JACOB STERN CV

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EDUCATION

Brigham Young University 2020-2024
Ph.D. Computer Science

GPA: 3.98

Brigham Young University 2016-2020
B.S. Applied and Computational Mathematics

GPA: 4.0

PUBLICATIONS

MILCDock: Machine Learning-Enhanced Consensus Docking for Virtual Screening in Drug Discovery 2022
Under review for Journal of Chemical Information and Modeling

Designed neural network ensemble method for consensus ligand-protein docking, improving enrichment factor by over double compared to the current best docking tool. Significance: 2x the number of drug hits in the top 1 percent of ranked molecules.

Evaluation of Deep Neural Network ProSPr for Accurate Protein Distance Predictions on CASP14 Targets 2021
International Journal of Molecular Sciences

Coded an ensemble-based CNN for protein structure prediction capable of predicting large structural changes due to small changes in sequence.

CURRENT RESEARCH

BayesDesign: A probabilistic formulation of protein design problems 2022

Developed an transformer-based generative model to design proteins with high conformational specificity, applicable to mitigating protein misfolding in neurodegenerative diseases.

Using machine learning and molecular dynamics as complementary tools for virtual screening in CACHE 2022

Combined MILCDock with molecular dynamics and computational free energy calculations to form a complete computational virtual screening pipeline. Applied pipeline to the LRRK2 protein associated with Parkinson's disease and submitted predicted drug leads for the CACHE challenge.

WORK EXPERIENCE

Enveda Biosciences 2021
Deep Learning Consultant

Designed and built pipeline for pre-trained Transformer for mass spectrum similarity prediction. Adapted base Roberta architecture for challenges specific to mass spectrometry data.

Nvidia 2020
Deep Learning Architecture Intern

Wrote software for kernel-by-kernel performance analysis of deep learning workloads on Nvidia GPUs. Enabled performance gains on the MLPerf benchmark by adding support for MXNet implementations of Single-Shot Detection and Resnet.

CaptionCall 2018

Speech Recognition/Machine Learning Intern

Benchmarked speech recognition providers by programming clients for speech recognition APIs. Wrote clients to stream audio data in real time for via asynchronous programming in C#.

TEACHING

Deep Learning - CS 474 2019
Head Teaching Assistant

Head teaching assistant for a class of 150 students. Taught weekly deep learning tutorials. Wrote a lab on transfer learning. Spent 10 hours/week helping students code neural networks in Pytorch.

NON-TECHNICAL EXPERIENCE

Aspiro Adventure 2017
Wilderness Therapy Field Guide

Worked as a field guide. Led groups of 6-12 students on 9-week wilderness excursions, teaching them wilderness survival skills. Helped young people overcome personal challenges through wilderness survival.

The Church of Jesus Christ of Latter-day Saints 2014-2016
Full-time Missionary in San Fernando, CA

Full-time volunteer for my church, serving the Hispanic population in San Fernando, California. Spent 2 years doing service and helping people learn from the teachings of Jesus Christ. Served in a variety of leadership capacities.