# Erfan Miahi

Edmonton, Canada

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## EDUCATION

**University of Alberta** **Edmonton, Canada**
*M.Sc. in Computing Science* *Jan 2021 - present*

- **Supervisors:** ***Martha White & Marlos C. Machado***
- **Courses:** Reinforcement Learning II (CMPUT 609), Empirical Reinforcement Learning (CMPUT 607), Real-Time Policy Learning (CMPUT 653), Representation Learning for Reinforcement Learning (CMPUT 605)

**University of Guilan** **Rasht, Iran**
*B.Sc in Computer Engineering* *Sep 2015 - Aug 2019*

- **CGPA:** 19.43/20
- **Ranked 1st in class**
- **Abrishamchian Reward** (Awarded for graduating with the highest distinction among all students of the University of Guilan)

## WORK EXPERIENCE

**Student Contractor** **Edmonton, Canada**
*Amii* *Nov 2021 - present*

I have contributed to the Startup Team as part of the program called SCALE AI: Supply Chain West through assisting in **consulting startups for coming up with better ML solutions**.

**Front-end Developer** **Rasht, Iran**
*Nila Software Group* *Oct 2016 – Nov 2017*

I designed a website for introducing decorations and selling appliances using Angular framework.

## KEY SKILLS

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|---|---|
| **Programming Language** | Python, C++, Java, JavaScript, TypeScript |
| **ML Framework** | PyTorch, TensorFlow |
| **Cloud Services** | Google Cloud, Compute Canada |
| **Web Development** | Django, Flask, Angular, React, HTML, CSS |
| **Operating Systems** | Windows, GNU/Linux (Ubuntu & Fedora), macOS |
| **Extra Tools** | MySQL, Vim, Git |
| **Strong Background in** | ML and Deep Learning, RL, Mathematics, Data Structures and Algorithms |

## SELECTED PROJECTS (*Extra Projects on GitHub*)

**Assignments of deep RL course by Sergey Levin** TensorFlow/PyTorch

- Solved its assignments that were originally designed in TensorFlow
- Completely altered the code and implemented another version of them in PyTorch

**Proposing a new soft-greedy operator for exploration**

- Implemented a codebase for running a large set of deep RL experiments from scratch in PyTorch
- Designed a set of experiments that clearly showed the advantages of this new operator for exploration
- Ran a large set of experiments on simple OpenAI gym environments as well as 8 Atari Environments

**Investigating the efficacy of the representations learned in deep RL for generalization**

- Implemented several auxiliary losses, including ATC and Laplacian loss, for value-based deep RL algorithms
- Proposed, designed, analyzed, and ran more than $10,000$ CPU and 300 GPU experiments on weekly basis

## PUBLICATIONS (*Google Scholar*)

**Investigating the Properties of Neural Network Representations in Reinforcement Learning**
Han Wang, Erfan Miahi, Martha White, Marlos C. Machado, et al. Paper
*Under review in IEEE Transactions on Pattern Analysis and Machine Intelligence*

**Genetic Neural Architecture Search for automatic assessment of human sperm images**
Miahi, Erfan, Seyed Abolghasem Mirroshandel, and Alexis Nasr Paper
*Published in Expert Systems and Applications*

**Effect of deep transfer and multi-task learning on sperm abnormality detection**
Amir Abbasi*, Erfan Miahi*, Seyed Abolghasem Mirroshandel Paper/Code
*Published in Computers in Biology and Medicine Journal*

**Scalable Transfer Evolutionary Optimization: Coping with Big Task Instances**
Mojtaba Shakeri, Erfan Miahi, Abhishek Gupta, Yew-Soon Ong Paper/Code
*Published in IEEE Transactions on Cybernetics Journal*

## LEADERSHIP EXPERIENCES & VOLUNTARY ACTIVITIES

**Vice Chairman of the Modeling and Artificial Intelligence Committee** **Rasht, Iran**
*Brain and Cognition Association - University of Guilan* *Aug 2018 – Sep 2019*

- Gave lectures on the topics of artificial intelligence and neuroscience
- Organized events and symposiums to increase the knowledge of the public about cognitive science

**Dean** **Rasht, Iran**
*Rasht School of AI* *Oct 2018 – present*

- Established an artificial intelligence learning community in the city of Rasht for the first time
- Organized five seminars and lectured in four of them (Slides)
- Designed a learning path for students who want to learn ML and Deep Learning
- Have been mentoring several students who are motivated to pursue artificial intelligence and computational neuroscience (My current mentee)

**RL Social Organizer** **Remote**
*ICML 2021*

## TEACHING EXPERIENCE

**University of Alberta** **Edmonton, Canada**
*Teaching Assistant, Basics of Machine Learning* *Jan 2021 - Apr 2021*

**Instructor**: Martha White

- Prepared and presented two seminars on using python for ML and data visualization
- Graded and improved the assignments of more than 100 students

**Teaching Assistant Experiences at the University of Guilan:** Principles of Data Mining, Principles of Computational Intelligence (A tutorial designed by me for the course), Algorithm Design, Data Structures, Advanced Programming, Principles of Computer & Programming

## AWARDS AND ACHIEVEMENTS

- **Ranked 6th in World Robot Challenge 2018 (received travel grant to Japan)**
- **Top Researcher in Computer Engineering Group**
- **Tuition Waiver, B.Sc, University of Guilan**
- **National Organization for Development of Exceptional Talents (NODET)**
- **Honorable Mention in ACM/ICPC 2016**
- **Ranked 1st in international movement festival- special section**

## LANGUAGES

**English** - Fluent **Persian** - Native