Hossein Souri

CONTACT INFORMATION

Homewood Campus, Johns Hopkins University
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EDUCATION

Johns Hopkins University (JHU), MD, USA — August 2020 - Present

Ph.D. in Computer Science (Cumulative GPA: **3.96/4**)
Advisor: Dr. Rama Chellappa
Research Area: Machine Learning, Computer Vision, Artificial Intelligence
I'm currently working on Adversarial Attacks and Defenses models.

University of Maryland, College Park (UMD), MD, USA — August 2018 - August 2020

M.S. in Electrical and Computer Engineering (GPA: **3.86/4**)
Advisor: Dr. Rama Chellappa
Research: Computer Vision, Machine Learning
Paper: ATFaceGAN: Single Face Image Restoration and Recognition from Atmospheric Turbulence

University of Tehran (UT), Tehran, Iran — 2013 - 2017

B.S. in Electrical and Computer Engineering
GPA: 18.66/20 (**3.95/4**)
Advisor: Dr. Hamid Soltanian-Zadeh

HONORS AND AWARDS

-Clark School Distinguished Graduate Fellowships, University of Maryland, 2018-2019
-Ranked **5th** (**top 3%**) among 250 students of Electrical and Computer Engineering, University of Tehran, 2013-2017
-Awarded scholarship as an honor student for three consecutive years, University of Tehran, 2015-2017
-Ranked **12th** in the 21st Scientific Olympiad for University Students in Electrical and Computer Engineering and qualified to pursue graduate studies in any Iranian university, 2016
-Semi-finalist in Iranain National Mathematics and Physics Olympiad, 2011

PUBLICATIONS

Google Scholar
Semantic Scholar

- P. Khorramshahi*, **H. Souri***, R. Chellappa, and S. Feizi, "**GANs with variational entropy regularizers: Applications in mitigating the mode-collapse issue**," *arXiv preprint arXiv:2009.11921*, 2020. [Link]
- P. Dhar, J. Gleason, **H. Souri**, C. D. Castillo, and R. Chellappa, "**Towards Gender-Neutral Face Descriptors for Mitigating Bias in Face Recognition**," 2020. [Link]
- P. Dhar, J. Gleason, **H. Souri**, C. D. Castillo, and R. Chellappa, "**An adversarial learning algorithm for mitigating gender bias in face recognition**," 2020. [Link]
- C. P. Lau, **H. Souri**, and R. Chellappa, "**Atfacegan: Single face imagerestoration and recognition from atmospheric turbulence**," arXiv preprintarXiv:1910.03119, *Accepted as **Oral** presentation for FG 2020.* [Link]

RESEARCH EXPERIENCE

- **Research Assistant, Artificial Intelligence for Engineering and Medicine Lab (AIEM)**, Johns Hopkins University — Aug 2020 - Present
  Research: developing novel adversarial attacks and defences models.

- **Research Assistant, University of Maryland Institute for Advanced Computer Studies (UMIACS)**, University of Maryland, College Park — Aug 2018 - Aug 2020
  Research: fairness in face recognition systems, image restoration, improving GANs, understanding deep features.

- **B. Sc. Thesis Project: Emotional State Recognition From EEG Signal Using Machine Learning Models** — 2017
  Emotional state recognition and classification from EEG signals using wavelet-based and power-spectrum based feature extraction methods and MLP, SVM, and KNN classifiers

- **Research Assistant, Secure Communication Laboratory** 2017 - 2018
  Acoustic Scene Detection using matching pursuit algorithm for extracting time-frequency features and classifying using MLP and SVM classifiers and hidden Markov model (HMM)

Work Experience

- **Computer Networks Lab, University of Tehran, Iran** 2016
  Internship, Internet of Things
  Mentor - Dr. Vahid Shah-Mansouri
  Design and programming a smart home control and monitor system using Zigbee wireless technology
- **High Voltage Lab, University of Tehran, Iran** 2015
  Internship, Programming
  Mentor - Dr. Hossein Mohseni
  Design and programming a Tesla Coil calculator

Technical Skills

- *Programming Languages*: Python, C/C++, Java, MATLAB, R, Assembly
- *Technical Tools*: PyTorch, TensorFlow, MATLAB, OpenCV, Keras, PySpark, Dask, CUDA

Relevant Courses

- Advanced Object-Oriented Programming
- Algorithms and Data Structures
- Parallel Programming
- Machine Learning
- Advanced Computer Vision
- Advanced Computer Graphics
- Advanced Numerical Optimization
- Random Processes

Teaching Assistant Experience

Computing Systems and Programming, Microprocessor and Assembly Language, Computer Networks, Signal and Systems, Engineering Probability and Statistics, Digital Communications, Digital Signal Processing. Communication Systems

Selected Projects **Github**

- TensorFlow implementation of modern neural network architectures, such as ResNet, DenseNet, and ResNext. **Code**
- PyTorch implementation of a Deep Convolutional Neural Network model for detecting the parameters of a circle presents inside a given image under the presence of noise. **Code**
- Boundary detection and object recognition using classical and deep learning methods. **Code**
- Python end-to-end pipeline to swap faces in videos and images. **Code**
- Python implementation of classical and unsupervised Structure from Motion(SfM). **Code**
- Python implementation of classical machine learning tools such as LDA, PCA, k-NN, Bayesian classifiers, SVM, MLP, and CNN. **Code**
- PySpark implementation of k-means clustering. **Code**
- C++ Nori base implemetation of Ray Tracing Acceleration Data Structures, Point Lights, Monte Carlo Sampling, Area Lights, Micro-facet BRDF, Dielectrics, and Path Tracing. **Code**
- Parallel implementation of image filtering using OpenMP and MPI implementation of Cellular Automata. **Code**
- Generation of HTML for web pages using Java language. **Code**
- Java implementation of concurrent systems using multi-threading, GUI implementation of Blackjack game, trees, graphs, hashmaps, sets, and linked lists. **Code**
- C implementation of secure file system with linked allocation, Quarto game, adaptive filters. **Code**