

# Dane Jacobson

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**Princeton University, Class of 2022:** B.S.E., Computer Science; Certificates in Statistics and ML and Music Performance (Violin); Significant coursework in Computational Biology.

**Languages:** Python, TS/JS, PostgreSQL, Java, C/C++, R

**Tools and Frameworks:** FastAPI, Flask, Django, Luigi, Flyte, Node.js, Express.js, React.js, Next.js

**DevOps and Infrastructure:** GCP, Git, Docker, Travis CI

**Data Science:** Numpy, Pandas, Scikit-learn, Bioconductor, Biopython, Bioconda

**Machine Learning:** This is a big field. I've worked through [ESL](#), and am still reading [Goodfellow](#) and [Sutton](#).

**AI Engineering:** OpenAI/Anthropic/Stability APIs, PyTorch, GGML/UF, learning CUDA

## **The EVERY Company, *Full Stack Data Scientist, Fall 2020 – Present***

First computational biologist/data scientist/SWE at EVERY. Modeled biological, chemical, and commercial systems.

Designed UI/UX for scientific tools, built data pipelines, and productionized models in a microservice architecture.

- Architected a company-wide knowledge graph that ingests millions of inputs across our microservices for probabilistic graph learning, data visualization, and efficient querying in Python, C++, and JS.
- Built genomic data pipelines moving PBs of data for training models and genetic QC. Built Python/JS web apps for user control of the data and pipelines, managed new SWE hires.
- Trained neural net architectures for predicting protein QA from FTIR spectrograms with >95% accuracy and decreasing analysis times by 100-fold.
- Built an in-silico biopanning pipeline for discovering new commercially viable proteins, yielding 12 new market verticals.
- Built MCMC techno-economic models and visualization tools in Python/JS to simulate scale-up campaigns.
- Expedited each new FDA approval by months by productionizing a viral protein fragment and allergen search pipeline using BLASTdb, Python, bash, and Bioconductor.
- Implemented genetic algorithm to increase protein yields by 10% using online fermentation parameters.
- Maintained CI/CD deployment, infra for remotely interfacing with lab equipment, and identity management.

## **Meta AI, *AI Research Engineer Intern, Summer 2021***

- Developed one-shot neural architecture search for model design and hyperparameter tuning, increasing user-reaction prediction by 5%.
- Built a load balancer in one day to expedite training runs for my team, saving countless hours of down time.

## **CPCBoston, *Co-Founder, 2021***

- Founded an edtech startup to tutor 1000s of students from home at the height of the pandemic.

## **Academic Projects**

- **Transforming Psychology, *Researcher, Spring 2022***
  - Used GPT3 to predict mental health illness and suicide-probability from social media and suicide notes.
  - Paper received the Princeton CS Independent Work Prize.
- **Engineering Longevity Proteins with AlphaFold, *Researcher, Spring 2022***
  - Used AlphaFold2.0 to design 15 novel proteins with identical structures but healthier amino acids.
- **Digital Passbook, *Frontend Android Engineer, Spring 2020***
  - Developed a mobile app for managing club access on nights out at Princeton University on a 5-person team.

## **Patents: 4 issued, 2 pending**

- *Systems and methods for in-silico biopanning:* [WO2023220205A1](#)
- *Systems and methods for algorithmically estimating protein concentrations:* [WO2022246224A1](#)
- *E2E optimization of precision fermentation-produced animal proteins in food apps:* [WO2022246284A2](#)
- *Compositions for preparing animal-free egg-like products:* [WO2022182799A1](#)