Amirhossein Afsharrad

Curriculum Vitae

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Education

2016–2021 **Sharif University of Technology**, *B.Sc.*, Electrical Engineering, *Communication Systems*.
GPA: *19.74/20*

2018–2021 **Sharif University of Technology**, *B.Sc.*, Computer Science (second major).
GPA: *20/20*

2012–2016 **Alavi High School**, *High School Diploma*, Physics and Mathematics.
GPA:*19.80/20*

Interests

- Probability, Statistics, and Stochastic Processes
- Theoretical and Applied Machine Learning
- Optimization and Applications
- Game Theory
- Information Theory
- Theoretical Computer Science
- Data Science and statistical Data Analysis
- Signal Processing

Research Experience

2020–present **Researcher**, *Edge Machine Learning Research Group*, Sharif University of Technology.
Working under supervision of Prof. Mohammad Ali Maddah-Ali on a project about deep learning on edge devices.

2020–present **Research Assistant**, *Signal Processing Research Lab*, Sharif University of Technology.
Working under supervision of Prof. Massoud Babaie-Zadeh on statistical signal processing and separation of nonlinear mixtures of stochastic processes

2017–2019 **Research Assistant**, *Augmented Intelligence Research Lab (AIRLab)*, Sharif University of Technology.
Working under supervision of Prof. Hamid K. Aghajan on statistical inference in computational neuroscience

2019 **Intern**, *MATAB Company*, Tehran.
Working on web scraping and machine learning projects

Teaching Experience

Teaching Assistant at Sharif University of Technology

Spring 2020 **Convex Optimization**, *Dr. M. Babazadeh*.
Holding tutorial classes

2019–2020 **Signals and Systems**, *Dr. H. K. Aghajan*.
Holding tutorial classes, designing exams and projects for two semesters

2019–2020 **Special Problems in Communications (Graduate Computational Neuroscience Course)**, *Dr. H. K. Aghajan*.
Holding tutorial classes on machine learning, designing exams and projects for four semesters

Fall 2019 **Communication Systems**, *Dr. M. Pakravan*.
Holding tutorial classes, designing homeworks, quizzes and projects

2018–2020 **Engineering Mathematics**, *Dr. H. K. Aghajan*.
Holding tutorial classes, designing exams and projects for three semesters

2017 **Fundamentals of Programming in C**, *Dr. M. Rivadeh*.
Designing exams and projects for two semesters

Teacher

2016–present **Teacher**, *Zehne-Ziba Institute*, Tehran.
Teaching high school and preuniversity mathematics and physics courses

2016–2017 **Teacher**, *Alavi Educational Institutions*, Tehran.
Teaching high school and preuniversity mathematics courses

Honors and Awards

2016–present **Ranked First (for 4 consecutive years)**, *out of 180 Electrical Engineering undergraduate students.*

2019 **Bronze Medalist**, *24th National Electrical Engineering Olympiad.*

2016 **Ranked 7th**, *out of +160,000 undergraduate applicants in the National Universities Entrance Exam.*

2018 **2nd Prize**, *National functional Magnetic Resonance Imaging (fMRI) Data Analysis Competition, National Brain Mapping Lab, University of Tehran.*

Skills

Programming Languages

Python(NumPy, PyTorch, CVXPY, SciPy, sklearn, selenium, etc.), Java, C/C++, R, Verilog

Related Softwares

MATLAB, Simulink, Modelsim, Altium Designer, LaTeX, Arduino Studio, Hspice, Pspice, MS Office, SQLite

Operating Systems

Windows, Ubuntu

Selected Courses

University Courses

Fall 2020 **Foundations of Machine Learning (Graduate Course)**, *Dr. M. Maddah-Ali*, current semester.

Fall 2020 **Information Theory (Graduate Course)**, *Dr. M. Mirmohseni*, current semester.

Fall 2020 **Theory of Languages and Automata**, *Dr. J. Ebrahimi*, current semester.

Spring 2020 **Analysis of Algorithms**, *Dr. M. Alimi*, 20.0/20.0.

Spring 2020 **Introduction to Cryptography**, *Dr. S. Khazaie*, 20.0/20.0.

Fall 2019 **Numerical Methods in Optimization (Graduate Course)**, *Dr. M. Babaeizadeh*, 20.0/20.0.

Fall 2019 **Linear Algebra I**, *Dr. S. Akbari*, 20.0/20.0.

Fall 2019 **Mathematical Analysis I**, *Dr. H. Fanaei*, 20.0/20.0.

Fall 2019 **Statistics and Applications**, *Dr. M. Sharifitabar*, 20.0/20.0.

Spring 2019 **Convex Optimization**, *Dr. M. Babazadeh*, 20.0/20.0.

