying spectral filtering methods to build world models for long-horizon planning and control

Princeton RL Lab Princeton University
Graduate Research w/ Prof. Ben Eysenbach Jan. 2024 – Present
- Improving multi-task IRL goal inference with temporal contrastive learning and adversarial goal generation, replacing expert demonstration data collection with self-supervised exploration

Laboratory for Intelligent Probabilistic Systems Princeton University
Graduate Research w/ Prof. Ryan Adams Jun. 2022 – Present

- Utilized spatial point processes and continuous-time MCMC to perform inverse design of emergent shape formation in morphogenetic systems
- Learning causal features in reinforcement learning using empowerment proxy objectives to solve interlocking puzzle tasks and architecture assembly problems with robotic manipulators

Harvard Medical AI Lab Harvard Medical School
Visiting Graduate Research Fellow w/ Prof. Pranav Rajpurkar Nov. 2021 – Jan. 2024
- Combined deep learning Viewmaker networks with hand-generated data augmentations to improve performance for self-supervised learning in VAE models for ECG classification
- Used domain-agnostic transformers and self-supervised algorithms to investigate generalization of multi-modality medical AI models under clinically-relevant distribution shifts (paper in submission)

Leonard Robotics Lab Princeton University
Graduate Researcher w/ Prof. Naomi Leonard Sept. 2021 – Present
- Utilized computer vision to detect human observers and define motion of "Rhythm Bots" kinetic art installation via space-filling parametric equations and nonlinear opinion dynamics (ICRA 2022 Workshop on Robotics and Art)

Harvard Economics and Computer Science Research Group Harvard University
Undergraduate Thesis w/ Prof. David Parkes Sept. 2020 – May 2021
- Used auction-based policies to create a market-based information exchange algorithm for optimal division of cooperative robotic mapping tasks and reduce chance of routing failure

Professional Experience

MIT Lincoln Laboratory - Advanced Systems and Capabilities Group Lexington, MA
Summer Research Intern Jun. 2021 – Aug. 2021
- Optimized GPS-free autonomous flight algorithms using keypoint identification and matching
- Reduced system memory usage 4x while maintaining navigation performance by experimentally confirming optimal data redundancy in keypoint matching scheme
- Quantified receptive field of utilized neural networks and visualized attention network weights to interpret model performance

Hewlett Packard Enterprise Seattle, WA
AI Engineer Intern May 2020 – Aug. 2020
- Modularized AutoML tool's data manager to in-memory backend, improving data processing speeds by 60%
- Wrote computer vision data pre-processing node for prebuilt AutoML workflow in Jupyter Notebooks; notebooks served as user tutorials/documentation upon tool's release

Harvard University Derek Bok Center Cambridge, MA
Learning Lab Undergraduate Fellow Oct. 2019 – Aug. 2020
- Designed Slack analytics dashboard with D3 to help staff gauge project engagement across the Bok Center
- Worked with team of Fellows to create comprehensive tutorials on digital art technologies for classrooms, including Adobe Illustrator/After Effects; reproduced a section of a professional Vox video to demonstrate the creative process

Champion REIT Hong Kong, China
Asset Management Intern June 2019 – Aug. 2019
- Studied interest rate prediction research publications to develop HIBOR forecast model in R based on macroeconomic indicators; used to identify optimal monthly borrowing periods, contributing to selection of corporate loans

Leadership/Volunteer Experience

International Conference on Learning Representations (2025) **–** *Reviewer*

Machine Learning for Health Symposium (Collocated with NeurIPS 2022) **–** *Reviewer*

Princeton ReMatch Mentoring Program (2021-2022) **–** *Computer Science Mentor*

Honors and Awards

Princeton School of Engineering and Applied Science (SEAS) Travel Grant (2024)

Princeton University Gordon Y.S. Wu Fellowship in Engineering (2023)

Princeton University Teaching Assistantship, Full Graduate Funding (2021-2023)