

# Kellen Kanarios

PhD Student, University of Michigan, Ann Arbor, MI

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## RESEARCH INTERESTS

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Reinforcement learning, Continual learning, Unsupervised learning, Robot Learning.

## EDUCATION

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### University of Michigan, Ann Arbor, MI

PhD in Electrical and Computer Engineering

August 2024 | Now

Cumulative GPA: 3.94/4.00

### University of Michigan, Ann Arbor, MI

Bachelor of Science: *Mathematics with Honors and Computer Science with High Honors*

Thesis Title: *Meta Learning for Continual Reinforcement Learning*

August 2020 | August 2024

Cumulative GPA: 3.85/4.00

## ACADEMIC EXPERIENCE

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### ECE Department

*Head Graduate Student Instructor for ECE 567 (Reinforcement Learning Theory)*

Ann Arbor, MI

Winter 2026

### EECS Department

*Teaching Assistant for EECS 602 (Reinforcement Learning Theory)*

Ann Arbor, MI

Winter 2024

### EECS Department

*Grader for EECS 592 (Advanced Artificial Intelligence)*

Ann Arbor, MI

Fall 2023

### EECS Department

*Grader for EECS 574 (Advanced Computational Complexity)*

Ann Arbor, MI

Fall 2023

### EECS Department

*Research Assistant (Synthesizing TensorFlow Programs)*

Ann Arbor, MI

Summer 2022

## PROJECTS

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### Meta Learning for Continual Reinforcement Learning

*Lead Investigator*

Ann Arbor, MI

April 2024 | August 2024

- Implemented existing meta-gradient GVF discovery algorithm in JAX and studied generalization ability.
- Proposed and implemented modifications to improve stability and forward transfer.

### Parallel Algebraic Multigrid Methods for Higher-Order PDEs (UCLA RIPS)

*Research Intern*

Ann Arbor, MI

June 2023 | August 2023

- Designed and implemented a new algorithm that improved convergence factor of existing state of the art by a factor > 108 on a fourth-order PDE that arises in nuclear fusion applications.
- 1 of 36 students selected (5000+ applicants).
- Manuscript available at ([link](#))

## PUBLICATIONS

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### Motion-Planning via Contrastive Reinforcement Learning and Gumbel Monte-Carlo Tree Search

*Published*

- K. Kanarios and L. Ying. Motion-Planning via Contrastive Reinforcement Learning and Gumbel Monte-Carlo Tree Search. In Workshop on Reinforcement Learning Beyond Rewards @ Reinforcement Learning Conference (RLC), 2025.

### Cost Aware Best Arm Identification

*Published*

- K. Kanarios, Q. Zhang, and L. Ying. Cost Aware Best Arm Identification. In Proceedings of the Reinforcement Learning Conference (RLC), 2024.

## SKILLS

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- **Programming:** Python, C, C++, CUDA, L<sup>A</sup>T<sub>E</sub>X
- **Libraries:** JAX, PyTorch
- **Software:** Git, Vim, Linux

## SELECTED COURSES

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### PhD Courses

- Large Language Model Theory
- Advanced Compilers
- Optimization Theory
- Stochastic Processes
- Information Theory

### Bachelor's Courses

- Convex Optimization
- Functional Analysis
- Measure Theory
- Honors Algebra I+II
- Analysis on Manifolds
- Probability Theory
- Reinforcement Learning
- Machine Learning Theory
- Large Language Models
- Randomness and Computation
- Machine Learning
- Operating Systems
- Applied Parallel Programming with GPUs

## AWARDS

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### ECE Honor Roll

One of twenty students awarded for cultivating community within ECE.

Ann Arbor, MI

June 2025

### James B Angell Scholar

Semester of all As.

Ann Arbor, MI

N/A

## Outreach

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### Reinforcement Learning Seminar

*Founder (YouTube)*

Ann Arbor, MI

Jan 2025 | Present

### EECS Undergraduate Research Advisor

Ann Arbor, MI

Jan 2025 | Present

### ECE Pure Program Advisor

Ann Arbor, MI

August 2025 | Present

## HIGHLIGHTED TALKS

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### Reinforcement Learning Conference

*Cost Aware Best Arm Identification ([link](#)).*

Amherst, MA

August 10, 2024

### Joint Mathematics Meeting

*Parallel Algebraic Multigrid for Higher-Order PDEs ([link](#)).*

San Francisco, CA

Jan 5, 2024

## Seminar Talks

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### Math Undergraduate Seminar, University of Michigan

Dec 2023: *Parallel Algebraic Multigrid for Higher-Order PDEs*

### Directed Reading Program

April 2022: *An Introduction to Brownian Motion and Stochastic Calculus*

## REFERENCES

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### Prof. Lei Ying

*Professor, Electrical and Computer Engineering, University of Michigan, Ann Arbor, MI*

E-mail: [leiyng@umich.edu](mailto:leiyng@umich.edu)

Scholar Profiles: [Home Page](#) | [Google Scholar](#)

### Prof. Susana Serna

*Director, RIPS, Institute of Pure and Applied Mathematics, Los Angeles, CA*

E-mail: [sserna@ipam.ucla.edu](mailto:sserna@ipam.ucla.edu)

Scholar Profiles: [Home Page](#) | [ORCID](#)