Zaheen Farraz Ahmad

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Research Interests

My interests lay broadly in the field of **artificial intelligence** with an emphasis on the intersection of *search* and *reinforcement learning* for planning. Particularly, I am interested in how search and learning can cooperatively scale to large, non-stationary environments, and in the bounded rationality of planning agents given time and computational constraints in continual decision-making settings.

Education

Ph.D. in Computing Science, University of Alberta 2017 – 2025
Thesis:
Advisors: Michael Bowling, Levi H.S. Lelis

M.Sc. in Computing Science, University of Alberta 2013 – 2017
Thesis: *"Action Selection for Hammer Shots in Curling: Optimization of Non-convex Continuous Actions With Stochastic Action Outcomes"*
Advisor: Robert C. Holte

B.Sc.Engg. in Computer Science and Engineering, Islamic University of Technology 2008 – 2012
Graduated with Honors, GPA: 3.98/4.00

Teaching Experience

Teaching Assistant, University of Alberta 2013 – 2020
Courses: Introduction to Computing, Introduction to the Foundations of Computation II

Professional Experience

Machine Learning Consultant, AB Sciex Pte. Ltd. 2017 – 2018

Lecturer, Islamic University of Technology 2012 – 2013

Awards and Scholarships

- Graduate Research Assistant Fellowship, 2019 – 2025
- Graduate Student Teaching Award, 2018
- IUT Gold Medal Award, 2012
- IUT Scholarship, 2009 – 2012

Academic Services

Program Committee:

- 2025: TMLR, ICLR, ICML
- 2024: ICLR, ICML, NeurIPS (top 10%)
- 2023: AAAI, ICML, NeurIPS
- 2022: AAAI, NeurIPS

Vice-President, Computing Science Graduate Student Association, University of Alberta, 2015

Treasurer, IUT Computing Society, Islamic University of Technology, 2012

Organizer, National ICT Fest, Islamic University of Technology, 2012

Outreach

Presenter, Iverson Day, 2014 – 2019

Panelist, WP Wagner Panel, 2015

Talks

- "Marginal Utilities for Planning in Continuous or Large, Discrete Action Spaces", University of Alberta, 2021
- "Action Selection for Hammer Shots in Curling", IJCAI, 2016
- "AI Analytics for the Sport of Curling", University of Alberta, 2016

Refereed Publications

[1] N Milson, A Tashchilina, T Ooi, A Czarnecka, Z F Ahmad, and L J LeBlanc. "High-Dimensional Reinforcement Learning for Optimization and Control of Ultracold Quantum Gases". In: *Machine Learning: Science and Technology* 4.4 (Dec. 2023).

[2] Zaheen Farraz Ahmad, Nathan Sturtevant, and Michael Bowling. "Measuring the Solution Strength of Learning Agents in Adversarial Perfect Information Games". In: *Association for the Advancement of Aritificial Intelligence* (2021).

[3] Samuel Sokota, Caleb Y. Ho, Zaheen Farraz Ahmad, and J. Zico Kolter. "Monte Carlo Tree Search with Iteratively Refining State Abstractions". In: *Advances in Neural Information Processing Systems* 34 (2021), pp. 18698–18709.

[4] Zaheen Farraz Ahmad, Levi Lelis, and Michael Bowling. "Marginal Utility for Planning in Continuous or Large Discrete Action Spaces". In: *Advances in Neural Information Processing Systems* 33 (2020), pp. 1937–1946.

[5] Zaheen Farraz Ahmad, Robert C. Holte, and Michael Bowling. "Action Selection for Hammer Shots in Curling." In: *International Joint Conference on Artifical Intelliegence*. 2016, pp. 561–567.

[6] Tracy L. Durksen, Man-Wai Chu, Zaheen Farraz Ahmad, Amanda I. Radil, and Lia M. Daniels. "Motivation in a MOOC: A Probabilistic Analysis of Online Learners' Basic Psychological Needs". In: *Social Psychology of Education* 19 (2016), pp. 241–260.

Skills

Python, C, C++, Jax, Lua, Linux, Slurm