Aida Afshar

Curriculum Vitae

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Research Interests

- **Sequential Decision Making**
- **Reinforcement Learning**
- **Foundation Models**

Education

Boston University — Boston, MA, USA
PhD - Computer Engineering — 2023–current

Sharif University of Technology — Tehran, Iran
Bachelor of Science — 2018–2023

- Major: Applied Mathematics
- Minor: Computer Science

Research Experience

DeLF: Designing Learning Environments with Foundation Models — Boston, MA
[Under Review] — Fall 2023

- We propose a method named DeLF: Designing Learning Environments with Foundation Models, that employs Large Language Models to design and codify the user's intended learning environment. We show in experiments that DeLF can obtain executable environment codes for the corresponding RL problems.
- Link to paper preprint

A Reinforcement Learning Approach to Lightning Network Fee Policy — Tehran, Iran
Bachelor Thesis at Sharif University of Technology — Fall 2021–Fall 2022

- Payment Channel Networks are decentralized transaction mechanisms among a large number of users. We proposed a dynamic fee-setting environment that can suggest a profitable fee policy for payment channel owners. This work facilitates the use of RL in novel crypto-economic applications.
- Link to paper preprint
- Link to GitHub repo

Reward Design of user-in-the-box model for Trackpad Application — Espoo, Finland
Research Internship at Aalto University — August 2023

- The ultimate goal of this project is to define rich behavioral data for training from an artificial agent with a human biomechanical model. We used a simulated skeleton named user-in-the-box, which is a Mujoco-based biomechanical model. We designed and added the scene for the trackpad application in the simulator, and proposed the reward function that successfully leads to the intended behavior.
- Link to presentaion slides

– Link to Trackpad Application video demos

Hierarchical Potential-based Reward Shaping from Task Specifications Vienna, Austria
Research Internship at Vienna University of Technology (TU Wien) Summer 2022

– *HPRS* is a hierarchical, potential-based reward-shaping approach that tries to automate the reward definition by formalizing the task as a set of safety, target, and comfort requirements using temporal logic. In this project, we implemented this method for HighwayEnv, an RL environment for decision-making in autonomous driving.

– Link to HPRS GitHub repo

– Link to HPRS paper preprint

Awards

- Srinivasa Krishnamurthy PhD Fellowship Fall 2023
  - College of Engineering, Boston University
- Boston University Distiguished Computer Engineering Fellowship Fall 2023
  - Department of Electrical and Computer Engineering, Boston University
- Third place in !Optimizer Competition of SOAL Optimization Lab Summer 2021
  - Department of Mathematical Sciences, Sharif University of Technology

Skills

- **Programming:**
  1. Julia
  2. Python
  3. Java
  4. C++
  5. Matlab
- **Optimization:**
  1. JuMP
  2. MathOptInterface
- **ML:**
  1. PyTorch
  2. TensorFlow
  3. Keras
- **Web:**
  1. HTML/CSS (Basic)
- **Tools:**
  1. LaTeX
- **Techs:**
  1. Git

Languages

- **English:** Proficient (TOEFL iBT: 107/120)
- **Persian:** Native

References

References are available upon request.