Dane Jacobson

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Princeton University, Class of 2022: B.S.E., CS; Minors in ML and Violin; Coursework in Computational Biophysics
Languages: Python, TS/JS, Rust, C/C++, Zig, CUDA C/C++, Java, R
SWE Frameworks: FastAPI, Flask, Node.js, Express.js, React.js, Next.js, PostgreSQL, Django, Luigi, Flyte
DevOps and Infrastructure: GCP, Git, Docker, Travis CI, Kubernetes
Machine Learning: PyTorch, CUDA C/C++, Pandas, Numpy, Scikit-learn, Gradio, ComfyUI, Huggingface, DSPy

Seldon, LLC, ***Applied AI Consultant, Spring 2024 – Present***

- AI engineering consulting: RAG systems, prompt engineering, embedding finetuning, MLOps infra
- Mechanistic interpretability services: improving LLM and diffusion model performance, preventing query abuse, and mitigating failure modes.

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

First data scientist and 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: WO202218279A1*