

FARBOD FARHOUR

SOFTWARE / ML ENGINEER

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SKILLS

Python

Fluent, 5+ years of experience. I use Python for:

- **Deep learning and machine learning solutions**
- **Numerical programming**
- **Data visualization**
- **Natural language processing**
- **Natural language understanding**
- **Backend development**
- **Image processing**

Deep Learning and Machine Learning

Fluent, 3+ years of experience. Whenever needed, I use these libraries to implement deep learning or machine learning solutions:

- **PyTorch**
- Keras
- Scikit-learn
- TensorFlow

Numerical Programming

I prefer using Python (instead of using Matlab or R) for numerical programming by using these libraries:

- **Pandas**
- Matplotlib
- SciPy
- Numpy

Data Visualization

I extensively use these Python libraries for practically every data visualization need:

- **Pandas**
- Matplotlib
- Seaborn
- Plotnine (ggplot)
- Plotly
- Pygal

PROFILE (LAST UPDATED: FEBRUARY 2022)

A self-starter and life-long learner Software/ML engineer with 9+ years of successful experience in research and development in startup companies and academic societies. Results include:

2021: Proposed and developed a weak supervision-based framework to improve chatbots for code repositories (my thesis, the framework, and the publication for M.Sc. in Computer Science, Montreal, Canada). **Result:** 44% increase in model's performance and an under-submission paper.

2020: Designed and developed a framework for automated testing of deep learning libraries (i.e., TensorFlow, PyTorch, Keras, and Theano). **Result:** A comprehensive study on oracle approximation assertions implemented in popular deep learning libraries.

2019: Proposed, designed, and developed a Twitter-specific online platform for collecting and analyzing tweets from 500,000+ targeted Twitter users using artificial intelligence and natural language processing (NLP). **Result:** Improved insights using real-time gathered and analyzed targeted tweets.

2018: Devised and developed an online platform for automated deployment and management of servers and related services on various cloud providers (i.e., Amazon AWS, Google Cloud, DigitalOcean, and Vultr). **Result:** An automated, time-saver, cost-effective and secure solution for managing servers and services on various clouds.

2017: Proposed, designed, and developed innovative trading software and related algorithms in Iran's financial markets (i.e., stock, future, and options markets). **Result:** 2.5x profit earned through new automated solutions.

2016: Devised and developed an exclusive, customized online platform for holding auctions and tenders for Iranian companies and sellers. **Result:** Became the largest auctions and tenders online platform in Iran.

2015: Proposed and developed a solution for discovering controllability in biological networks (my thesis and the framework for M.Sc. in Computer Science, Tehran, Iran). **Result:** A successful biological network modeling framework + defended thesis.

2014: Participated in developing an online stock trading platform in the Tehran stock exchange. **Result:** 3x increase in users of the trading platform.

2013: Developed and launched the Recordium app in Apple's app store. **Result:** Breaking into the top 10 apps in 53 countries in Apple's app store.

CAREER INTERESTS

- Software development and **ML** engineering using **Python**
- Blockchain development using **Solidity**
- Systems programming using **Rust**
- **I truly believe the future of advanced technology will be dominated by decentralized, open-source systems.**

EDUCATION

Concordia University, Montreal, Canada

Sep 2019 - Present

M.Sc. in Computer Science (Thesis-based)

- **Thesis:** A Weak Supervision-based Approach to Improve Chatbots for Code Repositories
- **Summary:** In my thesis, we created a [Weak Supervision-based Framework](#) to automate the query annotation and chatbot retraining processes. Specifically, we leveraged weak supervision to label users' queries posted to the chatbot. We applied our approach to the two most-used natural language understanding (NLU) platforms: [Rasa](#) and [Google Dialogflow](#).
- **Code:** The related code repository can be found [here](#).
- **Supervisors:** [Dr. Emad Shihab](#), [Dr. Essam Mansour](#)
- **Publication:** **Farbod Farhour**, Ahmad Abdellatif, Essam Mansour, and Emad Shihab. "A Weak Supervision-based Approach to Improve Chatbots for Code Repositories". Under Submission to the **IEEE Transactions on Software Engineering (TSE)**.

Awards:

- Concordia University International Tuition **Award of Excellence**, 2021-2022 academic year.
- Concordia University International Tuition **Award of Excellence**, 2020-2021 academic year.
- Concordia University International Tuition **Award of Excellence**, 2019-2020 academic year.

Relevant courses:

- Software Re-engineering (**A+**).
- Mining Large Software System Data for DevOps (**A+**)
- Distributed System Design (**A**)

Natural Language Processing (NLP)

I use Python for implementing NLP tasks using these libraries:

- **SciPy** (Extensively used for my research)
- NLTK
- Scikit-learn
- TextBlob

Natural Language Understanding (NLU)

I extensively used the following NLU platforms for my research, thesis, and publication:

- **Rasa**
- Google Dialogflow

Backend Development

I prefer and use these frameworks for backend development using Python:

- **Django**
- FastAPI
- Flask
- AIOHTTP
- Falcon

Image Processing

Whenever needed, I use these Python libraries for image processing purpose:

- **OpenCV**
- Scikit-image
- NumPy

Virtualization

I extensively use these tools for virtualization purposes:

- **HashiCorp Vagrant**
- Docker
- VMware Fusion

Linux System Administration

I always turn every Linux-related task into a bash script. Therefore, I am pretty familiar with writing bash scripts and Linux administrative tasks. Most used Linux distribution:

- **Ubuntu Server**

Database

I extensively use these database systems for development:

Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran

Sep 2013 - Dec 2015

M.Sc. in Computer Science (Thesis-based)

- **Thesis:** Controllability Discovery of Biological Networks
- **Supervisors:** [Dr. Fatemeh Zare](#), [Dr. Farzad Didehvar](#), [Dr. Zahra Razaghi](#)

Relevant courses:

- Neural Networks (**A+**)
- Advanced Topics In Neural Networks (Deep Learning) (**A+**)
- Advanced Artificial Intelligence (**A+**)
- Image Processing (**A+**)
- Computational Complexity Theory (**A**)

Shahid Beheshti University, Tehran, Iran

Sep 2009 - Sep 2013

B.Sc. in Computer Science

Relevant courses:

- Algorithm Design and Analysis (**A+**)
- Numerical Linear Algebra (**A+**)
- Artificial Intelligence (**A**)
- Programming Languages (**A**)

WORK EXPERIENCE

Concordia University, Montreal, Canada

Sep 2019 - Aug 2021

Research Assistant (2 years, full-time)

I participated in the research and development of two frameworks. First, we developed a framework for automated testing of deep learning libraries (i.e., TensorFlow, PyTorch, Keras, and Theano). Second, we designed and developed a weak supervision-based framework to improve chatbots for code repositories. This framework is used for retraining natural language understanding platforms to improve chatbots' accuracy.

Housh Gostar Co, Tehran, Iran

Jan 2016 - May 2019

Full Stack Developer (3 years, part-time & full-time)

We devised and developed several systems and web platforms at Housh Gostar Company. The primary purpose of these systems is to automate repetitive tasks and use artificial intelligence to improve outcomes. The twitter-specific platform, server deployment & management platform, financial markets trader platform, and online auctions and tenders holding platform are the four main products I participated in their design and development.

Khobregan Saham Brokerage Co, Tehran, Iran

Aug 2011 - May 2014

Web & Software Developer (3 years, part-time)

Key Achievements:

- Developed several web and mobile applications.
- Prepared and configured Linux OS for the final products.

Pichak Co, Tehran, Iran

Jan 2013 - Aug 2013

iOS Developer (8 months, full-time)

We designed and developed the Recordium app as a member of a team at Pichak startup company. Recordium had been selected as one of the top 10 apps in more than 104 countries and featured by Apple, [TheNextWeb](#), [The Guardian](#), [LifeHacker](#), [The Telegraph](#), [MakeUseOf](#), [iMore](#), [AppAdvice](#), and more.

TEACHING EXPERIENCE

Concordia University, Montreal, Canada

Jan 2021 - Jan 2022

Teaching Assistant

Taught the "**Introduction to Software Engineering**" course multiple times for undergraduate students.

Taught the "**Software Process**" course for undergraduate students.

Jahesh Co, Tehran, Iran

Mar 2016 - Jan 2017

Instructor

- **MySQL**
- PostgreSQL
- Redis
- MongoDB

Cloud Services

I extensively use these cloud services:

- **Akash Network**
- Amazon AWS
- Google Cloud
- Vultr

I prefer using, learning, and developing **Akash Network** (the unstoppable cloud), which is the world's first **open-source** cloud.

Rust

I prefer using Rust for systems programming due to its unique features and popularity.

Solidity

I have started learning Solidity programming language since late 2021. So, I am a novice. I have targeted to be proficient in this language for my career goals.

Data Programming

I extensively used **Snorkel** as a data programming paradigm for rapidly creating, modeling, and managing training data in my research, thesis, and publication.

LANGUAGES

English: Full professional proficiency

Persian (Farsi): Native or bilingual proficiency

French: Beginner level (currently learning)

INTERPERSONAL SKILLS

I am known as a person with the following skills among my colleagues:

- **Highly organized**
- **Problem solver**
- **Adaptable**
- **Self-manager**

Taught the "**Linux System Administration**" course multiple times.

Shahid Beheshti University, Tehran, Iran

May 2012 - Aug 2013

Instructor

Taught "**Web Design**" and "**Web Development**" courses multiple times for graduate and undergraduate students.

Shahid Beheshti University, Tehran, Iran

Sep 2011 - Jun 2013

Teaching Assistant

Taught the "**Programming in C++**" course multiple times for undergraduate students.

Taught the "**Algorithm Design and Analysis**" course multiple times for undergraduate students.

PUBLICATIONS

- **Farbod Farhour**, Ahmad Abdellatif, Essam Mansour, and Emad Shihab. "A Weak Supervision-based Approach to Improve Chatbots for Code Repositories". Under Submission to the **IEEE Transactions on Software Engineering (TSE)**.

AWARDS & HONORS

- Concordia University International Tuition **Award of Excellence**, 2021-2022 academic year.
- Concordia University International Tuition **Award of Excellence**, 2020-2021 academic year.
- Concordia University International Tuition **Award of Excellence**, 2019-2020 academic year.
- Achieved **21st rank among almost 15000 participants** in the entrance exam of M.Sc. to enter to free of tuition fee National Universities in Iran, July 2013.
- Achieved the **1st Rank** between Scientific Associations of Students at Shahid Beheshti University, May 2011.

PROFESSIONAL DEVELOPMENT & AFFILIATIONS

As a life-long learner, I always keep myself updated with new and related tools and technologies for my career. So, I have **completed 30+ online courses**, including:

- Machine Learning - Coursera
- Deep Learning Specialization - Coursera
- Machine Learning with Python - Coursera
- Advanced Machine Learning Specialization - Coursera
- AWS Fundamentals Specialization - Coursera