

Zhiyuan “Paul” Zhou

PERSONAL INFORMATION

Email	✉ zhouzy@brown.edu
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Google Scholar	📄 Zhiyuan Zhou

EDUCATION

Brown University 2019 – Expected 2023

Sc.B. in Applied Mathematics and Computer Science

- GPA: 4.0 / 4.0; on track for CS Honors.
- Selected CS Coursework: Collaborative Robotics, Deep Learning, Machine Learning, Computer Vision, Multiprocessor Synchronization, Computer Systems.
- Selected Math Coursework: Recent Applications of Computational Probability and Statistics, Pattern Theory, Statistics in Quantum Mechanics, Applied PDE & ODE.

PUBLICATIONS

Learning Portable Skills By Identifying Generalizing Features with an Attention-Based Ensemble 📄 2022

Zhiyuan Zhou*, Anita de Mello Koch*, Akhil Bagaria, Haotian Fu, Cameron Allen, George Konidaris (* denote equal contribution)

In submission to ICLR 2023

Specifying Behavior Preference with Tiered Reward Functions 📄 2022

Zhiyuan Zhou, Henry Sowerby, Michael L Littman

In submission to AAAI 2023

Characterizing the Action-Generalization Gap in Deep Q-Learning 📄 2022

Zhiyuan Zhou, Cameron Allen, Kavosh Asadi, George Konidaris

Multidisciplinary Conference on Reinforcement Learning and Decision Making (RLDM)

Designing Rewards for Fast Learning 📄 2022

Henry Sowerby, **Zhiyuan Zhou**, Michael L Littman

Multidisciplinary Conference on Reinforcement Learning and Decision Making (RLDM)
[Selected for **oral**]

Improving Post-Processing on Video Object Recognition Using Inertial Measurement Unit 📄 2022

Zhiyuan Zhou, Spencer Boyum, Michael Paradiso

Brown Undergraduate Research Journal, Spring 2022 Edition

ACADEMIC EXPERIENCE

Intelligent Robot Lab, Brown University

2020-Present

Undergraduate Research Assistant

- Working with professor George Konidaris and various Ph.D. students under Brown's BigAI initiative; one co-first author conference paper in submission and one first-author paper accepted at RLDM.
- Researched various topics in deep Reinforcement Learning (RL): generalization and life-long learning; hierarchical RL through skill chaining; distributed hierarchical RL; action generalization in Deep RL.

RLAB, Brown University

2021-Present

Undergraduate Research Assistant

- Working with professor Michael Littman; one paper accepted at RLDM with oral and one first author conference paper in submission.
- Researched various topics in reinforcement learning, and focused on the reward design and behavior specification problem with formal guarantees.

Humans to Robots Lab, Brown University

2020

Undergraduate Research Assistant

- Collaborated with professor Stefanie Tellex in a graduate robotics course.
- Researched instructing robot navigation using a combination of natural language commands and pointing gestures.

Paradiso Lab, Brown University

2020

Undergraduate Research Assistant

- Worked with professor Michael Paradiso funded by the Brown Undergraduate Teaching and Research Award (UTRA); one first-author paper published in school research journal.
- Helped build a visual prosthetic device and researched topics in video object recognition.

Department of Applied Math, Brown University

2022 - Present

APMA Peer Advisor

- Advised underclassmen on course selection and career planning and built meaningful advising relationships.

INDUSTRY EXPERIENCE

Zencastr, Inc.

July 2021 - Aug 2021

Natural Language Processing Engineer Intern

- Engineered and deployed a web app with websockets and FastAPI that allows users to edit (faulty) audio-to-text automatic transcriptions and provides a faster editing experience by intelligently recommending potentially incorrect segments: the recommendations are made by finding similar occurrences of user-made edits throughout the audio file with Keyword Spotting using language and acoustic models from Kaldi and Vosk-api.
- Sped up Keyword Spotting 2× using multithreaded offline-decoding in Python and Shell; sped up automatic speech recognition 5× using WeNet architecture (written in C++) and Speech Activity Detection models from Kaldi; model is pushed to production.

- Implemented a thread-safe MongoDB store with *asyncio* and *motor* to store user-made edits in the backend.

Zencastr, Inc.

Dec 2020 - Jan 2021

Machine Learning Engineer Intern

- Built a CNN in Keras that classifies audio files into speech, music, laughter, or noise with 93% accuracy; trained using audio data crawled from YouTube using *youtube-dl* and augmented by adding noise, changing pitch, and stretching time.
- Aligned audio-to-text transcriptions from DeepSpeech and Webspeech API using dynamic time warping and grapheme similarity.
- Built a Python library of machine learning utility scripts hosted privately on GitHub with Continuous Integration

TEACHING

Head Teaching Assistant

Spring 2022

CS1420 Machine Learning, Brown CS

- Managed a team of 20 teaching assistants and organized course logistics for 200 students.
- Built auto-grading pipelines for 12 coding assignments on Gradescope that enabled students to see code correctness shortly after handin.
- Answered questions through weekly TA hours and online discussion platform Edstem.

HONORS AND AWARDS

Hack @ Brown Nelson Center for Entrepreneurship Award	2023
3rd place in SELEF literary competition, STEM category	2022
Brown Undergraduate Teaching & Research Award	2021
Hack @ Brown Most Contrarian Hack & Wolfram Award	2021
Brown Undergraduate Teaching & Research Award	2019
227th (top 5%) in Putnam Math Competition, top 3 at Brown	2019
2nd Place in Hartshorn-Hypatia Math Contest	2019
Yongren Full Fellowship at PROMYS	2018
Provincial Top 1% in Chinese Physics Olympiad	2018
Regional Top 10 & International Top 100 in Physics Bowl	2018
Top 5% in AMC12	2018
Finalist in High School Mathematical Contest in Modeling	2017

INVITED TALKS

Designing Rewards for Fast Learning

Conference on Reinforcement Learning and Decision Making (RLDM)

June 2022

Pareto Optimal Reward Functions

Robotics Lab, Brown CS

July 2022