

Hadi Nekoei

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EDUCATION

- **University of Montreal** Montreal, Canada
Doctor of Philosophy (PhD) in Computer Science and Operational Research; GPA: 4.3/4.3 *Jan. 2021 – Current*
 - **Teaching:** Lead TA for INF8250E.
- **University of Waterloo** Waterloo, Canada
Master of Applied Science (MAsc) in Electrical and Computer Engineering; GPA: 3.95/4 *Sep. 2017 – Dec. 2019*
 - **Teaching:** Running tutorials and hands-on labs on Adaptive and Cooperative Algorithms, Probability Theory, and Advanced Numerical Methods for 500+ students.
- **Sharif University of Technology** Tehran, Iran
Bachelor of Science (BSc) in Electronics, Minor in Economics; GPA: 3.75/4 *Aug. 2012 – July. 2017*

PUBLICATIONS

- **Hadi Nekoei**, Arjun V Sudhakar, Mathieu Reymond, Miao Liu, Janarthanan Rajendran, Sarath Chandar, **A Generalist Hanabi Agent: Leveraging Language Models for Multi-Agent Collaboration**, Under review.
- **Hadi Nekoei**, Arjun V Sudhakar, Miao Liu, Janarthanan Rajendran, Sarath Chandar, **Multi-agent text-based Hanabi challenge**, ICLR 2024 Workshop GenAI4DM.
- Jesse Thibodeau, **Hadi Nekoei**, Afaf Taïk, Janarthanan Rajendran, Golnoosh Farnadi, **Fairness Incentives in Response to Unfair Dynamic Pricing**, Econometric Society Interdisciplinary Frontiers (ESIF) conference on Economics and AI+ML 2024.
- **Hadi Nekoei**, Xutong Zhao, Janarthanan Rajendran, Miao Liu, Sarath Chandar, **Towards Few-shot Coordination: Revisiting Ad-hoc Teamplay Challenge In the Game of Hanabi**, CoLLAs, 2023.
- **Hadi Nekoei**, Akilesh Badrinaaraayanan, Amit Sinha, Mohammad Amini, Janarthanan Rajendran, Aditya Mahajan, Sarath Chandar, **Dealing With Non-stationarity in Decentralized Cooperative Multi-Agent Reinforcement Learning via Multi-Timescale Learning**, CoLLAs 2023, ICLR 2022 GMS Workshop.
- Moksh Jain, Salem Lahlou, **Hadi Nekoei**, Victor Butoi, Paul Bertin, Jarrid Rector-Brooks, Maksym Korablyov, Yoshua Bengio, **DEUP: Direct Epistemic Uncertainty Prediction**, Transactions on Machine Learning Research (TMLR), 2023.
- Vincent Mai, Philippe Maisonneuve, Tianyu Zhang, **Hadi Nekoei**, Liam Paull, Antoine Lesage-Landry, **Multi-Agent Reinforcement Learning for Fast-Timescale Demand Response of Residential Loads**. AAMAS 2023, Machine Learning Journal Special Issue on Reinforcement Learning for Real Life.
- **Hadi Nekoei**, Akilesh Badrinaaraayanan, Aaron Courville, Sarath Chandar, **Continuous Coordination As a Realistic Scenario for Lifelong Learning**. ICML, 2021.
- Harm Van Seijen, **Hadi Nekoei**. et al., **The LoCA regret: A Consistent Metric to Evaluate Model Based Behavior in Reinforcement Learning**. NeurIPS, 2020.
- **Hadi Nekoei**, Benyamin Ghoghj et al., **Artificial Counselor System For Stock Investment**, AAAI 2019.
- LambdaZero team, **Generative Active Learning for the Search of Small-molecule Protein Binders**, Oral presentation at ICLR 2024 Workshop on Generative and Experimental Perspectives for Biomolecular Design.

