SARINE BABIKIAN

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WORK EXPERIENCE

Research Assistant, *University of Southern California, Los Angeles, CA*   2012 - present

Dissertation: Understanding the details of human movement patterns and their control in the nervous system.

- Designed human data collection experiments to gather data from multiple sensors (EEG, EMG, load cells, accelerometers).

- Implemented machine learning using linear discriminant analysis combined with common spatial patterns to show that brain activity is correlated with variability in movement details.

- Implemented a linear mixed-effects model to demonstrate that the relationship between prediction and ground truth is statistically-significant, while taking into account participant-specific dependencies.

- Developed and demonstrated that a bistable mathematical model of brain connections can reliably reproduce experimentally observed variability in brain activity.

- Performed nonlinear optimization to simulate minimum-energy muscle activation patterns in movement performance.

- Communicated findings to different audiences and at national and international scientific conferences.

Teaching Assistant, *University of Southern California, Los Angeles, CA*   2013

- Assisted in teaching and preparing class material for a graduate level course on neuromuscular systems.

- Prepared and delivered lectures on simulations of differential equations and Matlab programming tutorials.

- Led weekly office hours, supervised students in their semester-long projects, graded homework and exams.

Mechanical Engineering Consultant, *Pierre Dammous and Partners, Beirut, Lebanon*   2009 - 2011

- Designed heating, ventilation, and air-conditioning (HVAC) networks for residential, commercial, university, and hospital buildings in Lebanon and the Gulf region.

- Worked both individually and in teams; and led multiple projects from start to submission.

EDUCATION

Ph.D., Mechanical Engineering, *University of Southern California, Los Angeles, CA*   2017
M.S., Biomedical Engineering, *University of Southern California, Los Angeles, CA*   2012
B.Eng., Mechanical Engineering, *American University of Beirut, Lebanon*   2009

SKILLS

- Data analysis, machine learning, statistics, optimization, mathematical modeling, signal processing

- Lab: EEG, EMG, fMRI, EKG

- Programming: Matlab, Python, R

AWARDS AND HONORS

WiSE Travel Grant, *University of Southern California, Los Angeles, CA*   2015 - 2017
Dean's Award for Creative Achievement, *American University of Beirut, Lebanon*   2009
Dean's Honor List, *American University of Beirut, Lebanon*   2008 - 2009