

# Kavosh Asadi

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## Education

- 2015-2020 Doctor of Philosophy in Computer Science, Brown University  
advisor: [Michael L. Littman](#)
- 2013-2015 Masters in Computer Science, University of Alberta  
advisor: [Richard S. Sutton](#)
- 2008-2013 Bachelors of Engineering, University of Tehran

## Interests

Sequential decision making (more specifically, the reinforcement-learning problem)  
The alignment problem in AI  
Applications of reinforcement learning to problems with high impact, conversational agents in particular  
Studying reinforcement learning through the lens of optimization

## Experience

- 2020-2024 Applied Scientist at Amazon. My work at Amazon was comprised of 3 areas:
- I worked on advancing fundamental AI research. In particular, I started a research program to study value-function-approximation in reinforcement learning through the lens of optimization. Our efforts came into fruition by a) publishing multiple papers at NeurIPS and ICML.
  - I focused on a few applications, most notably aligning LLMs. This effort included developing a simple but effective rejection-sampling approach, and also rethinking, researching, and implementing various ingredients of reinforcement learning from human feedback (RLHF). In a different project, I focused on tackling congestion control in AWS networks using imitation learning. We explored approaches that tackle the distribution-shift problem.
  - I focused on making it easier for students and engineers to get started in AI. This came into fruition by co-authoring the RL chapter of a fantastic book called [Dive into Deep Learning \(D2L\)](#).
- 2016 & 2017 Microsoft Research (MSR) PhD Internship  
mentor: [Jason D. Williams](#)  
I worked on training generative AI systems (before it was cool) that solve various tasks through dialog! We were among to apply deep RL to the dialog domain. Our approaches were somewhat different than more recent work in that we were using the LSTM architecture (rather than Transformers), and we used sparse goal-based reward signals. The work was published at ACL, and was also deployed internally.

## AI Coding Skills

Hands-on experience in implementing machine-learning techniques using PyTorch, Tensorflow, and Keras.  
Advanced experience in Cloud Computing, particularly Amazon EC2, including training large-scale models with billions of parameters on cloud infrastructure using the DeepSpeed library for GPU optimization.  
Proficient in various programming languages, especially Python. Advanced experience in C, C++, and Java. Solid understanding of basic concepts and data structures in computer science.

## Conference Papers

- 2024 Cyrus Cousins, **Kavosh Asadi**, Elita Lobo, Michael Littman, "On Welfare-Centric Fair Reinforcement Learning", Reinforcement Learning Conference (RLC)
- 2024 **Kavosh Asadi\***, Yao Liu\*, Shoham Sabach\*, Ming Yin\*, Rasool Fakoor, "Learning the Target Network in Function Space", International Conference on Machine Learning (ICML)
- 2024 Zuxin Liu, Jesse Zhang, **Kavosh Asadi**, Yao Liu, Ding Zhao, Shoham Sabach, Rasool Fakoor, "TAIL: Task-specific Adapters for Imitation Learning with Large Pretrained Models", International Conference on Learning Representations (ICLR)

- 2023 **Kavosh Asadi\***, Shoham Sabach\*, Yao Liu, Omer Gottesman, Rasool Fakoor, "TD Convergence: An Optimization Perspective", Conference on Neural Information Processing Systems (NeurIPS)
- 2023 **Kavosh Asadi**, Rasool Fakoor, Shoham Sabach, "Resetting the Optimizer in Deep RL: An Empirical Study", Conference on Neural Information Processing Systems (NeurIPS)
- 2023 Omer Gottesman, **Kavosh Asadi**, Cameron Allen, Samuel Lobel, George Konidaris, Michael L. Littman, "Coarse-Grained Smoothness for Reinforcement Learning in Metric Spaces", Conference on Artificial Intelligence and Statistics (AISTATS)
- 2022 **Kavosh Asadi**, Rasool Fakoor, Omer Gottesman, Taesup Kim, Michael L. Littman, Alexander J. Smola, "Faster Deep Reinforcement Learning with Slower Online Network", Conference on Neural Information Processing Systems (NeurIPS)
- 2022 Martin Klissarov, Rasool Fakoor, Jonas Mueller, **Kavosh Asadi**, Taesup Kim, Alexander J. Smola, "Adaptive Interest for Emphatic Reinforcement Learning", Conference on Neural Information Processing Systems (NeurIPS)
- 2021 Rasool Fakoor, Jonas Mueller, **Kavosh Asadi**, Pratik Chaudhari, Alexander J. Smola, "Continuous Doubly Constrained Batch Reinforcement Learning", Conference on Neural Information Processing Systems (NeurIPS)
- 2021 **Kavosh Asadi**, Neev Parikh, Ronald E. Parr, George D. Konidaris, Michael L. Littman, "Deep Radial-basis Value Functions for Continuous Control", Conference on Artificial Intelligence (AAAI)
- 2021 Erwan Lecarpentier, David Abel, **Kavosh Asadi**, Yu Jinnai, Emmanuel Rachelson, Michael L. Littman, "Lipschitz Lifelong Reinforcement Learning", Conference on Artificial Intelligence (AAAI)
- 2019 Seungchan Kim, **Kavosh Asadi**, Michael L. Littman, George D. Konidaris, "Deepmellow: Removing the Need for a Target Network in Deep Q-learning", International Joint Conference on AI (IJCAI)
- 2019 David Abel, Dilip Arumugam, **Kavosh Asadi**, Yu Jinnai, Michael L. Littman, Lawson LS. Wong, "State Abstraction as Compression in Apprenticeship Learning", Conference on Artificial Intelligence (AAAI)
- 2018 **Kavosh Asadi\***, Dipendra Misra\*, Michael L. Littman, "Lipschitz Continuity in Model-based Reinforcement Learning", International Conference on Machine Learning (ICML)
- 2017 Jason D. Williams, **Kavosh Asadi**, Geoffrey Zweig, "Hybrid Code Networks: Practical and Efficient end-to-end Dialog Control with Supervised and Reinforcement Learning", Annual Meeting of the Association for Computational Linguistics (ACL)
- 2017 **Kavosh Asadi**, Michael L. Littman, "An Alternative Softmax Operator for Reinforcement Learning", International Conference on Machine Learning (ICML)

## Book Chapter

Dive into Deep Learning. Main Authors: Aston Zhang, Zack C. Lipton, Mu Li, Alexander J. Smola. I served as a co-author for the chapter on reinforcement learning.