WORK EXPERIENCE

- **Hydro-Québec Research Institute (IREQ)** Montreal, Canada
Reinforcement Learning Research Intern *May 2024 - Current*
 - **Safe RL with Industrial Constraints:** Designed Safe RL agents and a realistic simulator for remote microgrids, adhering to industry standards, which achieved a 25% reduction in fuel consumption.
 - **Supervisors:** Vincent Mai, Alexandre Blondin-Massé
- **Borealis AI, Royal Bank of Canada** Montreal, Canada
Machine Learning Research Intern *Jul 2022 - Oct 2022*
 - **Sequence Modeling for RL:** Explored Offline Reinforcement Learning through the lens of sequence modeling, introducing Self-Supervised Learning techniques tailored for Offline RL that demonstrably surpassed existing methods.
 - **Supervisors:** Tristan Sylvain, Lili Meng

- **Montreal Institute of Learning Algorithms (Mila)** Montreal, Canada
Research Engineer & Research Associate *Dec 2020 - Aug 2021*
 - **RL for Drug Discovery:** As part of LambdaZero project, I designed and implemented efficient RL agents to search in the space of molecules based on Monte Carlo Tree Search (MCTS) and Bayesian Optimization. Also, contributed to developing a new approach called DEUP for predicting epistemic uncertainty in Neural Networks.
 - **Supervisors:** Yoshua Bengio, Sarath Chandar
- **Ciena Corporation** Ottawa, Canada
Research Intern *Sep 2019 - Dec 2019*
 - **Non-linear Noise Compensation:** Designed and implemented an adaptive learning algorithm for the WaveLogic systems which improved both performance and complexity of the existing technology. **Manager:** Maurice Osullivan
- **Coding and Signal Transmission (CST) Lab** Waterloo, Canada
Graduate Researcher & Teaching Assistant *Sep 2017 - Dec 2019*
 - **Thesis:** Adaptive Compensation of Nonlinear Impairments in Fiber-Optic Communication Systems
Focus: Information Theory, Statistical Signal Processing. **Supervisor:** Amir Khandani
- **Graduate Student Association, University of Waterloo**
Finance and Economy Commissioner *Jul 2019 - Jan 2020*
 - **Responsibility:** Leading a committee to analyze local, provincial, and federal financial policies related to GSA
- **Institute for Infocomm Research (I2R), Astar** Singapore, Singapore
Research Intern *Jul 2016 - Sep 2016*
 - **Motion Detection:** Utilized Machine Learning to design an efficient WLAN connection for a client moving between Access Points with sensor assistance and real-time WLAN data transfer. **Signal Processing:** Designing contactless HR and BR sensing systems to continuously track physiological signals
 - **Supervisor::** Chin Keong Ho

AWARDS AND HONORS

- Canada Graduate Scholarship-Doctoral (CGS D), NSERC 2024. (\$105000)
- Bourses de doctorat en recherche (B2X), FRQNT 2024. (\$67000)
- Excellence scholarship of the DIRO competition, University of Montreal, 2022.
- Reinforcement Learning Fellowship for Drug Discovery project, Mila, 2020.
- Faculty of Engineering Award (FOEs) for outstanding performance, University of Waterloo, 2019.
- International Masters Student Award, University of Waterloo, 2017.
- Singapore International Pre-Graduate Award (SIPGA), 2016.
- Honored to become a member of National Elite Foundation of Iran, 2012.
- Ranked 30th among 270,000 participants in the Iran University Entrance Exam, 2012.

PROFESSIONAL ACTIVITIES

- Co-organizer, Conference on Lifelong Learning Agents (CoLLAs 2022).
- Co-organizer, ChandarResearch Lab (CRL) Summer Symposium, (2021).
- Program Committee: CoLLAs 2022, NeurIPS 2021 and 2022 Workshop on Offline Reinforcement Learning.

TALKS

- **Introduction to Offline Reinforcement Learning:** Borealis AI, August 2022, slides.
- **Lifelong Hanabi:** Spotlight talk, NERL workshop, ICLR 2021, video.
- **An Introduction to RL Tutorial:** Center of Analytical Expertise, Vidéotron, Dec 2020

PROGRAMMING SKILLS

- **Programming Languages:** Python, C/C++, Matlab.
- **Programming Libraries:** Pytorch, Jax, TensorFlow, Keras, Ray, NumPy, SciPy, Matplotlib, Scikit-learn.

MENTORING

- **Soma Karthik, PhD student in École Polytechnique de Montréal (Sep 2021 - Dec 2021):** During RL course (INF8953DE) at Poly, Soma explored the emergent behaviors in multi-agent RL as the result of peer reward gifting.
- **Vignesh Rangarajan, Mission San Jose High School (Jun 2021 - Aug 2021):** Vignesh implemented different methods on multi-arm bandits and developed an interactive tool for them.