Matin Aghaei

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HomePage | Linkdin | GitHub | Google Scholar

Research Interests

Reinforcement Learning | Optimization | Quantitative Trading | Robotics | Multi-Agent Systems

Education

Master's in Computer Science — Sep. 2022 – Present
Simon Fraser University — *Burnaby, BC, Canada*
- GPA: 3.5 /4

Bachelor's in Computer Engineering — Sep. 2017 – Apr. 2022
Amirkabir University of Technology — *Tehran, Iran*
- GPA: 18.33 /20

Research Experience

Graduate Research Assistant — Jan. 2023 – Present
Supervisor: Sharan Vaswani — *Simon Fraser University*
- Proved Convergence Guarantees for Policy Gradient Algorithms
- Designed Entropy Regularized RL Algorithms
- Experimented Bandits and RL Algorithms

Undergraduate Research Assistant — Mar. 2021 – Apr. 2022
Supervisor: Mehdi Ebadzadeh — *Amirkabir University of Technology*
- Implemented Deep RL Algorithms
- Compared Deep RL Algorithms for Portfolio Management [code]

Publications

- "On the Convergence Rates of Log-Linear Policy Gradient Methods" [PDF], **Matin Aghaei**, Anderson de Andrade, Qiushi Lin, Sharan Vaswani. In preparation.
- "Practical Principled Policy Optimization for Finite MDPs" [PDF], Michael Lu, **Matin Aghaei**, Anant Raj, Sharan Vaswani. "Optimization for Machine Learning" workshop, NeurIPS, 2023 **(Oral Presentation)**.

Selected Projects

Computer Vision
- Designed and trained CNN models to perform Object Detection, Semantic Segmentation, and Instance Segmentation on the iSAID dataset. [code]

Robotics
- A robot controller implemented in ROS, which constructs an obstacle map using VFH algorithm and avoids the obstacles in a Gazebo environment using a polar histogram [code]

Information Retrieval
- A search engine for Persian language using inverted index and TF-IDF [code]

Honors & Awards

- Paper accepted for an oral presentation **(top-5% contribution)** in NeurIPS OPT Workshop, 2023
- Ranked **top 2%** among more than 150,000 students in the Iranian University Entrance Exam in Engineering and Applied Mathematics, 2017
- Advanced to the 3rd stage of the Iranian National Olympiad in Informatics (**Only 80 students** reached this stage), 2015

Skills

Programming Languages: Python, Java, C, C++, MATLAB, VHDL, SQL, JavaScript
Developer Tools: Git, Numpy, Scipy, TensorFlow, PyTorch, Pandas, Matplotlib