ZAHRA PARHAM

Curriculum vitae last updated on January 10, 2022

5235 Saranac, H3W 2G5. ◇ +1 (438) 765 504

RESEARCH INTERESTS

- **Explainable Reinforcement Learning**
- **Deep Reinforcement Learning**
- **Deep Learning**

EDUCATION

Master Computer Engineering- Thesis-based *2021-2023*
Polytechnique Montreal, Montreal, Canada
Supervisor: Prof. Quentin Cappart

Mitacs Scholarship(iternship) - August 2021- present

Bachelor of Science in Computer Science *2015-2020*
Amirkabir University of Technology(Tehran Polytechnic), Tehran, Iran
CGPA: 3.55/4
Last Two Years GPA(71 Credits): 3.73/4 Selected Courses [1]

RESEARCH EXPERIENCE

Design explainable AI-based framework for bots in multiplayer video games. 2021- present
Master's thesis, Supervisor: Dr. Quentin Cappart

· designed a solution based on data mining algorithms (i.e., association rules) for understanding the behavior of an intelligent agent.
· plug this algorithm inside an agent trained with reinforcement learning.

Deep Double Q-Learning for Continuous Control 2021- Present

· The main objective is to improve the result of "Deep Radial-Basis Value Functions for Continuous Control" article by using the impact of the Double Q-learning algorithm to prevent the Radial-Basis Value function algorithm from overestimating the reward.

WORK EXPERIENCE

Research Intern 2021 - present
Stockholm Syndrome

· Develop an innovative pipeline to model the behavior of human players based on previous gaming histories.
· Train bots that are able to mimic the modeled behaviors with high accuracy. Develop an interpretable model to access the rationale behind the bot's decisions.

Data Developer 2019 - 2020
Snapp Company

[1] *Introduction to Computer and Programming : A*;Statistics and Probability 1 : *A* ; *Foundation of Matrix and Linear Algebra : A*; Foundation of Combinatorics : A^+ *Linear Optimization : A* Foundation of Numerical Analysis : A^+ *Database :* A^+ Principles of Computer Systems : A^+ *Computer Networks :* A^+ Compiler : A^+ *Principles of Operating Systems :* A^+ Numerical Linear Algebra : A^+ *Numerical Methods for Linear Algebra(Master's Course) :* A^-

- Wrote SQL queries to aggregate data
- Performed business analysis and wrote SQL scripts to analyze data and parse to Excel.
- Generated ad-hoc to provide visible data for data analysts and business using SSRS and Power Bi
- Developed ETL pipeline in python
- Developed Clickhouse Data Pipeline for Real Time Analysis and Reporting
- Developed Powerbi/Superset/Grafana Tech Stack for Visualization and advanced reporting and dashboard analysis
- Worked on Clickhouse, MySql, Sql Server, BigQuery

Web Developer December 2017-May 2018
bimebazar

- The job partially consisted of modeling insurance products
- Self taught Django and React.JS to build websites

PROJECTS

Kaggle Competition Fall 2021
Machine Learning Project

- you can read our report related to this competition here

Regularization and Feature Selection¡¿ in Least Squares Temporal Difference Learning
Fall 2021
Reinforcement Learning Project

- This is Python implementations of Least Angle Regression Temporal Difference (LARS-TD) algorithm and Least-Squares Temporal Difference (LSTD).

Multi-Agent Deep Reinforcement Learning 2019 - 2020
BSc Project

- Addressed pursuit-evasion problem with multi-agent deep reinforcement learning

Deep Neural Network for Image Classification June 2020
deeplearning.ai Course

- Built a deep network, and applied it to cat vs non-cat classification
- The first course of Deep Learning Specialization by deeplearning.ai

Rescue virtual robot Fall 2018
Computer Science Robotics Lab

- The main objective was to prevent the robot from getting stuck next to the walls while crossing.
- We benefited Gazebo for 3D simulation. As for developing the robot and its model, we utilized ROS and P3AT respectively.

Linear Algebra Project Jan 2019 - July 2019
Numerical Methods for Linear Algebra(Master Course)

- Solved a tridiagonal Toeplitz and block-Toeplitz matrix with Jacobi and Gauss-Seidel and SOR methods.
- Investigated the convergence of several iterative methods

Created a website for a company Sep 2018
Freelance Project

· My first ReactJS website for my freelance client.

Birthapp: An application that helps you buy birthday gifts Jan 2018 - July 2018
Software Engineering Course Project

· This project is a platform on which people can follow each other while proposing a list of their most desired birthday gifts.
· The application was Developed using Scrum Methodology for Agile Software Development.
· The coursework required 5 presentations throughout the semester which included a 5-minute startup pitch presentation and the presentation of the first MVP(Minimum Viable Product).

HONORS AND AWARDS

4th Place - RoboCup Asia-Pacific 2018 winter 2018
Math and Comptuer Science Faculty

· Field: Rescue Simulation Virtual Robot
· Team: SOS CS Team

Ranked Within the Top 1% (among 300,000 students) in Iranian University Entrance Exam Jul 2015
Tehran, Iran

· The competition is intense since it is the only means to gain admission to universities.

SKILLS

Programming Languages	C/C++, Python, Java, Matlab
Web Technologies	HTML, CSS, Javascript, MySQL, SQL Server, Django, Reactjs
Libraries	numPy, Pandas, TensorFlow, PyTorch Scikit-Learn, Keras, Matplotlib
Robotics	Robot Operating System(ROS), Gazebo
Miscellaneous	LaTeX, Jupyter, Git, GAMS

References, further information, and proofs are available upon request