Davi Nakajima An

Curriculum Vitae

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Education

May 2018 – May 2022 **B.S. in Computer Science, Minor in Chemistry & Biochemistry**, *Georgia Institute of Technology*.

- Concentration: *Intelligence & Theory*.
- Computer Science GPA: 4.0/4.0.
- GPA: 3.95/4.0.

Publications

2021 M. Gao, **D. Nakajima An**, J. M. Parks, J. Skolnick. Predicting direct physical interactions in multimeric proteins with deep learning. *Under review to Nature Communications Journal; Pre-print available on bioRxiv; 2021*.

2021 **D. Nakajima An**, D. Kartchner, C. Zhang, C. S. Mitchell. Deep Learning System for Labeling Neurology Text for Predictive Medicine. *In ANNALS OF NEUROLOGY (Vol. 90, pp. S159-S160). 111 River St, Hoboken 07030-5774, NJ USA: Wiley*.

2020 D. Kartchner, **D. Nakajima An**, C. Zhang, C. S. Mitchell. ReGAL: Rule-Generative Active Learning for Model-in-the-Loop Weak Supervision. Accepted to *HAMLETS (Human And Machine in-the-Loop Evaluation and Learning Strategies) Workshop @ NeurIPS 2020*.

Research Experience

2020 – Present **Protein Folding**, *Deep Learning, Structural Biology*.

- Investigated novel attention-based architectures for protein structure prediction.
- Developed methods for using AlphaFold2 for predicting the structure of multimeric proteins.
- Project and code available at: https://github.com/FreshAirTonight/af2complex .

2021 – Present **Drug Repurposing**, *Natural Language Processing, Deep Learning, Text Mining*.

- Developed deep learning models to automate the curation of randomized clinical trials
- Created and preprocessed new datasets for training automatic curation models.
- Project lead in collaboration with a team at the Emory Morningside Center for Innovative and Affordable Medicine.

2020 **Weak-Supervised Learning for text classification**, *Natural Language Processing, Active Learning*.

- Designed a deep learning framework for weak-supervised learning.
- Benchmarked the model against several other state-of-the-art weak-supervised models for text classification.

Awards and Honors

2018 **HackGT 5 Winner**, *Georgia Institute of Technology*.
Award granted to the top 8 (out of 189) projects in the HackGT 5 Georgia Tech annual hackathon.

2014 **Best Robot Design**, *RoboCup Junior*, International.

2014 **1st Place - Soccer Lightweight Superteam category**, *RoboCup Junior*, International.

2013 **1st Place - Robot Soccer**, *Brazilian Robotics Competition (CBR)*.

Experience & Projects

May 2020 – Aug 2020 **Software Engineering Intern** , *Facebook, Inc.*, Portal AI Team.

- Published image processing code to Facebook AI Research's open-source detectron2 platform for segmentation and object detection (https://github.com/facebookresearch/detectron2).
- Implemented data augmentation techniques for improving precision and recall on Portal AI 2D pose model.
- Created tools for exploratory data analysis for pose and object detection datasets.

May 2019 – July 2019 **Software Engineering Intern**, *Facebook, Inc.*, Facebook App Monetization Team.

- Implemented a new image ad format for live gaming streams in the Facebook Android app.
- Set up A/B testing experiments and user behavior logging to measure the impact of the new experience.
- Achieved an ad conversion rate on par with other image ad formats during testing in live gaming streams.

2016 – Present **Independent Machine Learning**.

- Used statistical learning methods to build and train a model that diagnoses breast cancer, achieving an accuracy of 97% and 80% on diagnosis and prognosis respectively.
- Trained a deep learning computer vision network to diagnose prostate cancer from giga-pixel images of tissue biopsies, according to the Gleason grading system. Used attention-mechanisms to correlate information from different image patches.

Advanced Coursework

Undergraduate Biology, Biochemistry, and Genetics Upper-Level courses:

- Cancer Biology & Biotechnology
- Biochemistry
- Genetics
- Genomics and Applied Bioinformatics

Undergraduate Computer Science and Artificial Intelligence Upper-level Courses:

- Machine Learning
- Complexity & Automata
- Deep Learning
- Computer Vision
- Data Structures & Algorithms
- Computer Systems & Networks
- Artificial Intelligence
- Robotics & Perception
- Design & Analysis of Algorithms

Skills & Abilities

Programming Java *(Advanced)*, Python *(Advanced)*, C *(Basic)*, C++ *(Basic)*, SQL *(Basic)*, PHP *(Basic)*.

Software PyTorch, TensorFlow, JAX, Git, LaTeX.

Languages English *(Native)*, Portuguese *(Native)*, Spanish *(Basic)*.