Yichen Song

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Research Interests

My research interests center on designing general-purpose sequential decision-making algorithms and applying them to real-world problems. I am currently particularly excited about (1) learning general decision-making and experimental design strategies from offline datasets, and (2) designing adaptive continual-learning agents for nonstationary environments.

Education

Boston University — Boston, MA
Ph.D. in Computing and Data Science (GPA: 3.95/4.0) — *Sept. 2023 – Present*
Advisor: Aldo Pacchiano

University of Michigan - Ann Arbor — Ann Arbor, MI
Master of Science in Robotics (GPA: 3.95/4.0) — *Sept. 2021 – Apr. 2023*

Southern University of Science and Technology (SUSTech) — Shenzhen, China
Bachelor of Engineering in Robotics (GPA: 3.85/4.0) — *Sept. 2017 – Jun. 2021*

Work Experience

Honda Research Institute USA, Inc. — San Jose, CA
Research Intern | Mentor: Aolin Xu — *May 2022 - Aug. 2022*

- Proposed a graph-based surrounding vehicle trajectory prediction framework based on various vehicle behavior models.
- Implemented the proposed framework in the CARLA simulator and developed an associated warning generation system for the ego vehicle based on the prediction results.

Manuscripts Under Review

Y. Song, A. Russo, A. Pacchiano, "Future Information-Directed Sampling for Bayesian Nonstationary Bandits"

- Developed Future Information-Directed Sampling (FIDS), a future-aware algorithm for Bayesian nonstationary bandits that leverages predictive information structures.
- Derived regret guarantees comparable to Thompson Sampling and introduced an offline supervised-learning framework that leverages the in-context learning capability of Transformer-based architectures to approximate FIDS policies from offline data.

Publications

[1] A. Russo, **Y. Song**, A. Pacchiano, "Pure Exploration with Feedback Graphs," *International Conference on Artificial Intelligence and Statistics (AISTATS), 2025,* ***Oral presentation***

[2] H. Zhou, **Y. Song**, V. Tzoumas, "Safe Non-Stochastic Control of Control-Affine Systems: An Online Convex Optimization Approach," *IEEE Robotics and Automation Letters*, 2023

Professional Activities and Service

Reviewers for AISTATS (2026), ICLR (2025, 2026), Neurips (2025)

Teaching Experience

Teaching Fellow, Boston University
- Algorithms for Data Science (Fall 2025)
- Introduction to Sequential Decision Making (Spring 2026)

Skills

Research: Theory and Algorithms of Reinforcement Learning and Bandits Learning, Statistical Learning Theory

Languages: Python, C++, ROS, MATLAB

AI/ML Frameworks: PyTorch, TensorFlow

Honors and Awards

Outstanding Graduate — May 2021
Top 3 among 44 graduates