USC Viterbi School of Engineering

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

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** GHC Scholarship from AnitaB. 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 machine learning methods that are proper for real-world datasets such as medical imaging data **(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
  - Uncertainty Estimation of Autoencoders
  - Lesion detection in brain MRI images deploying transfer learning.
  - Developing Spatial-temporal graph convolutional neural networks for predicting post traumatic epilepsy.

  May 2019-Current
- 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-Current
- Group synchronization algorithm for BrainSync that allows synchronization of rfMRI signals at homologous locations **(Python, MATLAB)** Nov 2017-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 SERVICES

- 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.