

# SARINE BABIKIAN

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## WORK EXPERIENCE

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

*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