

# Sahand REZAEI-SHOSHTARI

## AI | Robotics Researcher

@ sahand.rezaei-shoshtari@mail.mcgill.ca

🔗 sahandrez.github.io

🐙 github.com/sahandrez

in linkedin.com/in/sahand-rezaei

📍 Montreal, Canada

## 🎒 EDUCATION

Present Sep. 2020	PhD, SCHOOL OF COMPUTER SCIENCE, MCGILL UNIVERSITY, Montreal, Canada Supervisors : David Meger, Doina Precup
Dec. 2019 Sep. 2017	Master of Engineering - Thesis, MCGILL UNIVERSITY, Montreal, Canada Supervisors : Inna Sharf, David Meger CGPA : 4.00/4.00 Thesis : Learning Manipulator Dynamics for Control and Interaction Inference
Sep. 2016 Sep. 2012	Bachelor of Mechanical Engineering, UNIVERSITY OF TEHRAN, Tehran, Iran Supervisor : Masoud Shariat Panahi CGPA : 3.98/4.00 Thesis : Online Path Planning for a Mobile Robot in Dynamic Environments using Reinforcement Learning

## 🎒 WORK EXPERIENCE

Present Mar. 2020	Research Intern, SAMSUNG AI CENTRE, Montreal, Canada <ul style="list-style-type: none"><li>➢ Multimodal generative models for visuotactile perception</li><li>➢ Deep reinforcement learning for 5G networks</li></ul>
Mar. 2020 Jan. 2020	AI Programmer, UBISOFT LA FORGE, Montreal, Canada <ul style="list-style-type: none"><li>➢ Deep reinforcement learning for automated video game testing</li></ul>
Aug. 2019 Mar. 2019	Research Intern, SAMSUNG AI CENTRE, Montreal, Canada <ul style="list-style-type: none"><li>➢ Object detection neural networks for human hand-wave motions</li><li>➢ Implemented the vision stack on-board of a mobile robot using Google Edge TPU</li></ul>
Apr. 2019 Sep. 2017	Teaching Assistant, MCGILL UNIVERSITY, Montreal, Canada <ul style="list-style-type: none"><li>➢ Courses : System Dynamics and Control, Numerical Methods, Machine Element Design</li></ul>

## 🎓 PUBLICATIONS

- 2020 Rezaei-Shoshtari, Sahand and Meger, David and Sharf, Inna. "Learning the Latent Space of Robot Dynamics for Cutting Interaction Inference". In *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE, 2020.
- 2019 Rezaei-Shoshtari, Sahand and Meger, David and Sharf, Inna. "Cascaded Gaussian Processes for Data-efficient Robot Dynamics Learning". In *2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE, 2019.

## 🎓 CERTIFICATIONS

- Aug. 2019 Deep Learning and Reinforcement Learning Summer School in Edmonton, Canada

## SKILLS

---

Programming	Python, C++, C#, MATLAB, Simulink
Machine Learning Frameworks	PyTorch, TensorFlow, GPyTorch, GPFlow
Platforms	ROS, Docker
Robotic Software	Gazebo, MoveIt!, RViz, OpenCV, Bullet
Other Software	Unity 3D, SolidWorks, $\text{\LaTeX}$ , Microsoft Project

## SELECT PROJECTS

---

### RLBASE : IMPLEMENTATIONS OF RL ALGORITHMS

2020

 [github.com/sahandrez/rlbase](https://github.com/sahandrez/rlbase)  [Blog Post](#)

- > Minimalistic Deep RL implementations as an educational resource.
- > Fork of OpenAI Spinning Up with additional algorithms.

### LEARNING QUADROTOR CONTROLS USING DATA-EFFICIENT MODEL-BASED REINFORCEMENT LEARNING

2017

 [github.com/sahandrez/quad\\_pilco](https://github.com/sahandrez/quad_pilco)  [Simulation Videos](#)

- > Implemented PILCO (Probabilistic Inference for Learning Control) on a quadrotor to learn the control policies under the loss of an actuator
- > Successfully learned to hover with only three actuators

### MOTION PLANNING AND CONTROL UTILITIES FOR KINOVA JACO 2 ROBOT

2017-2018

 [github.com/sahandrez/jaco\\_control](https://github.com/sahandrez/jaco_control)

- > Worked on the full stack of Kinova Jaco 2 robot
- > Implemented impedance control, feedforward torque control, and velocity control utilities
- > Implemented motion planning utilities for joint space and Cartesian space planning

## HONORS AND AWARDS

---

Nov. 2019	IROS Student and Developing Countries (SDC) Travel Award (\$600), IEEE/RSJ IROS 2019
2017-2018	Grad Excellence Award (\$5000) in Mechanical Engineering, McGill University
2015-2016	Faculty of Engineering Award, Ranked 2 <sup>nd</sup> , University of Tehran
2014-2015	Faculty of Engineering Award, Ranked 3 <sup>rd</sup> , University of Tehran
2012-2012	Nationwide University Entrance Exam, Ranked 19 <sup>th</sup> , Iran

## EXTRACURRICULAR ACTIVITIES

---

Sep. 2019	Volunteer, 2019 Montreal AI Symposium in Montreal, Canada
May 2019	Volunteer, 2019 IEEE International Conference on Robotics and Automation (ICRA) in Montreal, Canada

## REFERENCES

---

References available upon request.