SARINE BABIKIAN

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SKILLS

Languages: Python, Matlab, SQL
Tools: pandas, NumPy, matplotlib, scikit-learn, BeautifulSoup, NLTK, gensim, VADER, Flask, AWS, LaTeX
Techniques: polynomial and logistic regression, random forests, dimensionality reduction, web scraping, recommender systems, topic modeling, data visualization, signal processing

WORK EXPERIENCE

Fellow, *Insight Health Data Science*, San Francisco, CA 2017 - present

- Created safeskincare.pro, a skin care recommender for finding safer alternatives to toxic skin care products based on similar reviews and lower toxicity ratings.
- Scraped 1000 product toxicity ratings from SkinDeep and 45000 product reviews from MakeupAlley with BeautifulSoup, and preprocessed raw review text by constructing cleaning, tokenization and stemming pipelines using Python's NLTK and gensim libraries.
- Trained a topic decomposition model using non-negative matrix factorization (NMF) to recommend products with similar topic content in reviews.
- Extracted and displayed positive and negative review highlights using VADER sentiment analyzer, and stored data into a PostgreSQL database.
- Designed and built an interactive web app front end using Flask and Bootstrap, and deployed on AWS.

Research Assistant, *University of Southern California*, Los Angeles, CA 2012 - 2017

- Characterized the brain control of repetitive movements, paving the way for guiding athlete training to prevent repetitive injuries, and guiding rehabilitation techniques for patients with neurological disorders.
- Acquired, organized, and analyzed large amounts of data from multiple sensors (EEG, fMRI, EMG, load cells, accelerometers) using signal processing techniques to understand the relationship between brain signals and human movement patterns.
- Predicted upcoming movement intention from EEG signals alone using linear discriminant analysis combined with common spatial patterns (dimensionality reduction).
- Developed a mathematical model of brain connections in Matlab, and demonstrated through simulations that it can reliably reproduce experimentally observed variability in brain activity.
- Built an automated pipeline in Matlab to clean, filter, de-noise and store EEG data, which is now employed by 5 other lab members in their EEG studies.

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

- Assisted in teaching and preparing class material for Neuromuscular Systems, a course offered in the department of Biomedical Engineering.
- Prepared and delivered lectures on programming tutorials in Matlab to simulate differential equations describing the muscle control of limbs.
- Supervised 15 students in their course projects, led office hours, and graded homework and exams.

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

- Designed heating, ventilation, and air-conditioning (HVAC) networks using Hourly Analysis Program (HAP) and Autocad.
- Performed schematic design evaluation for multiple projects including residential, commercial, university, and hospital buildings in Lebanon and the Gulf region.

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