

# Sadaf Sadeghian

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## EDUCATION

### Master of Science in Computer Science

*Under Supervision of Prof. Thomas Pasquier*

**University of British Columbia, Vancouver, Canada**

2021-Present

Courses : Distributed Systems Abstractions (92/100), Machine Learning and Data Mining (93/100)

### Bachelor of Computer Engineering

**GPA: 19.22 / 20 (WES CGPA : 4 / 4)**

**University of Tehran, Tehran, Iran**

2016-2021

Ranked **Second** among the CE class

## RESEARCH INTERESTS

- Applied ML in Systems
- Distributed Systems
- Self-tuning Systems and Databases
- Machine Learning

## HONORS AND AWARDS

- **Ranked 2<sup>nd</sup> Among the Computer Engineering class** *University of Tehran*
- **Honorary Award of FOE (Faculty of Engineering)** 2016-2017, 2017-2018, 2018-2019  
Awarded to the outstanding students (top 3) of each engineering field each year.
- **University of Tehran Hamiyan Scholarship** 2017-2018, 2018-2019  
Awarded for high academic achievement.
- **IEEE Xtreme 13.0 Contest** 2019  
Our team (OnceUponATimeInUT) ranked 2<sup>nd</sup> in Iran and globally 101<sup>st</sup> among 2,781 teams.
- **Ranked in the Top 0.13% (99.87 percentile)** 2016  
Among more than 168,000 participants in the Iranian nationwide university entrance exam.
- **9<sup>th</sup> place in RoboCup Iran Open** 2015  
Among more than 100 teams in the junior rescue league.
- **Iranian Olympiad in Informatics** 2014, 2012  
Acceptance in the first round of Olympiad as the top 25 percent of talented Iranian students.

## PUBLICATIONS

**Sabri, N., Sadeghian, S. Bahrak, B. A cross-country study on cultural similarities based on book preferences. Soc. Netw. Anal. Min. 10, 86 (2020). [link]**

Implemented codes for crawling data, visualizations, and analyzing the graphs, and wrote some parts of the paper.

## RESEARCH EXPERIENCES

### Graduate Research Assistant

*Under Supervision of Prof. Thomas Pasquier, Prof. Ivan Beschastnikh and Prof. Mathias Lécuyer*

**University of British Columbia**

2021-Present

Working on tuning Spark configuration parameters using the causal relationship between these parameters and causal bayesian optimization.

### Undergraduate Research Assistant

*Under Supervision of Prof. Behnam Bahrak*

**University of Tehran**

2019-2020

Worked on social networks, graph analytics and machine learning projects in the Data Analytics Laboratory.

### Data Scientist Intern

*PAD Laboratory*

**University of Tehran Science and Technology Park**

2019

The "Hands-on Machine Learning" book was read and contributed to Kaggle competitions, such as the Titanic competition, house price prediction, and IEEE fraud detection. Also, passed two Coursera courses on graph analytics and did a project on the Ethereum transaction graph.

## PROJECTS

### Privacy-Preserving Federated Architecture for Synthetic Medical Image Generation

*Distributed Systems*

We investigated generating high quality privacy-preserving data using an existing privacy-aware framework, FELICIA. Then, worked on adding more sites to FELICIA setting and making it distributed using LEAP platform so that it can be easily accessible by practitioners.

## Image Generation Using GANs

Neural Networks

Implemented Variational Auto-encoder, DCGAN and CGAN for generating plausible images similar to CIFAR10 dataset images. (Implemented in Python using Keras)

## GHS Algorithm for Finding MST

Distributed Systems

Implemented GHS distributed algorithm for finding minimum spanning tree in a weighted graph. (Implemented in Java using Kompics)

## MapReduce Algorithm for Counting Words

Distributed Systems

Implemented distributed MapReduce algorithm for counting occurrences of each word in a text. (Implemented in Java using Kompics)

## Traffic Signs Detection in Real-World Images

Neural Networks

Implemented CNN and fine-tuned it also used drop out, data augmentation and batch normalization for improving the network results. (Implemented in Python using Keras)

## Air Pollution Forecasting

Neural Networks

Implemented RNN, LSTM and GRU for series prediction. and implemented various methods for handling missing values. (Implemented in Python using Keras)

## New Features for xv6 kernel

Operating Systems

Implemented new features for xv6 operating system, including: new system calls, CPU scheduling and memory management. (Implemented in C)

## Food Ordering Application ("Loghme")

Internet Engineering

Developed web application for online food ordering and delivery.

(Backend: Java(Spring framework) - Frontend: JavaScript(Reactjs) - DB: MySQL - Deployment: Docker, Kubernetes)

## Compiler for SMOOLA Language

Compiler Design and Implementation

Implemented four phases: lexical and syntax analyzer, name analyzer, type analyzer and code generator. (Implemented in JAVA using ANTLR)

## SKILLS

**Programming Languages:** Python, C++, JAVA, C

**Database:** MySQL, SQLServer

**Machine Learning:** Numpy, Pandas, Seaborn, Scikit-learn, Keras, Pytorch

**Web Development:** Django, React, JavaScript, HTML, CSS

**Tools:** Git,  $\text{\LaTeX}$ , Wireshark, Maven, Mininet, Gephi, Postman, Jupyter notebook, networkx

**Operating Systems:** Linux(Ubuntu), MacOS, Windows

**Hardware Design:** Verilog, SystemVerilog, ModelSim

## LANGUAGES

Persian (Native), English (Fluent)

TOEFL iBT Score: 105 [Reading: 30, Listening: 24, Speaking: 23, Writing: 28]

## TEACHING EXPERIENCES

### Machine Learning and Python Instructor

IEEE Data Science Winter School, University of Tehran

Taught python and its useful libraries, designed hands-on problems, and helped participants in ML hands-on sessions.

2019

### Teaching Assistant

University of Tehran

"Operating Systems" Professor M. Kargahi

2019-2021

"Database Design" Professor A. Shakery

2019-2021

"Artificial Intelligence" Professor H. Fadaei and Professor H. Moradi

2019-2020

"Data Structures" Professor F. Faghhi

2020

"Formal Language and Automata" Professor H. Hojat

2019-2020

"Advance Programming" Professor R. Khosravi and Professor A. Sadeghi

2018-2019

"Discrete Mathematics" Professor S. Mohammadi

2018-2019

## VOLUNTEERING EXPERIENCES

### Member of FSEN Student Branch and Organizing Team

FSEN Conference 2019, Tehran

### Member of Organizing Team

Machine Learning Summit 2019, Tehran

### Core Member

ACM student branch of University of Tehran

We managed and organized scientific events including seminars, conferences, workshops and contests for students.

## WORKING EXPERIENCES

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### **Back-End Developer (Intern)**

*Lamasoo Company, 2018*

I worked as a developer in a hotel booking startup.

### **Front-End and Back-End Developer**

*Summer of Code (University of Tehran), 2017*

We developed a site for online contests held in the university.

## INTERESTS

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Hiking, Photography, Swimming, Travelling, Playing the Piano, Reading Books, Volunteer Work