Ali Marjaninejad

U.S. Permanent Resident
Bay Area, California
Cell: (213) 536-3159
E-mail: marjanin@usc.edu
Web: **Marjanin.github.io**
g-scholar: goo.gl/6kSyRT

Education:

University of Southern California
Ph.D. Biomedical Eng. GPA: 3.95/4,
Research: AI and Bio-robotics
M.Sc. Electrical Eng. GPA: 3.88/4,
Track: Data Science
Amirkabir University of Tech.
M.Sc. Biomedical Eng. GPA: 4/4,
Track: Signal Processing
Sahand University of Tech.
B.Sc. Electrical Eng. GPA: 3.8/4,
Minor: Biomedical Eng.

Skills:

- **Programming:** Proficient in Python, MATLAB, intermediate in C and R
- **Machine Learning:** Proficient in feature extraction, Supervised, Unsupervised, and Reinforcement Learning and Optimization -- DNN, Decision Making, Clustering, Classification, Regression, Policy and Value based methods, Genetic Algorithm, etc.
- **Hardware design:** Experienced in bio-signal acquisition and amplifiers, analogue filters, PCB design, and microcontrollers

Software and toolboxes:

Pytorch, TensorFlow, Keras, Scikit-learn, Open AI gym and baselines, Numpy, Pandas, SciPy, Matplotlib, and Bokeh libraries, MuJoCo-py, pybullet

DSP, DIP, Deep Learning, Optimization, and Statistics toolboxes + Simulink

MuJoCo and Bullet physics simulators, 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:

- **+20 peer-reviewed publications** (+300 citations) including a first-authored research paper being featured on the cover of "**Nature** Machine Intelligence", a book chapter in "Springer Nature" Tracts in Advanced Robotics, and IEEE conferences such as IROS and EMBC.
- +10 years of research experience in AI, Biological Signal Processing, Bio-inspired systems, Robotics, and Algorithms: Time and Frequency domain analysis, Multimodal signal processing, hardware design, Pattern recognition, Supervised, Unsupervised, and Reinforcement learning.

Professional Experiences

- Senior Data Scientist at Ceribell Inc. (Silicon Valley, California, Feb 2022 - Current)
  - Led multiple projects including ones that required active collaboration with multiple teams (such as the clinical, hardware, and commercial teams) from the idealization step to the FDA submission.
  - Using AI and classic Signal Processing techniques to process, enhance, and make inferences from biological signals, produce meaningful insight into how the pipelines works, and generate resulting statistics
- Postdoctoral Research Fellow at University of Southern California (Los Angeles, California, June 2021 – Feb 2022)
  - Developing Life-long Learning, Autonomous Bio-inspired Robotic Systems with Embodied Intelligence
  - Utilizing AI and machine techniques to model and make inference of bio-signals (Brain Computer Interface devices, etc.)
- Internship as a Data Scientist at NovaSignal (Los Angeles, California, formerly: Neural Analytics; Summer 2018)
  - Worked on algorithms to improve the search speed and efficiency of a robotic brain scanner
  - Designed machine learning pipelines and user interface software to enable the team to make data-driven clinical decisions
- Research Assistant at ValeroLab (USC, Los Angeles, California, 2016 – present)
  - Decoding sensory motor representations on human brain in EEG, ECoG, and Single Unit Activity (SUA) signals
  - Used Genetic Algorithm (GA) to find optimal tendon excursion values in a tendon-driven robotic limb (with unknown parameters) to follow a desired trajectory and ML to control the over- and under-determined robotic systems
  - Addressed the long-standing problem of redundancy in the anthropomorphic neuromechanics using by modeling their kinematics using optimization and dimensional reduction approaches
  - Developed a n award-winning VR based platform that gamifies the assessment protocol for tremor assessments
  - Led two groups of interns in hardware and software development projects including an EMG controlled robotic arm; resulted in peer-reviewed publications and raising research grant funding
- Received competitive merit-based fellowships (funded by NSF and others) to attend multiple external programs to be 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
- Course Instructor for three subjects (Microprocessors lab, Circuits design lab and Electronics design lab) at Amirkabir University of Technology and holding Coding workshops at USC

Honors and Awards

- Research contributions has appeared on more than 80 news outlets including the Wired magazine, PCMag, Wevolver, and VoA
- Has received a number of the most prestigious awards for the scientific and educational contributions during PhD
  - The USC best PhD Dissertation Award (William F. Ballhaus Award)
  - USC Stevens center for innovation's "Best Commercial Potential" award for the work done on bio-inspired autonomous robots
  - USC Grad. school's Research enhancement fellowship recipient; The most competitive PhD research award at USC
  - USC Provost's fellowship; one of the most prestigious PhD fellowships at USC
  - The Jenny Wang Excellence in Teaching award
  - The USC Viterbi BME Best Research Assistant award
  - USC Graduate Student Government's International Student Recognition Award
- Society for Brain Mapping & Therapeutics (SBMT) and BMF Student Outstanding Leadership and Service Award (2019)
- 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 the year - Iran)

Professional contributions, Services, and Memberships

- Assistant editor of Paladyn, Journal of Behavioral Robotics – De Gruyter
- Chairing the "Brain-machine Interface and Sensory Perception" session at ICONIP (2020)
- Co-chairing the "Biorobotics and Biomechanics & Computational Systems & Synthetic Biology; Multiscale modeling" session at IEEE EMBC (2018)
- President of the student branch of the Society for Brain Mapping & Therapeutics (SBMT) at USC (2019)
- Vice president of the Iranian Graduate Student Association (IGSA) at USC (2016)
- IEEE Student member; Society for Neuroscience (SfN) student member; American Society of Biomechanics (ASB) student member