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# Jordan Safer

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<https://jordansafer.github.io/>

<https://github.com/jordansafer>

## PURPOSE

To systematically treat diseases by using computational techniques to accelerate biology research and drug development by any means. To develop computational techniques for modeling and predicting protein dynamics toward modeling cell behavior and elucidating disease mechanisms.

## EDUCATION

**Massachusetts Institute of Technology, Cambridge, MA** - *Advanced Study Program*

SEPTEMBER 2023 - MAY 2024

- Coursework: Advanced Biochemistry, Protein Engineering

**Carnegie Mellon University, Pittsburgh, PA** - *Master of Science in Electrical and Computer Engineering*

SEPTEMBER 2017 - MAY 2018

- Coursework focused on signal processing and neuroscience
- Teaching Assistant for Digital Signal Processing

**Carnegie Mellon University, Pittsburgh, PA** - *Bachelor of Science in Electrical and Computer Engineering*

SEPTEMBER 2014 - MAY 2017

- Coursework in advanced algorithm design, embedded systems, advanced digital logic design
- Worked 3 semesters as a Teaching Assistant for Functional Programming
- Organizations: Served as Vice President of the Jewish Student Association and Finance Chair of the Student Activities Board's Film group

## SKILLS

- Proficient programming with languages including: Python, Javascript, Java, bash, C, Matlab, OCaml, SystemVerilog
- Working in unix & linux shells, using version control (git), building cloud applications on AWS, GCP, and Azure with serverless & server technology stacks
- Generating and analyzing protein features from tools & databases including: FoldX, fpocket, DSSP, PSP, UniProt, PyMOL, AlphaFold2/3, DepMap, DiffDock, ClinVar, gnomAD, and MaveDB
- Developing for websites in common frameworks including React, Angular, Handlebars, and JSP
- Operating physical hardware, including microcontrollers, FPGAs, and desktop components
- Languages: Fluent Hebrew, Intermediate Chinese, Elementary French

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## PUBLICATIONS & PREPRINTS

Kwon, S.\*, **Safer, J.F.\***, Nguyen, D.T., Hoksza, D., May, P., Arbesfeld, J.A., Rubin, A.F., Campbell, A.J., Burgin, A., Iqbal, S. *Genomics 2 Proteins Portal: A Resource and Discovery Tool for Linking Genetic Screening Outputs to Protein Sequences and Structures*. *Nat Methods*, 18 Sep 2024. <https://doi.org/10.1038/s41592-024-02409-0>.

[preprint] Rissom, P.F., Sarmiento, P.Y., **Safer, J.F.**, Coley, C.W., Renard, B.Y., Heyne, H.O., Iqbal, S. *Ema-Tool: A Python Library for the Comparative Analysis of Embeddings from Biomedical Foundation Models*. *bioRxiv*, 27 June 2024, p. 2024.06.21.600139. *bioRxiv*, <https://doi.org/10.1101/2024.06.21.600139>.

\*Denotes Co-First Author

## POSTERS & PRESENTATIONS

[Talk] Genomics to Proteins Portal: A Discovery Portal to Link Genetic Screening Outputs to Protein Sequence and Structure

Mutational Scanning Symposium, Cambridge, MA. May 23, 2024

[Poster] Characterizing 127 understudied kinases through *in silico* saturation mutagenesis of predicted protein structures

**Safer, J.**, Kwon, S., Arnaudi, M., Tiberti, M., Papaleo, E., Iqbal, S.

Biophysical Society Annual Meeting, Philadelphia, PA. February 10-14, 2024

[Poster] Genomics To Proteins portal: A discovery tool to link genetic screening outputs to protein sequence and structure

Iqbal, S., **Safer, J.**, Nguyen, D., Kwon, S., May, P., Hoksza, D., Campbell, A., Burgin, A.

American Society of Human Genetics Annual Meeting, Washington, DC. November 1-5, 2023

## EXPERIENCE

### Broad Institute of MIT and Harvard, Cambridge, MA

Computational Associate - Center for the Development of Therapeutics (CDoT)

APRIL 2023 - PRESENT

- Expanded [Genomics 2 Proteins portal](#) to make bringing genomic information to the protein space accessible to all. Added structural features, MAVEdb data, and integrations to view variants in the context of sequence and structure
- Generated protein structure data and carried out analysis as part of Sumaiya Iqbal's group, with a focus on deriving new insights from both experimental and predicted protein structures

Senior Software Engineer - Data Sciences Platform (DSP), Analysis Journeys team

OCTOBER 2021 - MARCH 2023

- As a deadline specialist, joined both the Landing Zone and apps team to deliver Terra on Azure
- Coordinated with the Terra Data Repository (TDR) team to support datasets from TDR in Terra

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## **Amazon Robotics, North Reading, MA - L4 Software Engineer (2018-20), L5 Software Engineer (2020-21), Robotic Inventory**

JULY 2018 - SEPTEMBER 2021

- Worked alongside the station and planning teams to deliver a robotic solution to last mile delivery
  - Led the move from internal legacy systems to AWS serverless technology for our team
- Subject matter expert and lead for shelf stability and station hardware
- Talent development
  - Gave tech talks at Fall and Spring career fairs on our technology
  - Interviewed over 25 applicants intern and full-time positions, worked with a team to automate reducing systematic bias in the interview process by detecting use of pronouns, candidates names, and other identifying and biased language
  - 1-on-1 mentored an intern, whose outstanding work earned them a full time role!

## **University of Pittsburgh - Department of Neurobiology, Pittsburgh, PA - Research Assistant in the Laboratory of Dr. Brian M. Hooks**

FEBRUARY 2018 - JUNE 2018

- Analyzed spectroscopy data from mouse brains to understand the connectivity between regions
- Failures: tried using Hough transforms and Sobel filters to emphasize activated neuron axons
- Successes: Used PCA to differentiate regions based on connectivity, improved downsampling for high-resolution data

## **LEADERSHIP**

- Broad Institute 2024 Machine Learning in Drug Discovery Symposium Organizing Committee
- CodeRATS chair: Organize events and programming for Computational Associates at the Broad Institute
- BroadHacks 2024 co-chair: Plan inaugural BroadHacks 24 hour hackathon, organize teams, workshops, project planning, and participant resources
- Broad Institute 2023 Machine Learning in Drug Discovery Symposium Organizing Committee
- Counter Bias Group - Write plugins to detect and gendered and identifying language in interview feedback to combat bias and discrimination at Amazon
- Jewish Student Association, Vice President, 2017 - Organize Jewish community events at Carnegie Mellon
- ABFilms, Finance Chair, 2017 - Manage finances for university sponsored weekly movie showings on campus
- Tartans4Israel, President, 2016 - Organize Israeli cultural and holiday events at Carnegie Mellon

## **PROJECTS (<https://github.com/jordansafer>)**

- 2021: Made a chrome extension that uses OpenCV to read text from a screen-selection
- 2020: Covid19 website to view case graphs on NYT covid data in March 2020, built my first computer and baked my first GPU, mechanical turk experiment to transcribe old census data
- 2019: AI to play Screeps computer-game. Manages resources, defense, construction, etc

PRE 2019/University

- Designed and implemented a compiler with a partner for the c0 language. Implemented in 5 stages. Lost sleep dealing with `x[i] = ++x[i] + x[i]++` type memory handling
- **Ask about:** Fall Detector, router, PacRunner (python games), Lukas-Kanade, smart football

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## **OUTSIDE OF WORK**

Long distance runner, transitioned from 8 kilometer races in college to the marathon and ultramarathon distances. Completed my first 50-mile race and triathlon!