Parsa Haghighi

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Education

Sharif University of Technology *Tehran, Iran*

M.SC. IN ARTIFICIAL INTELLIGENCE *2021 - 2023*

- **Thesis Title:** "Improving video-text retrieval models using language models" under supervision of Prof. Hamid R. Rabiee
- **Courses:** Machine Learning, Stochastic Process, Deep Learning, Natural Language Processing, Advanced Machine Learning, Image Processing, Advanced Digital Signal Processing

Isfahan University of Technology *Isfahan, Iran*

BACHELOR IN ELECTRICAL ENGINEERING *2016 - 2020*

- **Thesis Title:** "Generate fake data with Generative Adversarial Networks (GANs)" under supervision of Dr. MohammadAli Khosravifard

Research Interests

- Machine Learning
- Computer Vision
- Natural Language Processing
- Multi-modal Learning

Skills

Programming Languages	Python, Matlab, C#
Machine Learning Frameworks	PyTorch, TensorFlow, Keras
Computer Vision Libraries	OpenCV, Dlib, scikit-image
Electrical Skills	FPGA-Verilog, AVR-Codevision, Cisco Packet Tracer, PLC step7
Language	Persian (Native), English (Fluent)

Honors & Awards

- Ranked 4th in the national university entrance exam for an M.Sc. degree in Computer Engineering
- Ranked 4th in the national university entrance exam for an M.Sc. degree in Information Technology (IT)
- Ranked among top 1% in National-Wide University entry exam

Experience

TEACHING ASSISTANCE

- Stochastic Process and Linear Algebra under supervision of Prof. Rabiee
- Reinforcement Learning and Medical Image Processing under supervision of Dr. Rohban
- Artificial Intelligence, Machine Learning and Deep Learning under supervision of Dr. Soleymani
- Deep Learning under supervision of Dr. Beigy
- C-Programming under supervision of Dr. Naghsh

WORKSHOP INSTRUCTOR

- Time Series Workshop - DataDays2022 (an AI competition with over 2000 participants)

Top Academic Projects

Image Processing

- Implemented image enhancement methods: Histogram Equalization, Sharpening, Template Matching.
- Familiar with techniques including Neural Networks, Edge Detection, Image Segmentation, Feature Matching.
- Explored effects of various image enhancement methods on video understanding tasks in final project.

Natural Language Processing

- Developed a robust tool for extracting causal relationships from Persian language text (Python)
- Pioneered the creation of a tool designed to transform informal Persian sentences into their formal counterparts (Python)

Advanced Machine Learning

- Implemented various Meta-learning algorithms, including SNAIL, ProtoNet and MAML in PyTorch
- Trained neural networks using a variety of Reinforcement Learning algorithms, such as DQN, HER, Model-based RL, PREAL and DREAM
- Implemented a range of Continual Learning algorithms, including notable methods like DEN, GEM

Stochastic Processes

- Developed various algorithms in Python, including Point Processes and Hidden Markov Models (HMM).
- Implemented Monte Carlo Methods for Stochastic Simulation using Python.

B.Sc Final Project

- Conducted an in-depth review of multiple models within the GAN (Generative Adversarial Network) algorithms, including Conditional GAN, Wasserstein GAN, StyleGAN, CycleGAN
- Demonstrated the practical application of GAN algorithms by generating face images and handwritten digits in Tensorflow

Advanced Programming

- Designed a student education system using C# programming, including a user-friendly interface.

Linear Algebra

- Employed Matlab for image compression using SVD and PCA methods.
- Implemented k-means clustering on the MNIST handwritten digit dataset using Matlab.

Industrial Automation

- Conducted a simulation of a production line using PLC Step 7 and OPC, while also employing HMI to create an intuitive interface

FPGA (Verilog) Programming

- Calculated Fast Fourier Transform (FFT) of real-time signals and showing the results on an external monitor using VGA cable

Digital Signal Processing

- Compared effect of quantization error on coefficients in direct- and cascade-based filters with Matlab

Communication System

- Implemented a Matlab-based FM Receiver using SDR
- Designed a GUI platform to plot power spectral density (PSD) of FM signals using RTL-SDR

Extracurricular Experiences

The 8th Winter Seminar Series in advanced topics of Computer Science and Engineering

SHARIF UNIVERSITY OF TECHNOLOGY *Feb. 2023 - Mar. 2023*

- Contributed as a member of the science group.

Data Days 2022 competition

SHARIF UNIVERSITY OF TECHNOLOGY *Aug. 2022 - Oct. 2022*

- Contributed as a member of the science group.
- Instructed a Time Series Workshop for participants.

IEEE Student Branch

ISFAHAN UNIVERSITY OF TECHNOLOGY *Jun. 2017 - Dec. 2020*

- Served as the Vice Chair, actively organizing educational courses, workshops, and technical events for the IEEE Student Branch.

Children of Heaven Charity

ISFAHAN UNIVERSITY OF TECHNOLOGY *Dec. 2017 - Dec. 2020*

- Acted as Editor In Chief of Hiwa Magazine, focusing on social issues.
- Contributed by teaching students in a marginalized area of Isfahan city.