# Aliasghar Pourghani

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## Education

**Sharif University of Technology, Electrical Engineering, B.Sc. (18.09/20)** *2019 – Present*
*Communications Systems and Networks*

**Sharif University of Technology, Applied Mathematics, Minor (19.2/20)** *2021 – Present*

## Research Interests

- Deep/Machine Learning (Theory and Applications)
- Federated Learning
- NLP and LLMs
- Computer Vision and Generative Models

## Selected Research Experiences

**Sensor Fusion for Autonomous Driving Systems (Bachelor Thesis)** *Dec. 2022 – Oct. 2023*
*AICD Lab, Supervisors: Dr. A. Fotowat Ahmadi, Dr. Z. Kavehvash* *Sharif University of Technology*

- Development of a novel and efficient fusion algorithm named SideFusion to fuse camera and radar data in order to improve distance and velocity estimation. **Selected as on of the distinguished bachelor projects of the electrical engineering department.**

**Reliable Face Authentication on Low-Resource Devices** *Summer 2022*
*SSEC Lab, Supervisor: Dr. B. Khalaj* *Internship, Tehran*

- Implementation of a reliable face authentication algorithm on a low resource device(Orange Pi3)

**Machine Learning Engineer Intern** *Summer 2023*
*MCI Next Co., R&D team* *Internship, Tehran*

- Developing attention based recommendation systems for a social media. In this internship I worked with large language models, sequential models and large datasets

## Technical and Soft Skills

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|---|---|
| **Programming Languages** | Python(PyTorch, Tensorflow, COBRA, Transformers, RecBole, Pandas, Numpy, CVXPY, ...), Java, C/C++, R |
| **Related Software and Tools** | MATLAB, Docker, GNS3, Wireshark, LaTeX, PSpice, LTSpice |
| **Operating Systems** | GNU/Linux(Ubuntu, CentOS), Microsoft Windows |
| **Soft Skills** | Hard Working, Team Work, Enthusiastic to Learn New Topics |

## Honors and Awards

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|---|---|---|
| **Ranked 53 out of +160000 applicants** | National University Entrance Exam(Konkur) | *2019* |
| **Mathematics Olympiad Silver Medal** | National Olympiad of Mathematics | *2018* |
| **Mathematics Olympiad Honors Diploma** | National Olympiad of Mathematics | *2017* |
| **Distinguished Bachelor Project** | EE Department at SUT | *2023* |
| **Member of National Elites Foundation** | Iran's National Elites Foundation | *Since 2017* |

## Selected Courses

- Deep Learning
- Neuroscience
- Artificial Intelligence
- Convex Optimization
- Statistical Learning
- Computational Systems Biology
- Computer Vision LAB
- Differential Privacy
- Information Theory
- NLP with DL (CS224n)

## Course Projects

**Multimodal Sentiment Analysis** *Fall 2022*
*Deep Learning Course Project* *Sharif University of Technology*

- Implementation of a sentiment analyser consisting of transformers and CNN backbones, in order to classify sentiments of movie scenes

**BP-Spice: A Software to design simulate and visualize circuits** *Spring 2021*
*Object Oeiented Programmign Course Project* *Sharif University of Technology*

- An Object Oriented software in Java, in which users can design a circuit, then visualize it and simulate it with different settings.

**Image Denoising Using Dictionary Learning** *Fall 2022*
*Linear Algebra Course Project* *Sharif University of Technology*

- Denoising images using combinations of various methods of sparse coding (MP, OMP, WMP), and dictionary learning (MOD, KSVD, A-KSVD)

**Isolation of Relevant Visual Features from Random Stimuli for Cortical Complex Cells** *Spring 2021*
*Neuroscience Course Project* *Sharif University of Technology*

- Implementation of "Isolation of Relevant Visual Features from Random Stimuli for Cortical Complex Cells" paper in Matlab

## Teaching Experience

- Deep Learning (Graduate)
- Machine Learning
- Computer Architecture ($\times 2$)
- Communication Systems
- Theory of Circuits
- Engineering Mathematics

## Language Proficiency

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|---|---|---|
| **English** | TOEFL score: 109 (R:28, L:30, S:25, W:26) | *Oct.7Th* |
| **Azerbaijani** | Native-Bilingual | |
| **Persian** | Native-Bilingual | |