Spring 2019 **Digital Communication**, *Dr. J. Salehi*, 20.0/20.0.

Spring 2019 **Foundations of Economics**, *Dr. M. Nili*, 20.0/20.0.

Spring 2019 **Stochastic Processes**, *Dr. K. Alishahi*, 20.0/20.0.

Spring 2019 **Digital Signal Processing**, *Dr. M. Babaeizadeh*, 20.0/20.0.

Fall 2018 **Control of Linear Systems**, *Dr. M. Babazadeh*, 20.0/20.0.

Fall 2018 **Special Problems in Communication Systems (Neuroscience)**, *Dr. H. K. Aghajan*, 20.0/20.0.

Fall 2017 **Engineering Probability and Statistics**, *Dr. F. Ashtiani*, 19.5/20.0.

Fall 2017 **Numerical Computations**, *Dr. S. Sadoughi*, 20.0/20.0.

Audited/Self-Studied Courses

Fall 2018 **Game Theory**, *Dr. F. Fatemi.*

2019 **Foundations of Measure Theory**, *Self-Studied.*

2020 **High-Dimensional Probability**, *Self-Studied.*

2020 **Optimal Transport**, *Self-Studied.*

Projects

Research Projects

2020 **Designing Algorithms and Hardware Implementation of Deep Learning at Edge Devices**, *Sharif University of Technology.*

A study of algorithms for deep learning implementation on limited-source devices (such as Raspberry Pi) and implementing learning models on such devices.

2017–2018 **Design and Implementation of an Inexpensive and Portable Olfactometer**, *Sharif University of Technology, AIRLab.*

Full design and implementation of an inexpensive and portable Olfactometer for neuroimaging experiments

2019 (July–Sept.) **Instagram Data Analyzer**, *MATAB Company*, Tehran.
A software in Python to automatically get data from Instagram and do statistical analysis on data using deep learning methods to find specific information

2019 (July–Sept.) **Book Database**, *MATAB Company*, Tehran.
A code in Python to create and maintain Databases of Holy books as Quran, Mafatih, etc. using web-scraped data

Course Projects

Spring 2020 **Hearthstone Game**, *Advanced Programming*.
Full implementation the Hearthstone game in Java (Both game logic and graphics).

Fall 2019 **Data Analysis on Air Quality Index Data**, *Statistics and Applications*.
Different data analysis tasks to answer different statistical questions on 2018 air quality index dataset of the United States.

Fall 2019 **Optimization Toolbox**, *Numerical Methods in Optimization*.
Implementation of a MATLAB toolbox for numerical optimization methods -completed through several homeworks-

Spring 2019 **Portfolio Optimization**, *Convex Optimization course*.
Implementation of different algorithms of Portfolio Optimization

Fall 2018 **Communication System Simulator**, *Communication Systems course*.
Implementation of a full communication system simulator using MATLAB

Fall 2018 **Biologically-Plausible Neural Network Implementation**, *Special Problems in Communication Systems (Neuroscience) course*.
Implementation of a neural network to operate similar to the human brain, using Python and PyTorch

Spring 2018 **Simple Fan Sensitive to Temperature and Light**, *Principles of Electronics course*.
Implementation of a fan, which would automatically turn on and off in high temperature or intense light

Spring 2018 **P300-Speller**, *Special Problems in Electrical Engineering (Neuroscience) course*.
Full implementation of a P300 Speller to spell a word using EEG brain data

Spring 2018 **Music Genre Decoder from fMRI Data**, *Special Problems in Electrical Engineering (Neuroscience) course*.
Implementation of a machine-learning-based decoder of music genre using fMRI data

Spring 2018 **Human Sleep Stage Detector**, *Special Problems in Electrical Engineering (Neuroscience) course*.
Implementation of a classifier to recognize human sleep stage from EEG brain data

Spring 2018 **Study of Cats Complex Visual Cortex Neurons**, *Special Problems in Electrical Engineering (Neuroscience) course*.
Implementation of a decoder to recover the image seen by a cat using data from cat's visual cortex neurons

Spring 2018 **Brain-Computer Interface**, *Signals and Systems course*.
Implementation of a Brain-Computer Interface (BCI) to recognize human behavior from EEG brain data

Fall 2017 **Numerical Computation Toolbox for Matlab**, *Numerical Computations course*.
Implementation of a Matlab toolbox for Numerical Computations including system of equations solver, curve fitting tool, integral calculator, and system of differential equations solving tool

Fall 2017 **Simple Calculator Design**, *Logic Circuits course*.
Implementation of a digital calculator on FPGA.

Fall 2016 **Minesweeper Game**, *Fundamentals of Programming in C course*.
Implementation of Minesweeper game in C++