Funded Postdoctoral Position in Neuromorphic and Robotic Systems

Brain-Body Dynamics Lab, Los Angeles, California, United States.

Who we are:

The Brain-Body Dynamics Lab, led by Prof. Francisco Valero-Cuevas, is dedicated to understanding neuromuscular control and the interaction between neural systems and biomechanical/robotic systems. Our laboratory consists of an interdisciplinary group of graduate and undergraduate students, postdoctoral fellows, clinicians, and faculty in electrical engineering, computer science, mechanical engineering, neuroscience, bioengineering and mathematics. Further information about our laboratory can be found at: Valerolab.org

Who we are looking for:

Our laboratory is accepting applications for an NIH-funded postdoctoral fellowship to understand the neuromuscular control of complex tendon-driven systems, and reverse-engineering brain function in collaboration with Profs. Terry Sanger and Jerry Loeb.

We are looking for candidates to implement models of neural circuitry and muscle function for simulation purposes or in real-time to control hardware-in-the loop systems. Successful applicants will have strong backgrounds in several of the following: control and estimation of nonlinear systems, computational neuroscience, mechatronics, computational methods, robotics, and/or biomechanical modeling.

The successful candidate must have a Ph.D. in engineering, bioengineering or neuroscience; and a strong interest in neuromuscular control. She/he must have experience in at least two of the following: control & estimation of nonlinear or biological systems; computational modeling; FPGA-based acceleration of computational models/algorithms; and/or experimental design of electromechanical systems. Preference will be given to applicants with experience in neuroscience. Expertise in computer languages is essential.

Nice to have:

- Hands-on experience in real-time control system design.
- Familiarity with continuous-time, discrete-time, FIR/IIR, transfer-function, state-space representations of dynamic systems.
- Understanding of physiology/pathophysiology of the neuromuscular system, spinal reflex circuitry, muscle afferentation, and biomechanics of musculotendinous complex.
- Experience in time and frequency-domain analyses of biomedical signals and systems, digital signal processing and system identification.
- Experience in programming in MATLAB, Python or R for model simulation and data analysis purposes.
- Experience in object oriented programming like C/C++.
- Knowledge of Verilog and experience working with FPGA.
- Hands-on experience in biomedical instrumentation and signal conditioning.
- Hands-on experience with data acquisition systems.

How to Apply:

For consideration, please fill out this Form with your name and contact email, and upload your application as one single PDF document (include a cover letter, your full CV, a statement of research interests and career goals, and three references including their name and email addresses). The position is available immediately, and applications will be received until the position is filled.

The University of Southern California offers a competitive salary and benefits.