







Soroush Mahdi

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 Statistical Data Analysis Laboratory-CEIT building-Amirkabir University of Technology-Hafez Ave-Tehran-Iran

Education

Master of Science in Artificial Intelligence

Amirkabir University of Technology (Tehran Polytechnic)

Cumulative **GPA: 4/4**

Tehran, Iran

Sep 2020 – Sep 2023

Bachelor of Computer Engineering

Bu-Ali Sina University

Cumulative GPA: 3.17

Hamedan, Iran

Sep 2016 – Sep 2020

Research Interests

Adversarial Robustness

Computational Vision

Generative AI

Deep Learning Theory

Computer Vision

Computational Neuroscience

Honors & Awards

- **2nd** Place in [The National fNIRS Data Analysis Competition](#) focusing on brain-computer interface systems to help patients with movement disorders, National Brain Mapping Laboratory, Tehran, Iran, 2022.
- Ranked **61st Among More Than 15,000 Participants** in Iranian University Entrance Exam For Masters In Artificial Intelligence, Iran, 2020.
- Ranked **36th Among More Than 15,000 Participants** in Iranian University Entrance Exam For Masters In Algorithms and Computation, Iran, 2020.
- Ranked **22nd** Place in [National Collegiate Scientific Olympiad in Computer Engineering](#), Iran National Organization of Educational Testing, Tehran, Iran, 2020.
- **1st** Place in the Provincial Programming Contest of Hamedan, Hamedan University of Technology, Hamedan, Iran, 2019.
- **1st** Place in [2017](#) & **2nd** Place in [2019](#) Programming Contest, Iran West Region (WICPC). selected as a member of Bu-Ali Sina University's team for the West Asia Regional ACM-ICPC Contest as a result, Bu-Ali Sina University, Hamedan, Iran, 2019 & 2017.
- Ranked 14th in the [West Asia Regional ACM-ICPC Contest](#), Tehran, Iran, 2017

Publications

1. **Mahdi, S.**, Amirmazlaghani, M., "Adversarial training with memory", 2023. (in Preparation)

Research Experiences

Thesis Based M.Sc. Student and Research Assistant

Statistical Data Analysis Laboratory

Under the supervision of Maryam Amirmazlaghani

June 2021 – Present

Tehran, Iran

- Thesis title: An approach for improving the robustness of deep neural network image classifiers against adversarial examples
- Conducted a method for improving adversarial training by reusing generated attacks in previous epochs of training.
- Experimented with various loss functions, including TRADES and supervised contrastive learning losses.

Computer Vision Researcher

[HARA.ai](#)

Under the supervision of Ali Karimi

Jan 2022 – Jan 2023

Tehran, Iran

- Specialized in face anti-spoofing and liveness detection using deep learning techniques.
- Developed blink detection and blink counter models using semi-supervised approaches.

Academic Projects

- **Robust Supervised contrastive learning** - [Github link](#)
Implemented adversarial training coupled with supervised contrastive learning using PyTorch.
- **PSO-SGD Hybrid Optimizer** - [Github link](#)
Developed a custom PyTorch optimizer by designing an optimization algorithm that combines SGD and PSO.
- **multivariate HMM** - [Github link](#)
Implemented a range of algorithms for Hidden Markov Models (HMMs) in the multivariate case from scratch.
- **Typicality-Based Collaborative Filtering Recommendation** - [Github link](#)
Recommendation algorithm based on the paper "Typicality-Based Collaborative Filtering Recommendation".
- **Kohonen Self Organizing Map** - [Github link](#)
Implemented Kohonen Self-Organizing Map (SOM) neural network from scratch utilizing NumPy.

Teaching Assistantships

Statistical Machine Learning - AmirKabir University of Technology
Instructor: Maryam Amir mazlaghani (Assoc. Prof.) - Graduate Course

*Tehran, Iran
Spring 2023*

Machine Vision - AmirKabir University of Technology
Instructor: Reza Safabakhsh (Prof.) - Graduate Course

*Tehran, Iran
Fall 2022*

Algorithm Design - Hamedan University of Technology
Instructor: Mir Hossein Dezfoulian (Asst. Prof.) - Undergraduate Course

*Hamedan, Iran
Spring 2020*

Other Undergraduate Courses: Artificial intelligence & Expert Systems(2019), Data Structures(2018), Discrete Structures(2017), Fundamental Of Computer Programming(2017)

Professional Skills

- **Programming Languages:**
Python, C++, Matlab, R
- **Libraries/Frameworks:**
PyTorch, NumPy, Pandas, OpenCV, scikit-learn, Tensorflow, JAX
- **Tools:**
Git, LATEX, Visual Studio Code
- **Operating Systems:**
Linux, Windows
- **Languages:**
English: Fluent, Scheduled for TOEFL Exam: December 11, 2023
Persian: Native

Major Courses

Machine Vision	19.9/20	Stochastic Processes	19.28/20
Machine Learning	18.6/20	Neural Networks	16.8/20
Optimization	16.21/20	Computational Intelligence	20/20

References

Maryam Amir Mazlaghani (Assoc. Prof.)	mazlaghani@aut.ac.ir	Homepage
Mir Hossein Dezfoulian (Asst. Prof.)	dezfoulian@basu.ac.ir	Homepage
Ali Karimi (MSc)	aliiikarimi@ut.ac.ir	

More references are available upon request.