ARYA AFTAB

Tehran, Iran

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EDUCATION

Sharif University of Technology   Sep. 2018 – Jul. 2021
Master of Science, *Department of Electrical Engineering (Communication Systems)*   *Tehran, Iran*
GPA - 3.6

Amirkabir University of Technology (Tehran Polytechnic)   Sep. 2013 – Aug. 2018
Bachelor of Science, *Department of Biomedical Engineering (Bioelectric)*   *Tehran, Iran*

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

- **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

Speech Processing
Fall 2020
- For PhD and Master of communication systems students at Sharif University of Technology. Instructor: **Dr. Shahrokh Ghaemmaghami**.

Fundamental of Electrical Engineering
Winter 2020
- For Bachelor of electrical engineering students at Sharif University of Technology. Instructor: **Dr. Leila Mahmodi**.

WORK EXPERIENCES

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 part of the company on solving problems with artificial intelligence.

INTERNSHIP

Emam Sajjad Hospital ⎘
Jun. 2017 – Aug. 2017
Biomedical Intern
Yasuj, Iran
- I classified documents related to medical devices in the hospital based on their performance.

TECHNICAL SKILLS

Languages: Python(TensorFlow, PyTorch, Keras, JAX, ...), MATLAB, C++, JavaScript, BashScript
Developer Tools: VS Code, Jupyter Notebook, PyCharm, Sublime Text, Vim
Technologies/Frameworks: Linux, GitHub, Git, NodeJS, Docker
Other Tools: LaTeX, GIMP, Inkscape, MeshLab, Mendeley, Microsoft Office

INTERESTS

- Listening to Music
- Playing Computer Games
- Climbing
- Watching Movies
- Walking
- 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. Benoit Champagne**: Professor
  Department of Electrical and Computer Engineering, McGill University, Montreal, Canada.
  Email: benoit.champagne@mcgill.ca

- **Dr. Alireza Morsali**
  Department of Electrical and Computer Engineering, McGill University, Montreal, Canada.
  Email: alireza.morsali@mail.mcgill.ca