Austin Watkins

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EDUCATION

Johns Hopkins University, Baltimore, Maryland

- Doctor of Philosophy, Computer Science — Aug 2021 – present

  Advisor: Raman Arora
  - I do research in theoretical machine learning with a focus on representation learning, adversarial robustness, and differential privacy.
- Master of Science in Engineering, Computer Science — Aug 2021 – Dec 2024

University of Utah, Salt Lake, Utah

- Bachelor of Science, Computer Science — Jan 2018 – Dec 2020

  Thesis Supervisor: Jeff Phillips
- Bachelor of Science, Applied Mathematics — Jan 2018 – Dec 2020

Salt Lake Community College, Taylorsville, Utah

- Associate of Science, General Studies — May 2016 – Dec 2017

PUBLICATIONS

- Adversarially Robust Multi-task Representation Learning. Austin Watkins, Thanh Nguyen, Enayat Ullah, and Raman Arora. Conference on Neural Information Processing Systems (NeurIPS) 2024.
- Optimistic Rates for Multi-Task Representation Learning. Austin Watkins, Enayat Ullah, Thanh Nguyen, and Raman Arora. Conference on Neural Information Processing Systems (NeurIPS) 2023.
- Using Existential Theory of the Reals to Bound VC Dimension. Austin Watkins and Jeff Phillips. Canadian Conference on Computational Geometry (CCCG) 2022.

WORK EXPERIENCE

Booz Allen Hamilton, Annapolis Junction, Maryland (remote)

- *Scientist Intern* — May 2024 – present
  - I perform internal research on differentially private machine learning.

Amazon Web Services, Seattle, Washington (remote)

- *Software Engineer Intern*, DynamoDB Insights — May 2020 – Jul 2020
  - As part of the insights team, my responsibilities were the visualization of big data and performing statistical analysis to develop algorithmic resource allocation strategies.

RESEARCH EXPERIENCE

University of Utah, Salt Lake, Utah

- *Predoctoral fellow*, Computer Science Department — Jan 2021 – Jul 2021
  - While hosted by Jeff Phillips, I developed high probability sample complexity bounds to protect polynomial classifiers against adversarial Euclidean perturbation.
- *Student Researcher*, Computer Science Department — Aug 2019 – Dec 2020
  - I bounded the Vapnik–Chervonenkis dimension of inflated polynomials using tools from algebraic geometry. Applications include PAC bounds on learning trajectories with area-of-effect.
- *Student Researcher*, Computer Science Department — May 2019 – Dec 2019
  - While advised by Ganesh Gopalakrishnan, I implemented neural networks using PyTorch to study applications of machine learning to numerical analysis on PDE models and other scientific simulations.
- *Student Researcher*, Computer Science Department — Jan 2019 – May 2019
  - While mentored by Ganesh Gopalakrishnan, I studied program synthesis and verification. The projects we implemented were written in either Rosette or Alloy.
- *Student Researcher*, Mathematics Department — Jan 2019 – Apr 2019
  - I studied the applications of machine learning to financial markets under the advisement of Jingyi Zhu. While working with another student researcher, I implemented an investment pipeline using Scikit-learn and Keras.

TEACHING EXPERIENCE

Johns Hopkins University, Baltimore, Maryland

- *Head Teaching Assistant - Learning Theory* — Aug 2024 – present

  Taught by Raman Arora
- *Course Assistant - Machine Learning* — Aug 2023 – Dec 2023

  Taught by Raman Arora
- *Teaching Assistant - Machine Learning* — Jan 2023 – May 2023

  Taught by Raman Arora
- *Course Assistant - Machine Learning* — Aug 2022 – Oct 2022

  Taught by Mark Dredze and Anqi Liu
- *Head Teaching Assistant - Software Testing* — Jan 2022 – May 2022

  Taught by Mohammad Ali Darvish

University of Utah, Salt Lake, Utah

- *Teaching Assistant - Models of Computation* Aug 2019 – Dec 2019
  Taught by Ganesh Gopalakrishnan

AWARDS

- *Outstanding Undergraduate Researcher - Honorable Mention*, Computing Research Association 2021
- *Pride In Academics*, Salt Lake Community College 2017
  Awarded to accomplished students of diversity

PROFESSIONAL ACTIVITIES

Reviewer

- AAAI 2024
- AAAI 2023