Dara Rouholiman

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WORK EXPERIENCES

ML Research Engineer, AIM Lab, Stanford University 2023–Present

- Evaluating applications of large language models in anesthesia and perioperative medicine
- Applying predictive and generative models to electronic health records (EHR) and operating room (OR) management data

Founder, stealth startup 2022-2023

- Developed a health intervention recommendation system
- Acquired by a health startup in 2023

ML Engineer, COR 2018-2022

- Research and development of the first at-home blood analyzer device with 1000+ users
- Developed the central machine learning backend
- Managed the interdisciplinary research team, co-authored a preprint and filed 3 patents

Co-founder, Telesphora 2017-2021

- Developed a Bayesian spatiotemporal model to predict opioid overdose outbreaks
- Deployed and tested the model in the state of Connecticut

Clinical Research Associate, AIM Lab, Stanford University 2013-2017

- Managed 8 clinical research projects, conducted 2 clinical trials
- Published 4 peer-reviewed papers and 1 book chapter

Undergraduate Research Assistant, Chen Group, UC Santa Cruz 2014-2015

- Synthesized and characterized nanostructures
- Developed skills in NMR, NIR, and Raman spectroscopy

EDUCATION

University of California Santa Cruz, Santa Cruz, CA 2010–2015
B.S., Chemistry (Major), Bioinformatics (Minor)

Advisor: Shaowei Chen
Track: Physical Chemistry
Senior Thesis: Synthesis of Silver and Silver-Copper Alloy Nanostructures: Antibacterial Activity and Surface-Enhanced Raman Detection of Bacteria

CERTIFICATES

Algorithms Specialization, Stanford Online via Coursera Fall 2018

Four online courses on fundamental algorithms and data structures

Natural Language Processing Nanodegree, Udacity Summer 2018

3 months online NLP training
Capstone project: An RNN model as a hospital operating room voice assistant

Machine Learning Engineering Nanodegree, Udacity Spring 2018

6-month hybrid(in-person office hours) ML training
Capstone project: An optimized U-Net model for nuclei detection in pathology images

AWARDS AND HONORS

National Hackathon Award, Prize of $10,000, The U.S. Department of HHS Fall 2017
Outstanding Undergraduate Research Award, UC Santa Cruz Spring 2015
Dean's Honor, UC Santa Cruz Winter 2014

PAPERS

[12] Large Language Model Agents Can Use Tools to Perform Clinical Calculations
Alex Goodell, Simon Chu, **Dara Rouholiman**, and Larry Chu
npj Digital Medicine 2025

[11] Operating Room Management: Forecasting Anesthesiologist Scheduled End-Times
Dara Rouholiman, Shriya Sudini, Ryan Schmiesing, Janak Chandrasoma, Bassam Kadry, and Larry Chu
Manuscript in Preparation

[10] Impact of language models' covert dialect bias on pain management and labor
Dara Rouholiman, Alex Goodell, Nailah Cannon, Ethan Fung, Ryan Schmiesing, Dominique Arce, and Larry Chu
Under review

[9] Augmentation of ChatGPT with Clinician-Informed Tools Improves Performance on Medical Calculation Tasks
Alex Goodell, Simon Chu, **Dara Rouholiman**, and Larry Chu
medRxiv 2023(Preprint)

[8] Open-Source Large Language Models in Anesthesia and Perioperative Medicine: ASA-Physical Status Evaluation
Dara Rouholiman, Alex Goodell, Ethan Fung, Janak Chandrasoma, and Larry Chu
Presented at World Congress of Anesthesiology 2024(Poster)

[7] Rapid Lifestyle Prototyping: Assessment of Infrared Spectroscopic Blood Responses for Short-term Lifestyle Interventions
Dara Rouholiman, Erik Andries, Sylvie Dobrota, Hershel Macaulay, Robert Messerschmidt, and Thomas Quertermous
medRxiv 2021(Preprint)

