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Department of Computing Science,  
University of Alberta, Edmonton,  
Alberta

# Hadi Rohani

## Computer Science Researcher

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### CAREER OBJECTIVE

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- More than three years of experience working with python programming and algorithm development
- Proficient in data visualization with **Tableau**, web development with **django** in python, **TypeScript**, **Node.js**, **Angular**
- Highly skilled in developing machine learning tools and bring data to the heart of business development
- Team-player with strong communication and leadership skills
- With more than 3 years of working for Canadian and European companies
- I have a Canadian Permanent Residency status and so I am eligible to work full-time in Canada

### SKILLS

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<b>Tools and Languages</b>	C/C++, Python, Git, Linux, TypeScript, Node.js, Json API, database and SQL, Working with AWS platform and ComputeCanada
<b>Quantitative Research</b>	Computer networks, algorithm, Markov process, data structure, machine Learning, deep learning, and reinforcement learning
<b>Organizational skills</b>	Team-oriented, public speaker, diversity and inclusive advocate, active listener, program planner and administrator
<b>Communication</b>	English (fluent speaker), Persian (fluent speaker), German (reading and writing)

### PROJECTS

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#### Sizing of Charging Stations Co-located with Solar Panel and Battery Storage

*A business project in collaboration with ATCO Electric company, Alberta, Canada*

- Held several business meetings since the start of the project and analyze the problem in depth.
- Developed a problem formulation and communicated with the business team making sure the problem is properly translated into algorithm and math
- The project was then migrated into a programming in Python
- Several edge cases were considered and tested
- The final version of the work was verified based on the real data provided by ATCO company
- The report was presented as a whitepaper to the industry partners (Alberta power industry simposuim)

#### Reddit Clone Web Application

*Web Application with Angular*

- Developed an application that allows users to post an article and a system is available for upvoting/downvoting
- The code follows ES6 developed using TypeScript

#### Breast cancer diagnosis using Machine Learning

*Supervised Machine Learning using classification methods from Scikit-learn python*

- Implemented 7 different classification ML models to compare diagnostic accuracy.

#### Applied ML using real data

- Predict the salary of a company given some features in a real dataset using regression models from scikit-learn library.
- Develop an API to train a machine learning model to predict the job positions of a company based on available features in their dataset using decision tree regression model from scikit-learn Python.

#### C Coding in Linux

*Operating Systems*

- Developed a C programming code that shows the virtual memory allocation of a running process in Linux. [\[C Code\]](#)
- I wrote a C code to model the TCP communication between a server and several clients. This communication achieved via local and external IP addresses.
- Working with Valgrind in C/Linux.

## Simulator for Queueing systems [Python Code]

### Computer Networks & Performance

- I developed an algorithm using various data structures including doubly linked lists, tensors, hash tables to model a queueing system
- An object-oriented programming API was developed to represent users and servers.
- I improved the coding so that it would have the best time complexity

## WORK EXPERIENCE

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### Machine Learning Researcher

Department of Computing Science, University of Alberta

Sep 2020 — Present

Edmonton, Alberta

- Developed an API to solve optimization problems with `cvxpy`, `cvxopt` `python` for sizing of charging stations co-located with renewable energy resources. Real data is used as training data to evaluate the charging system modeling. Machine learning tools (`scipy`, `sklearn`, `pandas`) are used to extract queueing system metrics by learning from the data.  
supervisors: **Dr. Omid Ardakanian** and **Dr. Petr Musilek**
- Analyzing differential privacy in Machine learning methods for smart meters. A team-led by me worked on a machine learning API for home smart meters to evaluate differential privacy mechanism.  
supervisor: **Dr. Nidhi Hegde**
- Led a team-based project for APIC Hackathon competition where an API was developed in `python` to detect rooftop from Google Maps using computer vision tools and recommend the best sizing requirement for installation of solar panel. The team worked interactively through `git`.
- As a lab instructor, I developed an API in `python` to identify the anomaly in student's performance based on their experiment results and reports.

### Python Teaching Assistant

Department of Computing Science, University of Alberta

Sep 2020 — Dec 2020

Edmonton, Alberta

- Worked collaboratively with a team of TAs to arrange the content of a 2nd-year undergraduate course on `python`.
- Provided solutions to the assignments and marked over 200 `python` coding assignments using automations (i.e `makefile`, using `python` API, `bash` command line etc.)
- Supervised undergraduate students with their `python` coding to improve their skills in coding and time complexity.
- Provided daily reports through `git`.

