Haleh Damirchi

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Education

Amirkabir University of Technology — Tehran, Iran
M.Sc. Electrical Engineering, GPA: 17.83/20 — *2017–2020*

Thesis: Single-channel Speaker Extraction based on Deep Learning

Tabriz University — Tabriz, Iran
B.Sc. Electrical Engineering, GPA: 16.04/20 — *2012–2016*

Research Interests

Deep learning, Signal processing, Image and Speech processing, Machine listening
Machine learning applications in healthcare, Medical signal processing, Neurosceince

Publications

[1] **H. Damirchi**, S. Seyedin, S. M. Ahadi, "Speaker Extraction using Stacked BLSTM Optimized with Frequency-domain Differentiated Spectrum Loss," in *International Conference on Electrical Engineering (ICEE). IEEE, 2020.* (to appear)

[2] **H. Damirchi**, S. Seyedin, S. M. Ahadi, "Improving the Loss Function Efficiency for Speaker Extraction Using Psychoacoustic Effects," Submitted to *Applied Acoustics, 2020.*

Work Experience

Machine Learning Teaching Assistant — Fall 2019 – Present
Amirkabir University of Technology — *Graduate/Undergraduate*

Logic Circuits Teaching Assistant — Spring 2019, Spring 2020
Amirkabir University of Technology — *Undergraduate*

Research Assistant at Signal and Speech Processing Research Lab — 2018 – Present
Amirkabir University of Technology

R&D Intern — July 2016 – Feb 2017
Aria Kavosh Industrial Corp.

Tech Blogger — Aug 2015 – June 2016
Graph Team - ZAMANA blog

R&D Intern — Summer 2014
Tabriz Peguh

Honors

- **Second Best** teaching assistant in the electrical engineering faculty of Amirkabir University of Technology by students' evaluations.
- Ranked among **top 1%** in the nationwide university entrance exam in Mathematics and Physics field for B.Sc. degree, 2012.
- Ranked among **top 1%** in the nationwide university entrance exam in Electrical Engineering field for M.Sc. degree, 2017.

Extra Courses and Certificates

Fundamentals of Reinforcement Learning July 2020
Coursera

Fundamentals of Neuroscience (part one) April 2020
edX

Deep Learning Specialization March 2018
Coursera

Certificate of Robotic Training and Participation January 2013
Robotic Competition, University of Tabriz

Projects

Speaker Extraction | *Tensorflow, Pytorch, Matlab*

- Worked on deep neural networks (DNN, LSTM, CNN) for speaker extraction.
- Researched for and implemented different loss functions for DNN and LSTM models.

Speech Recognition | *Matlab*

- Used Hidden Markov Models (HMM) and Dynamic Time Warping (DTW) to recognize an utterance.

Speech Enhancement | *Matlab*

- Enhanced the input noisy speech using MMSE and Spectral Subtraction algorithm
- Used Decision Directed algorithm to estimate the prior SNR.

Voice Activity Detection | *Matlab*

- Used Ramirez04 Algorithm to detect the activity of speech signals.

Packet Transmission in Wireless Sensor Networks | *Python*

- Optimized Packet Sending using ACO (Ant Colony Optimization) algorithm.

Backpropagation using Evolutionary Algorithms| *Python*

- Implemented backpropagation in a deep neural network using GWO (Gray Wolf Optimization), and PSO (Particle Swarm Optimizaton).

Path Planning through Obstacles | *Python*

- Implemented genetic algorithm to optimize path planning through obstacles.

Flight Trend Prediction | *Python, Tensorflow*

- Predicted number of flights based on trends and data given by Alibaba company (Amirkabir University Data Analysis Competetion).

Car Price Prediction | *Python*

- Extracted car data from Bama car dealership website using BeautifulSoup python library.
- Predicted the price of cars using machine learning algorithms from sklearn python library.

Technical Skills

C, Python, Tensorflow, Keras, Pytorch, Matlab, Latex, MySQL

AVR, PCB Design, PLC Ladder

Languages

- Azeri, Persian: Native
- English: Fluent, TOEFL iBT: 114 (Reading: 30, Listening: 30, Speaking: 27, Writing: 27)

volunteer work

Organizing committee member in 4th International Conference on Signal Processing and Intelligent Systems (ICSPIS), December 2018 at Amirkabir University of Technology, Tehran, Iran.