Armin Ashrafi

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Personal Webpage | Github | LinkedIn

Profile

Machine Learning and Reinforcement Learning researcher pursuing a Master of Computing Science at the University of Alberta, specializing in Reinforcement Learning and Neurosymbolic AI. My research and development experience spans novel algorithm design in PyTorch and JAX, guided by a passion for understanding the foundations of continual lifelong learning

Education

Master of Computing Science **Expected Aug 2026**
University of Alberta *Edmonton, AB*
- Cumulative GPA: A-

Bachelor of Mathematics & Computing Science **Sep 2023**
Islamic Azad University *Tehran, Iran*
- Cumulative GPA: 3.72

Research & Teaching Experience

Research Assistant **Sep 2024 – Present**
RLAI, University of Alberta *Edmonton, AB*
- Conducting research under Prof. Adam White and Prof. Levi Lelis on Skill Acquisition and Experience Replay
- Working on implementing performant codebases for novel algorithms with JAX and PyTorch.

Teaching Assistant **Sep 2024 – Present**
University of Alberta, Dept. CS *Edmonton, AB*
- CMPUT 175 Introduction to the Foundations of Computation II (Prof. Euijin Choo)
- CMPUT 267 Machine Learning I (Prof. Dieter Buechler).
- CMPUT 466 Machine Learning Essentials (Prof. Nidhi Hegde)
- Delivered graduate-level lectures on the principles of ML and Statistical Learning for CMPUT 267
- Mentored students, graded assignments, and held office hours for graduate and undergraduate courses.

Teaching Assistant **Sep 2021 – June 2024**
Islamic Azad University, Dept. CS *Tehran, Iran*
- Introduction to Probability Theory (Prof. Mohammad Ali Fariborzi Araghi)
- Theory of Computation (Prof. Maryam Hajiesmaili).
- Foundations of Set Theory and Logic (Prof. Mohammad Ali Fariborzi Araghi)
- Delivered undergraduate-level lectures on Probability Theory and Foundations of Logic.
- Mentored students, graded assignments, and held office hours for undergraduate courses.

Technical Skills

Languages	Python (Expert), Rust (Proficient), C++ (Familiar), C# (Familiar)
ML Expertise	PyTorch (Expert), JAX (Expert), TensorFlow (Proficient), Reinforcement Learning, Scikit-learn, Pandas, NumPy, OpenAI Gym
Theoretical Background	Real Analysis, Probability and Statistics, Differential Equations
Developer Tools	Git, LaTeX, HTML/CSS, Dart and Flutter

Publications (Work In Progress)

Coreset Replay: Improving Experience replay via Coreset Construction **2025**
*Panahi P., & **Ashrafi** A., & Patterson A., & White A. & White M.* *Work in Progress, to be submitted to ICML 2026*

Learning Latent Policy Spaces with Variational Auto-encoders **2022**
***Ashrafi** A., & Lelis L. & White A.* *Work in Progress*

Professional Affiliations

Member, AI Career Accelerator Program (AICaps) **2024 – Present**
Alberta Machine Intelligence Institute (Amii) *Edmonton, AB*

Presentations & Awards

Top Student of the Year **2021**
Awarded the title of Top Student of The Year to academic excellence.

CS Student Committee member at IAU **2021**
A member of the CS Student committee responsible for student initiatives and scientific events

Selected Projects

Supermasks for Option Discovery **2025**
Course Project, University of Alberta
- Inverstigated the possibility of extracting options from pretrained neural policies.
- Used Stochastic Gradient Descent and a new method of masking to effieciently extract masks over networks.
- Tech: PyTorch, NumPy

Inverse Reinforcement Learning **2024**
Passion Project, Myself
- Explored different strategies for Inverse reinforcement learning, and reinforcement learning from human feedback
- Implemented Adversarial Inverse Reinforcement Learning
- Implemented Generative Adversarial Imitation Learning and tested it on Gridworld Environments
- Tech: PyTorch, OpenAI Gym, NumPy.

Time Discretization in Reinforcement Learning **2024**
Course Project, University of Alberta
- Investigated the influence of time discretization values on the dynamics of learning of the PPO and A2C algorithms.
- Reimplemented Classical Control environments, with different time discretization dynamics.
- Tech: PyTorch, OpenAI Gym, NumPy, Stable Baselines 3

Reinforcement Learning **2024**
Passion Project, Myself
- Implemented DQN and PPO from first-principles and tested the algorithms on OpenAI Lunar Lander
- Tech: PyTorch, OpenAI Gym, NumPy.

Using Vision to Detect Words in Audio Scripts **2023**
Undergraduate Capstone Research Project
- Trained a CNN model on a Spectrogram images of audio files for Word extraction.
- Tech: Keras-Tensorflow, Numpy

Transfer Leanrning of Vision Models for Ocular Disease Detection **2023**
Internship, Chashmyar Startup
- Designed and implemented a modified transfer learning system used for the detection of ocular diseases, in particular Diagnosing Keratitis from Fundus Images.
- Tech: Keras-Tensorflow, XGBoost

Sentiment Analysis for Instrcutor Feedback **2021**
Course Project, Islamic Azad University
- Extracted and Preprocessed a corpus of 12,000 user comments about instructor performance.
- Empoyed Bag-of-Words for feature extraction and MLPs for Sentiment Anlysis.

Relevant Coursework

Graduate (University of Alberta)
- Reinforcement Learning I (A-)
- Intermediate Machine Learning (A-)
- Neurosymbolic Programming (A-)

Undergraduate (Islamic Azad University)
- Theory of Computation (20/20)
- Foundations of Machine Learning (18/20)
- Probability and Statistics (18/20)

References

Adam White
Associate Professor
Dept. Computing Science
University of Alberta
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Levi Lelis
Assistant Professor
Dept. Computing Science
University of Alberta
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