### Data Science Researcher

Universität Stuttgart

Dec 2019 — Jun 2020

Stuttgart, Germany

- I Led three data science and probability theory projects on implementation of novel density estimation in power system analysis and using machine learning algorithms evaluate the feasibility of electric vehicle-to-grid power transaction.
- Supervised two computer science master students with their projects on smart energy systems.

### Test Tech Lead

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Jul 2019 — Nov 2019

Spruce Grove, Alberta

- Led the Test Department to detect faults and short circuits in transformers using experiment data.
- Organized the testing environment in the department and made a structured data acquisition to capture/record/reuse the experiment data.
- I developed an API in MS Excel to verify that running experiments on transformers follow all standards.

### Senior Teaching Instructor

Department of Electrical & Computer Engineering, University of Alberta, Edmonton, Canada

Sep 2018 — Sep 2019

- Supervised 4 teaching assistants on delivering their work for a course in electric circuits
- Presented lectures on a weekly basis and clarified materials in the textbook
- Led students to solve their problem by providing hints and insights

## Electrical Engineering Researcher

Sep 2012 — Sep 2015

Department of Power & Control Engineering, Shiraz University, Shiraz, Iran

- Worked at Smart Grid Laboratory at Shiraz University on the issues related to probability modeling of renewable energy sources.
- Developed stochastic models to apply to random events happening in a real power system.
- Held regular meetings with the clients from the electric regional company in Shiraz to understand our partners problem and addressing the problem at our best accuracy.
- Used the real world examples and data to evaluate our proposal on probabilistic modeling of the power system.
- The result of my work is published in a journal article [[see publication](#)].

## Solar Panel Design Engineer

Jan 2012 — May 2012

Pars Rassam Electric

- Worked on a contract project to equip rural road signs with solar-powered LEDs
- Developed a prototype for the solar electrified LED to be mounted on road signs
- We had regular meetings with the business client
- As a contractor, we had limited time to deliver the project and so time management was a key success for me
- The project was deployed on a rural road with more than 100 signs

## EDUCATION

**M.Sc. in Computer Science**, University of Alberta, Edmonton, Canada

Sep 2020 - Sep 2022

**M.Sc. in Electrical Engineering**, University of Alberta, Edmonton, Canada

Sep 2016 - Sep 2019

**B.Sc. (with distinction) in Electrical & Computer Engineering**, Shiraz University, Shiraz, Iran

Sep 2009 - Sep 2013

## RELATED COURSES

Computer Networks & Performance	Operating Systems (Linux)	Privacy in Machine Learning	Algorithms II
Machine Learning A-Z (Udemy)	Data Science w/ Python (IBM)	Data structure	Neural Networks
Online optimization	Convex optimization (Stanford)	Economics & Finance in Engineering	

### Certificates:

• Machine Learning with Andrew NG - <b>Coursera</b>	Jan 2022
• Web Application with Angular - <b>CodeWithMosh.com</b>	Dec 2021
• Artificial Intelligence Foundations: Machine Learning - <b>LinkedIn</b>	Dec 2021
• Version Control System, git - <b>github</b>	Sep 2020
• Deep Learning A-Z - <b>Udemy</b>	July 2019
• Machine Learning A-Z - <b>Udemy</b>	May 2019
• Data Science with Python - <b>IBM Online</b>	April 2019

## ACTIVITIES & ACHIEVEMENTS

1st runner up APIC-Hackathon	Jul 2021
Ranked among the top 100 graduate students to receive Vanier Scholarship	Winter 2018
Reached by more than 6000 users in Stackoverflow where I hold 200 reputation points.	-
Active programmer in <a href="#">leetcode.com</a> by solving algorithms in Python and C.	-
President and CEO of a non-profit Iranian community based in Edmonton	May 2017 - May 2018
Recipient of Graduate Recruitment Scholarship (\$ 15000)	Sep 2020 - Sep 2021
Travel Award grant from GSA (\$ 500) and FGSR (\$ 2000)	Jul 2017