

Profile

Biomedical engineer-turned-data scientist and designer eager to combine machine learning, UI/UX design, and next-generation wearable technologies to transform healthcare

Experience

PHD CANDIDATE, COMPUTATIONAL PHYSIOLOGY; COLUMBIA UNIVERSITY – 2013-PRESENT (MAY 2017)

Computationally integrated biological and clinical data to predict adverse effects of drug-drug interactions.

- Developed machine learning algorithms to analyze large datasets of biological networks, adverse drug event reports collected by the FDA, and hospital electronic health records to predict that Rocephin (antibiotic) and Prevacid (heartburn medication) would interact to cause long QT syndrome, a dangerous change in heart rhythm.
- Validated the predicted drug-drug interaction by performing experiments using human cells; results subsequently received the attention of the FDA.
- Combined rigorous statistical analyses with intuitive data visualizations to best communicate results to pharmacologists and lay audiences. Presented work regularly at data science and pharmacology conferences.
- Published eight peer-reviewed articles in high-impact cardiology and pharmacology journals (Journal of the American College of Cardiology, Clinical Pharmacology & Therapeutics): 57 citations.

INNOVATION AND ENTREPRENEURSHIP @ COLUMBIA; NEW YORK, NY – 2015

Participated in cross-university program to develop ideas for potential ventures. Designed and prototyped WELL, a crowdsourced health platform connecting researchers and volunteers. Developed business plan, implemented iPhone app using HealthKit and Amazon Web Services, and regularly presented to business faculty and investors.

RESEARCH ASSISTANT: COLUMBIA UNIVERSITY; NEW YORK, NY – 2012-2013

Studied the structure and function of the ryanodine receptor – a protein that can be targeted pharmacologically to improve a range of cardiovascular diseases – using molecular biology, biochemistry, and protein crystallography.

PRODUCT DESIGN ENGINEER: PROOF OF CONCEPT, LLC; SAN LUIS OBISPO, CA – 2011

Designed and built a toolkit for Stryker Endoscopy to optimize the standardized field-testing of endoscopic equipment. Maximized functionality, aesthetics, and ease-of-use while reducing price to a fraction of alternatives.

Skills

- **Data Science & Machine Learning:** Python (Scikit-learn, NumPy, SciPy, Pandas), R, MATLAB, C, LabVIEW, Bash, MySQL
- **Data Visualization & Web Development:** HTML, CSS, JavaScript (D3, React, jQuery), Flask, AWS, Adobe Creative Suite
- **Mobile & AR/MR:** iOS (Xcode, Objective-C, Swift, HealthKit), Occipital Structure (Unity 3D, C#)
- **Teaching & Science Communication:** Curriculum development, academic paper and grant writing

Education

COLUMBIA UNIVERSITY, NEW YORK, NY – 2013 - PRESENT (EXPECTED MAY 2017)

PhD, MPh, MA in **Physiology and Cellular Biophysics** *Focus:* Translational Bioinformatics, Clinical Data Mining

CALIFORNIA POLYTECHNIC STATE UNIVERSITY, SAN LUIS OBISPO, CA – 2008 - 2012

BS in **Biomedical Engineering** *Overall GPA:* 3.46

Activities & Leadership

CO-INSTRUCTOR: DRUG DEVELOPMENT - BASIC SCIENCE TO CLINIC; COLUMBIA UNIVERSITY – 2015

Led weekly discussions with students to discuss challenges and opportunities related to drug development.

TEACHER'S ASSISTANT: BIOCHEMISTRY, MOLECULAR & CELL BIOLOGY; COLUMBIA UNIVERSITY – 2014

Developed and led class discussions on experimental design and critical analysis of recent biomedical literature.

PRESIDENT: THE FORUM AT POLY; SAN LUIS OBISPO, CA – 2010 - 2012

Founding member. Organized talks to take place year-round bringing together speakers, students, faculty, and community members to discuss important issues in science, technology, art, culture, and philosophy.

TEACHER'S ASSISTANT: BIOMEDICAL ENGINEERING DESIGN; CAL POLY – 2010-2012

Assisted lab instructors with curriculum development and evaluation of reports and presentations. Mentored students throughout a quarter-long prosthetic thumb design project.