Seyed (Yahya) Shirazi, Ph.D.

Assistant Project Scientist, **Swartz Center for Comp. Neuroscience, UCSD**

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Innovative lead scientist in neural and biomechanical research with over 7 years of experience in experimental design, technology development, data analysis, and project leadership. Adept at developing and optimizing processes for next-generation technologies, with a strong foundation in statistical data processing and an exceptional track record in leading research projects from concept to completion.

Technical Expertise

Research: IRB, experiment design, motion capture, motor control, high-density EMG/EEG, computational modeling
Signal Processing: Statistical methods, feature extraction, blind source separation, multivariate analysis
Computing & Software dev: Matlab, Python, SciPy, PyTorch, Pandas, Plotly, Docker, Git, Shell
Hardware dev: sensor design, benchtop testing, prototyping, SolidWorks, Ansys, PCB design

Experience (selected)

University of California San Diego, La Jolla, CA 12/2022 – Present
Assistant Project Scientist (postdoc completed 02/2024), Institute for Neural Computation

- Led the development EEG, EMG, and ECoG methodologies, significantly enhancing model accuracy and reliability.
- Integral contributor to a $6 million NIH project for markerless MoCap development and brain-body interaction.
- Applied best-in-class statistical data processing techniques to analyze and interpret complex datasets.

New York University, New York, NY 05/2021 – 08/2022
Postdoctoral Scientist, Electrical and Computer Engineering

- Managed multicenter collaborations to development of functional biomarkers of fatigue, tendinopathy, and stroke.
- Led a comparative analysis of high-density EMG sensor technologies, enhancing sensor performance & application.

Education

University of Central Florida, Orlando, FL
Doctor of Philosophy, Mechanical Engineering with Neuroscience focus 01/2017 - 04/2021

Tehran Polytechnic, Tehran, Iran
Master of Science, Biomedical Engineering, Biomechanics 09/2011 - 02/2014
Bachelor of Science, Biomedical Engineering, Biomechanics 09/2007 - 09/2011

Patent

Shirazi S.Y., *System & methods for biosignal detection & active noise cancellation*, US Patent 2023/0240581A1.

Publications (journals and proceedings, selected)

Kothe C, **Shirazi S.Y.**, Mullen T., *et. al. The Lab Streaming Layer framework for synchronized multimodal recording.* BioRxiv, 2024, (PDF)

Frank G, **Shirazi S.Y.**, Palmer J., Cauwenberghs G., Makeig S., and Delorme A. *An Exploration of Optimal Parameters for Efficient Blind Source Separation of EEG Recordings Using AMICA.* The 23rd IEEE BIBE 2023 (PDF)

Shirazi S.Y. & Huang, H. J. *Older adults use fewer muscles to overcome perturbations during a seated locomotor task*, under review, Journal of Neurophysiology 2023 (PDF)

O' Keeffe R., **Shirazi S.Y.**, Yang J., Mehrdad S., Rao S., and Atashzar S.F. *Non-parametric Functional Muscle Network as a Robust Biomarker of Fatigue*, IEEE J. Biomed. and Health Informatics, 2023 (PDF)

O' Keeffe R., **Shirazi S.Y.**, Bilaloglu S., Bighamian R., Raghavan P., and Atashzar S.F. *Nonlinear functional muscle network based on information theory tracks sensorimotor integration post stroke*, Scientific Reports, 2022 (PDF)

Shirazi, S.Y. and Huang, H. J. *Differential theta-band signatures of the anterior cingulate and motor cortices during seated locomotor perturbations*, IEEE Trans. Neural Sys. and Rehab. Engr., 2021. (PDF)

Shirazi, S.Y. and Huang H.J., *More Reliable EEG Electrode Digitizing Methods Can Reduce Source Estimation Uncertainty, But Current Methods Already Accurately Identify Brodmann Areas*, Front. Neurosci., Nov 2019. (PDF)

Conferences (peer reviewed, selected)

Shirazi, S.Y. and Makeig S., *Recording the 3D locations of EEG scalp electrodes using an ordinary cell phone camera*, 30th Annual Meeting of the Society for Neuroscience, Washington DC, Nov 2023,

Shirazi, S.Y. and Huang H.J., *Electrocortical and motor responses to perturbations are not necessarily coupled*, 4th International Conference on Mobile Brain/Body Imaging (MoBI), La Jolla, CA, June 2022.

Outreach and Service

Outreach
Weekly EEGLAB and ExG public office hours for researchers around the world, 2023-present
PedsAcademy STEM Day for the in-patient children, Nemours Children's Hospital, May 2019
UCF STEM Day, demonstrated Biomechanics of the Muscles movement to middle-school students Oct 2018
Mentorship
Co-Advised a female Ph.D. student from Universidad Autónoma de Madrid, Spain, 2023
Mentorship of two Ph.D. candidates and two Master students at the NYU MERIIT Lab. 2021-2022
Co-mentored a UCF female freshman to present at the Society of Neuroscience Meeting, Chicago, IL, 2019
Co-mentored a UCF female sophomore to prototype a magnetic break for assistive devices, BRaIN Lab, 2018

Extracurricular Training

- Specialization on Generative Adversarial Networks (GANs), DeepLearning.AI
- MATLAB Academy courses on programming, data visualization, machine and deep learning
- ISO 9001:2008 quality system management auditor, IMQ Academy
- ISO 13485:2003 and Legal requirements for medical device manufacturers and distributors, Iran's FDA

Professional Membership

- Institute of Electrical and Electronics Engineers (IEEE)
- IEEE Engineering in Medicine and Biology Society (EMBS)
- IEEE Signal Processing Society (SPS)
- Society for Neuroscience (SfN)
- American Society of Biomechanics (ASB)
- International Neuroinformatics Coordinating Facility (INCF)

Relevant Skills & Experience

- Extensive track record of successfully delivering high-profile, technical projects within tight deadlines.
- Expertise in leading and mentoring high-caliber engineering and research teams.
- Proven ability in navigating fast-paced, ambiguous environments and identifying new research opportunities.
- Skilled in leading root-cause analysis experiments and effectively communicating findings to project teams.
- Exceptional writing skills in writing scientific papers, protocols, design of experiments (DOEs), FMEA, etc.
- Excellent interpersonal and communication skills, adept at coordinating activities to meet objectives on time and with high quality.