

Haleh Akrami

akrami@usc.edu • Los Angeles, CA • (213) 706-7723 • [LinkedIn](#)

EDUCATION

Ph.D. in Biomedical Engineering

University of Southern California (USC)

Coursework: DSO699: Exploration of emerging topics in contemporary data sciences, MATH 547: Mathematical Foundations of Statistical Learning Theory, ISE633: Large Scale Optimization and Machine Learning, MATH541a: Introduction to Mathematical Statistics, BME525: Advanced Biomedical Imaging, BME502: Advanced Studies of the Nervous Systems Mathematical, BME505: Laboratory Projects in Biomedical Engineering, BME511: Physiological Control Systems

GPA: 4/4
Aug 2018 – May
2023 (Expected)

M.Sc. in Electrical Engineering

University of Southern California (USC)

Coursework: CSCI 455x: Introduction to Programming Systems, EE599: Special topic- Deep Learning, EE563: Estimation Theory, EE596 Wavelets and Graphs for Signal Processing and Machine Learning

GPA: 4/4
Aug 2018 – May
2023 (Expected)

M.Sc. in Biomedical Engineering

Ferdowsi University of Mashhad

Selected Coursework: Digital Signal Processing, Digital Image Processing, Modeling of Biological Systems, Dynamical Systems Neuroscience, Special Topics – A (The neural code)

GPA: 18.99/20
Aug 2014 – Jan
2017

EXPERIENCE

Image Analytic intern

Merck & Co.

Projects: Semi-supervised continual learning for histopathology datasets with noisy labels
- Developed a sequential training scheme for multi-task learning with unbalanced labels using continual learning.

May 2021 – Aug
2021

Volunteer Researcher at USC Neural Modeling and Interface Lab

University of Southern California

Project: EMG prediction from M1 recordings using a sparse generalized linear model (MATLAB)
- Actively research on driving coordinate decedent algorithm for group bridge for Poisson regression.

Nov 2017 – Aug
2018

Volunteer Researcher at Biomedical Imaging Group

University of Southern California

Project: Group synchronization algorithm for BrainSync that allows synchronization of rfMRI signals at homologous locations (Python, MATLAB).

Nov 2017 – Aug
2018

SKILLS

- ❖ **Programming languages:** C/C++/C#, Python, and Java.
- ❖ **Version Control:** Git.
- ❖ **Tools:** Pytorch, Keras, TensorFlow, MATLAB, MATLAB toolboxes (Psychtoolbox, EEGLAB, LYSIS, SIMULINK), SPSS, Minitab, Code Vision AVR Compiler, and ISE Design Suite

HONORS AND AWARDS

- ❖ **Awarded** MHI scholarship (the highest honor in the EE Dept. of USC) 2021
- ❖ **Awarded** GHC Scholarship from AnitaB. 2021, 2020
- ❖ **Awarded** travel grant for IEEE Int. Symp. Biomed. Imaging Conference 2020

- ❖ **Awarded** USC Viterbi Fellowship for incoming Ph.D. student. Aug 2018
- ❖ **Awarded** Ferdowsi University of Mashhad Fellowship for M.Sc. **Ranked** the second students. Mar 2015
- ❖ **Awarded** Financial support for M.Sc. thesis from Cognitive Science and Technologies Council of Iran (CSTC). 2015

PROJECTS

- ❖ Developing a robust and generalizable unsupervised anomaly detection method for medical imaging application **(PyTorch)**
 - Built robust machine learning methods, including robust variational autoencoders, robust classifier, robust GAN to an outlier in the dataset
 - Actively working on developing a robust GAN to apply it on fMRI harmonization
 - Lesion detection in brain MRI images deploying transfer learning.
 - Developing Spatial-temporal graph convolutional neural networks for predicting post traumatic epilepsy.

May 2019-
Current
- ❖ Uncertainty estimation for autoencoders **(PyTorch)**
 - Deployed deep quantile estimation and obtained a probabilistic threshold for anomaly detection using generative models
 - Actively working on extending the method for medical image translation

May 2020-
Current
- ❖ Developing Spatial-temporal convolutional neural networks for predicting post traumatic epilepsy **(PyTorch)**
 - Actively working on developing self-supervised learning for graph neural networks and fMRI connectivity matrix.

May 2021-
Current
- ❖ Developing a method to reduce CNN model complexity which is in the category of pre-defined constrained filter design approaches – i.e., pre-defined Sparse Convolutional (pSConv) layers **(PyTorch)**

Jan 2019-Aug
2019

ACADEMIC EXPERIENCE & PROFESSIONAL SERVICE

- ❖ Co-leading a breakout session in WiML workshop 2021 about “Uncertainty estimation” July 2021
- ❖ Program Committee for ICLR’21 Workshop on “Synthetic Data Generation: Quality, Privacy, Bias” Feb 2021
- ❖ Reviewer of Artificial Intelligence and Statistics. Dec 2020
- ❖ Co-leading a breakout session in WiML workshop 2020 about “robust machine learning with bad training data” Jul 2020
- ❖ President of Iranian Graduate Student Association at USC Aug 2019- Aug 2020
- ❖ Reviewer of IEEE International Symposium on Biomedical Imaging. Jan 2019

SELECTED PUBLICATIONS

- ❖ Quantile Regression for Uncertainty Estimation in VAEs with Applications to Brain Lesion Detection. IPMI 2021
- ❖ Prediction of posttraumatic epilepsy using machine learning”, in proceeding of SPIE Medical Imaging, 2021.
- ❖ Robust Variational Autoencoder for Tabular Data with β Divergence. ICML UDL 2020
- ❖ Brain Lesion Detection Using a Robust Variational Autoencoder and Transfer Learning. IEEE ISBI 2020.
- ❖ pSConv: A Pre-defined Sparse Kernel Based Convolution for Deep CNNs. 57th Annual Allerton Conference, 2019.
- ❖ A Matched Filter Decomposition of fMRI into Resting and Task Components. MICCAI, 2019.
- ❖ Group-wise alignment of resting fMRI in space and time”, in proceeding of SPIE Medical Imaging, 2019.
- ❖ Culture modulates the brain response to harmonic violations: an EEG study on hierarchical syntactic structure in music. Frontiers in human neuroscience 2017.