Zhiyu Zhang

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Research interest

Adaptive online learning, with applications in system control and robotics. The goal is to design theoretically sound and practically useful sequential decision making algorithms that Bayes-optimally exploit offline knowledge, such as domain structures, physical models and deep learning.

Employment

Harvard University 09/2023 – Present
Postdoctoral Fellow *Advisor: Heng Yang*

Education

Boston University 09/2018 – 08/2023
PhD, Systems Engineering *Advisor: Ioannis Paschalidis, Ashok Cutkosky*

Tsinghua University 09/2014 – 06/2018
BEng, Mechanical Engineering

Delft University of Technology 09/2016 – 02/2017
Exchange Student, Control Engineering

Publication

Five representative works marked with [⋆].

[⋆] **Pick up the PACE: A Parameter-Free Optimizer for Lifelong Reinforcement Learning** ArXiv
*Aneesh Muppidi, **Zhiyu Zhang**, Heng Yang*

Adapting Conformal Prediction to Distribution Shifts Without Labels ArXiv
*Kevin Kasa, **Zhiyu Zhang**, Heng Yang, Graham Taylor*

[⋆] **Discounted Adaptive Online Learning: Towards Better Regularization** ICML'24
***Zhiyu Zhang**, David Bombara, Heng Yang*

Understanding Adam Optimizer via Online Learning of Updates: Adam is FTRL in Disguise ICML'24
*Kwangjun Ahn, **Zhiyu Zhang**, Yunbum Kook, Yan Dai*

[⋆] **Improving Adaptive Online Learning Using Refined Discretization** ALT'24
***Zhiyu Zhang**, Heng Yang, Ashok Cutkosky, Ioannis Paschalidis*

[⋆] **Unconstrained Dynamic Regret via Sparse Coding** NeurIPS'23
***Zhiyu Zhang**, Ashok Cutkosky, Ioannis Paschalidis*

[⋆] **Optimal Comparator Adaptive Online Learning with Switching Cost** NeurIPS'22
***Zhiyu Zhang**, Ashok Cutkosky, Ioannis Paschalidis*

PDE-Based Optimal Strategy for Unconstrained Online Learning ICML'22
***Zhiyu Zhang**, Ashok Cutkosky, Ioannis Paschalidis*

Adversarial Tracking Control via Strongly Adaptive Online Learning with Memory AISTATS'22
***Zhiyu Zhang**, Ashok Cutkosky, Ioannis Paschalidis*

Provable Hierarchical Imitation Learning via EM AISTATS'21
***Zhiyu Zhang**, Ioannis Paschalidis*

Award

Division of Systems Engineering Dissertation Award 2024
Boston University

NeurIPS Scholar (Travel Award) 2023

Multiple Top Reviewer Awards (∼10%)
AISTATS'22, ICML'22, NeurIPS'22 and '23

Dean's Fellowship 2018 – 2019
College of Engineering, Boston University

Scholarship for Distinction in Academics 2014 – 2017
Tsinghua University

Scholarship for Outstanding Exchange Students 2016
China Scholarship Council

Service

Action Editor:

TMLR, 2024-Present (Transactions on Machine Learning Research)

Conference Reviewer:

AISTATS 2021-2024 (Artificial Intelligence and Statistics)
ICML 2022-2023 (International Conference on Machine Learning)
NeurIPS 2022-2024 (Conference on Neural Information Processing Systems)
ALT 2023 (International Conference on Algorithmic Learning Theory)
COLT 2024 (Conference on Learning Theory)

Subreviewer:

NeurIPS 2020
L4DC 2020 (Learning for Dynamics & Control Conference)

Journal Reviewer:

IEEE Transactions on Robotics
Journal of Machine Learning Research
Foundations and Trends in Machine Learning

Research talk

Center for Machine Learning Research, Peking University	04/2024
Prof. Na Li's group, Harvard University	02/2024
Prof. Na Li's group, Harvard University	10/2023
SIAM Student Chapter, Boston University	10/2023
Prof. Chuchu Fan's group, MIT	02/2023
CISE Graduate Student Workshop, Boston University	01/2023
Prof. Christos Cassandras' group, Boston University	12/2021

Teaching and mentoring

Teaching Assistant 2020 – 2021

Boston University

- EK 381: Probability, Statistics, and Data Science for Engineers
- ME 366: Probability and Statistics for Mechanical Engineers
- ME 404: Dynamics and Control of Mechanical Systems

BU RISE program mentor Summer 2019

Boston University

- Summer research program for high school students.