[6] Patient-Centric Strategies in Digital Health
Larry Chu, Ashish Shah, **Dara Rouholiman**, Sara Riggare, and Jamison Gamble
Book Chapter in *Digital Health: Scaling Health Care to the World*, Springer 2018

[5] Improving Health-Related Quality of Life of Patients With an Ostomy Using a Novel Digital Wearable Device: Protocol for a Pilot Study
Dara Rouholiman, Jamison Gamble, Sylvie Dobrota, Ellen Encisco, Ashish Shah, Francisco Grajales, and Larry Chu
JMIR Research Protocols 2018

[4] Patient Participation at Health Care Conferences: Engaged Patients Increase Information Flow, Expand Propagation, and Deepen Engagement in the Conversation of Tweets Compared to Physicians or Researchers
Audun Utengen, **Dara Rouholiman**, Jamison Gamble, Francisco Grajales, Nisha Pradhan, Alicia Staley, Liza Bernstein, Sean Young, Kevin Clauson, and Larry Chu
JMIR 2017

[3] Inflammatory Response to Chronic Opioid Exposure in Humans
Kavita Mathi, Sylvie Dobrota; Timothy Lee; Zahra Sayyid, **Dara Rouholiman**, Jamison Gamble, Ellen Encisco, Tom Rico, Holden Maecker, and Larry Chu
The Journal of Immunology 2020
Also presented at Stanford Anesthesia Department Research Awards Dinner 2017(Poster)

[2] Antibacterial Mechanisms of Graphene-Based Composite Nanomaterials
Mauricio Rojas-Andrade, Gustavo Chata, **Dara Rouholiman**, Junli Liu, Chad Saltikov, and Shaowei Chen
Nanoscale 2017

[1] Antibacterial Activity of Silver-copper Alloy Nanoparticles against E. coli and Staph.
Dara Rouholiman
Presented at UC Undergraduate Research Symposium 2015(Short paper)

PATENTS

*filing dates

- Composite Infrared Spectroscopy for Nutrition and Fitness 2023
- Methods and Systems for Using Surrogate Markers to Improve Fitness, and Performance 2022
- Method for Transdermal Measurement of Blood Fat and Surrogate Biomarker Levels 2021

GRANTS

DoD SBIR, Development of a Lancet-Suction Combo Device for Painless Blood Draw 2020

Role: Principal Investigator (PI)
Award amount: $49,255

PCORI (Engagement Award), The Future of Patient-Centered Medical Education 2016

Role: Research Associate (PI: Larry Chu)
Award amount: $249,000

TEACHING

Lead Instructor, Stanford Technology in Healthcare Fall Internship 2024

Co-designed a four-session virtual curriculum of advanced, graduate-level seminars
Conducted hands-on lab sessions on Clinical Data Structures and Algorithms for interns

Teaching Assistant, 3D Printing and Biofabrication (ANES 206), Stanford University 2016

Led the discussion sessions, held weekly office hours, and graded finals

SERVICE

University Service

President, Student Club: Iranian Student Network, UC Santa Cruz 2011–2015

Volunteering

Inpatient General Surgery Unit, Stanford Hospital 2012-2014
Disaster Services, American Red Cross 2013-2018
Citizen Schools, Design Thinking Apprenticeship Teacher Fall 2017

Organization

Program Coordinator, Stanford Medicine X 2015
Assistant Program Coordinator, Stanford Medicine X 2014
Panel Moderator, Data-Driven Health Outcomes Session, Stanford Medicine X 2017

Discussant

Khosla Ventures, Technical due diligence 2020
Stanford University, HIGIA Design Charrette 2019
Yale School of Medicine, Origami Innovations 2018
John Hopkins Medicine, Sibley Innovation Hub 2018
The U.S. Department of HHS, Office of the CTO, Data Sharing Policies 2018
White House, OSTP, Engaging Participants as Partners in Research 2016