Ali Marjaninejad

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Education

University of Southern California
Ph.D. Biomedical Eng. GPA: 3.95/4.0, Expected: June 2020
M.Sc. Electrical Eng.
GPA: 3.88/4.0, Track: Data Science
Amirkabir University of Tech.
M.Sc. Biomedical Eng.
GPA: 4.0/4.0, Track: Signal Proc.
Sahand University of Tech.
B.Sc. Electrical Eng.
GPA: 3.8/4.0, Minor: Biomedical

Skills

- Programming: Proficient in Python, MATLAB
- Machine Learning: Proficient in feature extraction, Supervised, Unsupervised, and Reinforcement Learning and Optimization: SVM, Neural Networks, Decision Making, Clustering, Classification, Regression methods, Policy and Value based methods, Genetic Algorithm, etc.
- Hardware design: Experienced in bio amplifiers, analogue filters, PCB design, and microcontrollers

Software and toolboxes:

Numpy, Pandas, SciPy, Scikit, Matplotlib, and Bokeh libraries

DSP, DIP, NN, Optimization, Statistics and Machine Learning toolboxes + Simulink

PSpice, Eagle Cad, Adobe Illustrator, Adobe Photoshop, Microsoft Office

Related Coursework

- Estimation theory
- Statistical signal processing
- Advanced digital signal processing
- Biological signal processing
- Pattern recognition
- Computational intelligence
- Foundations of artificial intelligence
- Cognition and brain physiology
- Advanced studies of the nervous system
- Neural implant engineering
- Medical imaging systems
- Medical image processing
- Neuromechanics

Highlights:

- More than 10 peer-reviewed publications including a ***nature*** *machine intelligence* paper and a Springer book chapter
- 6+ years of experience in Machine learning, Algorithm development and Biological signal processing: Time and Frequency domain analysis, Multi-dimensional signal processing, Pattern recognition, Supervised, Unsupervised, and Reinforcement learning

Honors and Awards

- Being featured on the cover of the march 2019 issue of the *nature machine intelligence*
- USC Provost's fellowship; the most prestigious fellowship at USC (Duration: 2015 – 2019)
- USC Grad. school's Research enhancement fellowship recipient; The most competitive PhD research award at USC (2018 – 2019)
- Society for Brain Mapping & Therapeutics (SBMT) and Brain Mapping Foundation Student Outstanding Leadership and Service Award (2019)
- USC Grad. Student Government's International Student Recognition Award (2018)
- Appeared on the Wired magazine for my role in the neuromorphic quadruped robot project (2018)
- Featured on USC news for instructing MATLAB classes for students in the SHINE program (2016)
- Awarded the Certificate of Appreciation from the Deputy Minister of Science for my active role in the "Bioelectric" journal (awarded as the best national student journal of 2009 - Iran)

Professional Experiences

- Internship as a Data Scientist at Neural Analytics (Summer 2018)
  - Worked on algorithms to improve the search speed and efficiency of the robotic brain scanner
  - Designed machine learning protocols to enable robotic system to make data driven clinical decisions
- Internship at the MRI section of the exclusive service provider for the General Electrics Healthcare company in Iran (Tajhizat Pezeshki Pishrafteh, 2011)
  - Contributed to both hardware and software Installation, repair, and maintenance
  - Mastered the general principles of physics of imaging modalities especially the MRI; Mastered image processing in MATLAB
- Research Assistant at Brain-Body Dynamics Lab: Exploring the neuromechanics of the hand and its representation in human cortex (2015 – present)
  - Finding sensory motor representations on human brain in EEG, ECoG, and Single Unit Activity (SUA) signals
  - Showed that a linear mapping can efficiently describe the relationship between finger positions (joint angles) and signal power in different frequency bands of ECoG recordings
  - Used Genetic Algorithm (GA) to find optimal tendon excursion values in a tendon-driven robotic limb (with unknown parameters) to follow a desired trajectory
  - Addressed the long-standing problem of redundancy in the anthropomorphic neuromechanics using optimization and dimensional reduction approaches
  - Developed the Neuromechanics toolbox in MATALB environment as a complementary toolbox for the book: Fundamentals of Neuromechanics
  - Led two groups of interns in hardware and software development projects; resulted in peer-reviewed publications and raising research grant funding
- Attended Computational sensory-motor neuroscience (CoSMo) and Health data exploration (HDE) summer schools (2017, 2018)
  - Received competitive merit-based fellowships to attend each program
  - Trained to work with bigdata, neural data, and health related data by the most famous leaders of the field
- Research assistant at intelligent signal and data processing lab: Biological and Array signal processing (2012-2015)
  - Used SVM and Neural Network regressors to predict the direction of arrival of a sound wave to a microphone array system
  - Collected a database of microphone array recordings using Persian vocabulary and implemented a MATLAB toolbox that increased speech recognition ratio using beamforming; the project was later integrated successfully in industry
- Instructed three subjects (Microprocessors lab, Circuits design lab and Electronics design lab) at Amirkabir University of Technology and holding two MATLAB workshops per year at USC

Certificates

- Health, Technology, and Engineering (HTE) certificate, USC
- Data Scientist with Python accomplishment certificate, DataCamp (in progress)
- ISO 13485 Internal audit training certificate, Oxfordcert. Registration Number: TIA1331509010

Services and Memberships

- Assistant editor of Paladyn, Journal of Behavioral Robotics – De Gruyter
- President of the student branch of the Society for Brain Mapping & Therapeutics (SBMT) at USC
- Vice president of the Iranian Graduate Student Association (IGSA) at USC
- IEEE Student member
- Society for Neuroscience (SfN) student member
- American Society of Biomechanics (ASB) student member

- References are available upon request