

SHARON S. NEWMAN

Naturally at the intersection of CS and protein sciences.

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newmanst

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EXPERIENCE

Postdoc & PhD Student

Department of Radiology, Advisor Tom Soh, Stanford University

September 2017 – April 2024

Stanford, CA

- Thesis: Reanalyzed the fundamental limitations and problems for molecular quantification robustness and assay scalability [SU Thesis].
- Matured a theoretical and experimental tuning mechanism for molecular assays that enables multiplexed measurement of proteins across 7 orders of dynamic range in 100% serum [Nature Comm, Patent].
- Developed mathematical optimization framework to enable accurate and quantitative use of cross-reactive affinity reagents [bioRxiv].
- Implemented image segmentation and spatial autocorrelation algorithms for spatiotemporal monitoring of cellular molecular signaling [Adv. Mat.].
- Created memory-efficient software pipeline for image registration and analysis of ~100 GB of single molecule TIRF images. [Nature Comm.]
- Designed a multiplexed molecular assay that can quantify small molecules using DNA as a signal readout. [ACS Omega]
- Wrote API to automate OT-2 wet-lab robot for in-house SELEX protocols.

Data Science Intern

BigHat Biosciences

July 2022 – September 2022

San Mateo, CA

- Developed statistical and computational methods that highlighted importance of un-monitored data signal for antibody developability.
- Efficiently integrated signal into company-wide data science pipeline and machine learning infrastructure.
- Proposed in-silico antibody designs with expected improvement in specified antibody characteristic.

ML Instructor & Curriculum Developer

Inspirit AI

May 2019 – August 2021

Mumbai, India and California

- Designed and taught project-based AI curriculum for high school students, progressing from linear regression to NLP and CNNs.
- Developed and led advanced modules on healthcare-focused AI, covering GNNs, saliency maps, and ethical implications.

Research Scientist

Molecular Information Systems Lab (MISL), University of Washington

August 2016 – August 2017

Seattle, WA

- Spearheaded the design of a Read Only Memory chip for DNA data storage [Nature Comm.].
- Developed electronic systems and control software to enable electrowetting-based automation of microscale fluidics and standard wet-lab protocols.
- Established a lab branch focused on digital microfluidics for DNA data storage.

OVERVIEW

I develop computational and bio-analytical techniques with expertise in protein and small molecule quantification. I'm seeking a compbio/bioinformatics role where I can drive advancements in diagnostics or therapeutics.

EDUCATION

Bioengineering PhD, 2023

Stanford University – Stanford, CA

Electrical Engineering M.S., 2021

Stanford University – Stanford, CA

Bioengineering B.S., 2015

University of Washington – Seattle, WA

SKILLS

Python Linux Git Slurm h5py

Optimization ML Computer Vision

Scikit-Learn NGS Immunoassays

COURSEWORK

- Linear Dynamical Systems
- Deep Learning
- AI Principles & Techniques
- Design and Analysis of Algorithms
- Probabilistic Graphical Models
- Representations & Algs. for Comp. Bio.
- Therapeutics at Chem-Bio Interface

TEACHING

- Biological Macromolecules (Stanford)
- Intro. to Systems Biology (Stanford)
- Anal. Methods in Biotech (Stanford)

AWARDS

- GRC, Bioanal. Sensors, Best Poster '22
- NSF GRFP '19-'22
- Stanford Graduate Fellowship '17-'22
- U.S. Student Fulbright Scholar '15-'16
- Whitaker International Fellow '15-'16

* underline indicates publication hyperlink