

# ARYA AFTAB

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## EDUCATION

**Sharif University of Technology** 

Sep. 2018 – Jul. 2021


**Master of Science**, Department of Electrical Engineering (Communication Systems)

Tehran, Iran

**Thesis:** “Speech Emotion Recognition with Deep Learning and Frequency Features”

**Supervisor:** Prof. Shahrokh Ghaemmaghami

**GPA :** 3.6(16.48/20)

**Amirkabir University of Technology (Tehran Polytechnic)** 

Sep. 2013 – Aug. 2018

**Bachelor of Science**, Department of Biomedical Engineering (Bioelectric)

Tehran, Iran

**Thesis:** “Investigating Effect of Drop-out Regularizer on Deep Neural Network”

**Supervisor:** Dr. Seyyed Ali Seyyedsalehi

## RESEARCH INTERESTS

- Deep Learning
- Machine Learning
- Speech Processing
- Artificial Intelligence

## RELEVANT COURSEWORK

- Deep Learning
- Information Hiding
- Speech Processing
- Random Processes
- Advanced Communication
- Source Localization
- Radar Systems
- Artificial Intelligence
- Chaos Theory
- Optimization
- Linear Algebra

## HONORS

- Ranked 9st in Iran’s national Master of Science in electrical engineering university entrance exam among more than 35,000 participants [Spring 2018].
- Ranked top 0.5% in Iran’s national undergraduate university entrance exam among more than 300,000 participants [Summer 2013].
- Acceptance in the first stage of Iran’s nation-wide astronomy Olympiad (among top 2000 of 100,000 participants) [Winter 2011].

## PROJECTS

**Different Models for Word Spotting (Private Repository)** | Python, TensorFlow, PyTorch **Present**

- In this project, for an industrial project at Electronic Research Institute (ERI), we examine several different models in terms of efficiency, accuracy, ability to implementation, and so on.

**Multi-Head ReLU for Implicit Neural Representation**  | Python, TensorFlow

Sep. 2021

- In this project, a novel multi-head multi-layer perceptron (MLP) structure is presented for implicit neural representation (INR).

**Speech Emotion Recognition (My Master’s Thesis)**  | Python, TensorFlow, Linux

Jul. 2021

- In this project, we propose an efficient and lightweight fully convolutional neural network(FCNN) for speech emotion recognition in systems with limited hardware resources.

**Drop-Connect in TensorFlow**  | Python, TensorFlow

Jul. 2021

- In this project, we implemented drop-connect in form of a Python library.

**SincNet in TensorFlow**  | Python, TensorFlow

Jun. 2021

- In this project, we implemented SincNet in form of a Python library.

**Rotary Embeddings in TensorFlow**  | Python, TensorFlow May. 2021


- In this project, a standalone library for adding rotary embeddings to transformers in TensorFlow was implemented.

**Sparse Layer in TensorFlow**  | Python, TensorFlow Apr. 2021

- In this project, we implemented two layers (Convolution and Dense) as sparse layers in form of a Python library.

**Physics-Based Neural Network**  | Python, TensorFlow, FEniCS Feb. 2021

- In this project, we used the sine activation function, which has recently been introduced as a solution for solving differential equations with neural networks.

**Two Steps Gradient Vector Flow (GVF) Snake Model**  | MATLAB Dec. 2020



- In this project, we utilized the generalized gradient vector flow snake model using minimal surface and two steps converging using both vector based normalization and component-based normalization with distinct controlling parameters on active contour.

**Stock Prediction (Private Repository)** | Python, TensorFlow, Web Crawling Sep. 2020

- In this project, we first extracted financial market data via web crawling and then modelled them for risk reduction and profit forecasting.

## PEER-REVIEWED MANUSCRIPTS

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- **Arya Aftab**, Alireza Morsali, Shahrokh Ghaemmaghami, Benoit Champagne. “**Light-SERNet: A Lightweight Fully Convolutional Neural Network for Speech Emotion Recognition**”. Accepted in ICASSP 2022. Arxiv 
- **Arya Aftab**, Alireza Morsali. “**Multi-Head ReLU Implicit Neural Representation Networks**”. Accepted in ICASSP 2022. Arxiv 
- **Arya Aftab\***, Fatemeh Kashani Asadi Jafari\*, Alireza Morsali, Shahrokh Ghaemmaghami. “**An End to End Method for Predicting  $pK_a$  of Small Molecules**”. Under preparation.

\*: Indicating same contribution

## TEACHING ASSISTANT EXPERIENCES

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**Speech Processing** Fall 2020

- For PhD and Master students of communication systems at Sharif University of Technology. Instructor: **Prof. Shahrokh Ghaemmaghami**.

**Fundamental of Electrical Engineering** Winter 2020

- For Bachelor students of electrical engineering at Sharif University of Technology. Instructor: **Dr. Leila Mahmodi**.

## WORK EXPERIENCES

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**Electronic Research Institute (ERI) at Sharif University of Technology**  Sep. 2021 – Present  
*Researcher* *Tehran, Iran*

- I am working as a researcher and developer to develop systems based on machine learning and speech processing.

**DG Sculptor**  Jan. 2021 – Present  
*Researcher* *Montreal, Canada*

- My colleagues and I at this startup are trying to develop new methods for neural rendering.

**Arya Teb Firouz**  Mar. 2019 – Aug. 2019  
*Researcher* *Tehran, Iran*

- I worked as a researcher in the research and development (R&D) department of the company to solve problems with artificial intelligence.

## INTERNSHIP

Emam Sajjad Hospital 

*Biomedical Intern*






Jun. 2017 – Aug. 2017

Yasuj, Iran

- I classified documents related to medical devices in the hospital based on their performance.

## TECHNICAL SKILLS

### Languages:

-  **Python**(TensorFlow, PyTorch, Keras, JAX)(Expert)
-  **JavaScript**(Intermediate)
-  **MATLAB**(Expert)
-  **BashScript**(Intermediate)
-  **C++**(Intermediate)

### Developer Tools:

-  **VS Code**(Expert)
-  **Sublime Text**(Intermediate)
-  **Jupyter Notebook**(Expert)
-  **Vim**(Intermediate)
-  **PyCharm**(Intermediate)

### Technologies/Frameworks:

-  **Linux**(Expert)
-  **NodeJS**(Intermediate)
-  **GitHub**(Expert)
-  **Docker**(Intermediate)
-  **Git**(Expert)

### General Softwares:

-  **LaTeX**(Intermediate)
-  **MeshLab**(Intermediate)
-  **GIMP**(Intermediate)
-  **Mendeley**(Intermediate)
-  **Inkscape**(Intermediate)
-  **Microsoft Office**(Intermediate)

## INTERESTS

- Listening to Music
- Playing Computer Games
- Walking
- Climbing
- Reading Manga Comics

## REFERENCES

- **Dr. Shahrokh Ghaemmaghami:** Professor  
Department of Electrical Engineering and Electronics Research Institute, Sharif University of Technology, Tehran, Iran.  
**Email:** ghaemmag@sharif.edu
- **Dr. Sajjad Amini:** Assistant Professor  
Department of Electrical Engineering and Electronics Research Institute, Sharif University of Technology, Tehran, Iran.  
**Email:** s.amini@sharif.edu
- **Dr. Alireza Morsali**  
Department of Electrical and Computer Engineering, McGill University, Montreal, Canada.  
**Email:** alireza.morsali@mail.mcgill.ca