

## EDUCATION

### University of California, Berkeley — B.S. Bioengineering

May 2017

College of Engineering Honors, GPA: **3.75****Recognitions:** Dean's Honor List, Cal Alumni Association Leadership Award Scholar, Bioengineering Honors Society**Activities:** Statistics Lab Teaching Assistant, Undergraduate Research Apprentice, Artists in Resonance A Cappella**Coursework:** Linear Algebra & Differential Equations, Multivariable Calculus, Structure & Interpretation of Computer Programs, Computing with Data, Physics for Engineers, 3D Modeling & Design, Biomechanics, Cell Engineering, Honors Bioengineering Research

### App Academy — Full-Stack Software Engineering

April 2020

## SKILLS

**Programming Languages:** JavaScript, Ruby, SQL, Python, R**Web Development:** Ruby on Rails, React.js, Redux.js, HTML5, CSS3, Sass, Node.js, Express.js, jQuery, AJAX, Webpack, REST**Other Proficiencies:** Git, PostgreSQL, MongoDB, RSpec, TDD, JMP Pro, ImageJ, SolidWorks, data analysis, prototyping

## PROJECTS

### CO-HABIT — Frontend Lead

[Live](#) | [GitHub](#)

An all-in-one housemates web application built using the MERN stack

- Ensured user privacy and autonomy using frontend (React Router) and backend (Passport.js) authentication measures, allowing only approved, logged-in users to access and make changes to their own household
- Implemented chores assignment logic that automatically assigns chores to each housemate, ensuring that workload is distributed evenly using JavaScript promises to fetch household data and store chores data asynchronously

### Scribbled — Full-Stack Software Engineer

[Live](#) | [GitHub](#)

An online books and documents library inspired by Scribd, built with Ruby on Rails

- Integrated React components with Redux's global store by dispatching actions only when sharing information across components and encapsulating data to give the user an uninterrupted experience
- Utilized CSS media queries to create a fully responsive, device agnostic design

### Blue JS Tutorials — Solo Developer

[Live](#) | [GitHub](#)

A series of blue JavaScript animations with tutorials

- Used vanilla JavaScript DOM manipulation, Three.js, and Sass, to create a series of animations with corresponding GitHub gists

### Project Vitalize — Software Lead

A low-cost vital signs monitor designed to address barriers to early sepsis detection in resource-limited hospitals

- Developed a functional Arduino-based prototype and a 3D printed form prototype through multiple iterations of the design process
- Presented posters in the final rounds of two international design competitions (2<sup>nd</sup> place — [Big Ideas in Global Health 2017](#))

## WORK EXPERIENCE

### Research Associate — Biomechanical Engineering

Jul 2017 – Jun 2019

UCSF Orthopedic Bioengineering Laboratories

- Designed, troubleshooted, and executed study examining the effect of dynamic loading on nutrient transport through the cartilage endplate (CEP); performed statistical analyses and published findings in the *Journal of Biomechanics*
  - [Sampson SL](#), Sylvia M, et al. Effects of dynamic loading on solute transport through the human CEP. *J Biomech.* 2019;83:273-9. PMID: [30554819](#).
- Evaluated the effect of novel enzymatic and mechanical cartilage matrix modification strategies on disc cell viability
  - Wong J, [Sampson SL](#), et al. Nutrient supply and nucleus pulposus cell function. *Osteoarthritis & Cartilage.* 2019;27(6):956-64. PMID: [30721733](#).
- Wrote scripts to automate and standardize confocal microscopy 3D image processing used to calculate levels of gene expression
- Developed and validated new lab protocols: applying constant static or dynamic pressures with automatic fluid loss adjustments, quantifying solute transport through cartilage, matching local permeability variations to FTIR maps of cartilage composition

### Biodesign Fellow

Summer 2016 &amp; 2017

UC Berkeley Bioengineering — Summer Biodesign Internship

- Completed training as a protégé in 2016; returned as a fellow to lead the 2017 program and mentor a group of 7 protégés
- Compiled a database of 1500 unmet needs and co-authored over 300 pages of technical reports to serve as the basis of future capstone design projects