Sadaf Sadeghian

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EDUCATION

Bachelor of Computer Engineering — **University of Tehran, Tehran, Iran**
GPA: 19.22 / 20 (4 / 4) — *2016-Present*
Related Courses : Computer Networks(20/20), Computer Networks Security(20/20), Distributed Systems(20/20), Operating Systems(20/20), Artificial Intelligence(20/20), Neural Networks(18/20), Linear Algebra (19.1/20)

Diploma of Math and Physics — **Salam High School, Tehran,Iran**
GPA: 19.98 / 20 (4 / 4) — *2012-1016*

HONORS AND AWARDS

- **Ranked 2nd** — *University of Tehran*
  Among CE class of 2020
- **Honorary Award of FOE** — *2016-2017, 2017-2018, 2018-2019*
  Awarded to the top three students of each engineering field each year.
- **Faculty of Engineering Fellowship Award** — *2017-2018, 2018-2019*
  Received Faculty of Engineering fellowship award as an exceptionally talented student.
- **IEEEXtreme 13.0** — *2019*
  Our team (OnceUponATimeInUT) ranked 2nd in Iran and globally 101st among 2,781 teams.
- **Ranked in the Top 0.13% (99.87 percentile)** — *2016*
  Among more than 168,000 participants in Iranian nationwide university entrance exam.
- **RoboCup Iran Open** — *2015*
  9th place among more than 100 teams in junior rescue league.
  Awarded as the super team of rescue robots among more than 30 teams.
- **Iranian Olympiad in Informatics (Computer Science)** — *2014, 2012*
  Accepted in first round of Olympiad as top 25 percent of talented Iranian students.

RESEARCH INTERESTS

- Computer Networks
- Network Security
- Distributed Systems
- Cryptography
- Applied Machine Learning
- Data Management

RESEARCH EXPERIENCES

Research Assistant — **Under Supervision of Dr. Behnam Bahrak**
Inter-country Study of Similarities and Influences — *2019-2020*
Country similarities were analyzed based on most read books. The effect of language, religion and geological distance on book similarity and inter-country influences was studied.
The manuscript is under review.

Intern — **PAD Lab, University of Tehran**
Machine Learning Application — *2019*
The "Hands-on Machine Learning" book was read and contributed to Kaggle competitions.

TEACHING EXPERIENCES

Teaching Assistant — ***University of Tehran***

"Operating Systems" Professor M. Kargahi — *2019-present*
"Database Design" Professor A. Shakery — *2019-present*
"Artificial Intelligence" Professor H. Fadaei and Professor H. Moradi — *2019-2020*
"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*

IEEE Data Science Winter School **University of Tehran IEEE Student Branch**
Machine Learning and Python Instructor *2019*

PROJECTS

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)

Dynamic Forwarding and Routing in a Network *Computer Network*
Implemented Distance Vector routing protocol, which uses Bellman-Ford algorithm, for routing and forwarding message among virtual nodes. Also implemented traceroute command. (Implemented in Python)

TCP over UDP *Computer Network*
Implemented some features of TCP New Reno protocol over UDP such as reliable data transfer, congestion control and flow control. Also implemented Nagle algorithm for improving efficiency. (Implemented in Java)

Proxy Server *Computer Network*
Implemented a proxy server with logging, caching, injection and accounting features. (Implemented in Python)

BitTorrent *Computer Network*
Implemented a BitTorrent system with custom network topology. (Implemented using Mininet VM and Python)

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)

Traffic Signs Detection in Real-World Images *Neural Networks*
Implemented CNN and improved the result with different techniques. (Implemented in Python using Keras)

Air Pollution Forecasting *Neural Networks*
Implemented RNN, LSTM and GRU for series prediction. (Implemented in Python using Keras)

Database for a blood center *Database Design*
Implemented a database with functions, triggers, views and indexes for a blood center. (Implemented in SQL Server)

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)

Socket Programming *Operating Systems*
Implemented server heartbeat, UDP and TCP socket protocols for Battleship game. (Implemented in C)

Multi-process Text Searching System *Operating Systems*
Used pipes for communication between processes, which filter specific records in multiple files and sort them by a particular field. (Implemented in C++)

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)

Multi-cycle MIPS *Computer Architecture*
Implemented MIPS multi-cycle processor. (Implemented in verilog)

TECHNICAL SKILLS

Programming Languages: Python, JAVA, C, C++
Database: MySQL, SQLServer
Machine Learning Python Libraries: Numpy, Pandas, Seaborn, Scikit-learn, Keras, Pytorch
Hardware Design Languages: Verilog, SystemVerilog
Web Development: Django, React, JavaScript, HTML, CSS
Simulation: ModelSim, Quartus, Proteus

Tools: Git, LaTeX, Wireshark, Mininet, Gephi, Postman, Jupyer notebook, Maven
Operating Systems: Linux(Ubuntu), MacOS, Windows

WORKING EXPERIENCES

Back-End Developer (Intern) — **Lamasoo Company**
Worked as a developer in a hotel booking start-up. — *Summer 2018*

Front-End and Back-End Developer — **Summer of Code (University of Tehran)**
Developed a site for online contests as a member of DMC team. — *Summer 2017*

VOLUNTEERING EXPERIENCES

Member of FSEN student branch — *FSEN Conference 2019, Tehran*
Member of Organizing Team — *Machine Learning Summit 2018, Tehran*
Membership Chairperson — *ACM student branch of University of Tehran, 2017*

LANGUAGES

Persian (Native), English (Fluent), German (Familiar), Arabic (Familiar)