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Department of Computing Science,
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Alberta

Hadi Rohani

Computer Science Researcher

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Career Objective

- Three years of experience working with python programming and algorithm development
- Proficient in data visualization with **Tableau**, **Seaborn**, **plotly**, and **matplotlib** from Python
- Highly skilled in developing machine learning tools and conducting comprehensive report as a data scientist
- Team-player with strong communication and leadership skills gained from real experience
- 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

Tools & Languages	C, Python, Git, Linux, SQL, Worked with cloud computation and ComputeCanada
Quantitative topics	Computer networks, algorithm, Markov process, data structure, machine Learning, deep learning
Organizational skills	Team-oriented, public speaker, diversity and inclusive advocate, active listener, program planner and administrator
Communication	English (fluent speaker), Persian (fluent speaker), German (reading and writing)

Projects

Drug review - A Data Analysis [Python Code]
Supervised a data analysis using natural language processing and machine learning tools to analyze reviews on drugs

- Leveraged the data by using **Pandas** and visualization tools to demistify the pattern in the data.
- Developed **Wordcloud** package for NLP implementation and sentiment analysis
- Deployed Xgboost machine learninng to evaluate the positive/negative sentiment in the reviews and evaluated the trained model and benchmarked the results.

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.
- Devleloped 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)

Breast cancer diagnosis using Machine Learning [Python Code]
Supervised Machine Learning using classification methods from Scikit-learn python

- Implemented 7 different classification ML models to compare diagnostic accuracy
- Open source code and data analysis report is available

Rooftop solar panel sizing detection using deep learning models [**Hackathon 1st runner up winner!**]
Alberta power industry consortium (APIC) 2021 Hackathon Competition

- Led a team of 4 programmers for APIC Hackathon competition
- We developed an API to detect feasible rooftop area from Google Maps using computer vision tools and recommend the best sizing requirement for installation of solar panel.
- Deep learning with hidden layers of CNN using **tensorflow** has been used to classify images of different types of rooftops.
- The team worked interactively through `git`.

Other Applied ML small projects

- 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 [C Code]

Operating Systems

- Developed a C programming code that shows the virtual memory allocation of a running process in Linux.
- 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.

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

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

Machine Learning Researcher **Sep 2020 — Present**

Department of Computing Science, University of Alberta, *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**
- 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 **Sep 2020 — Dec 2020**

Department of Computing Science, University of Alberta, *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 **Dec 2019 — Jun 2020**

Univeristy of Stuttgart, *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 **Jul 2019 — Nov 2019**
Surplec HV, *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 **Sep 2018 — Sep 2019**
Department of Electrical & Computer Engineering, University of Alberta, *Edmonton, Canada*

- 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, *Shiraz, Iran*

- 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

Graduate Student in Computer Science, *University of Alberta, Edmonton, Canada* Sep 2020 - Sep 2022 [Expected]
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 - **Coursera** Jan 2022
- Web Application with Angular - **Codewithmosh.com** Dec 2021
- Artificial Intelligence Foundations: Machine Learning - **LinkedIn** Dec 2021
- Version Control System, git - **github** Sep 2020
- Deep Learning A-Z - **Udemy** July 2019
- Machine Learning A-Z - **Udemy** May 2019
- Data Science with Python - **IBM Online** April 2019

Activities & Achievements

1st runner up APIC-Hackathon	Jul 2021
Ranked among the top 100 graduate students to recieve Vanier Scholarship	Winter 2018
Reached by more than 6000 users in Stackoverflow where I hold 200 reputation points.	-
Active programmer in leetcode.com 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
Recipient of the Dean's Honor Award as the top BSc Electrical Engineer Student among 164 undergrads	Jul 2013