Braxton **Owens**

ML Researcher

Orem Utah, USA

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Summary

Current research assistant at Brigham Young University working at the cutting edge of interdisciplinary research in applied machine learning. I believe in open source, live in the terminal with nvim, and think math is the solution to most problems. Interested in all things predictive modeling and open source. Eager to apply my expertise in predictive modeling and machine learning to solve complex problems in industry.

Education

BYU(Brigham Young University) *Provo, Utah*

M.A. in Computer Science *Apr 2021 - Aug 2024*

BYU-I(Brigham Young University-Idaho) *Rexburg, Idaho*

B.S. in Physics, Minor in Computer Science *Jan 2018 - Apr 2021*

Work Experience

Brigham Young University *Provo, Utah*

Research Assistant - CryoET *Aug 2023 - current*

- Leveraged deep learning algorithms, including SAM, Masked Autoencoders, and CNNs to successfully identify low signal macro-molecular complexes in bacteria.
- Contributed in the development of the CZI CryoET data portal that hosts over 15,000 tomograms by writing open source software that extracts oriented point labels from imod binary files.
- Led a $50,000 Kaggle competition from start to finish, including data labeling and preprocessing for a 150TB dataset, hosting preparatory community competitions, creating custom evaluation metrics, writing detailed competition documentation, and developing starter notebooks, resulting in significant advancements in computational CryoET.

Brigham Young University *Provo, Utah*

Research Assistant - Materials Design *Apr 2021 - Aug 2023*

- Developed and implemented machine learning models and feature engineering techniques to predict grain boundary properties, leading to the development of open source software and the publication of 3 papers.
- Conducted advanced research on the structure-property relationships of grain boundaries, utilizing a deep understanding of atomic structures and machine learning algorithms to drive insights for materials science applications.

Centauri *Chantilly, VA*

Machine Learning Intern *Apr 2020 - Sep 2020*

- Built a U-net using the TensorFlow/Keras framework to detect industrial and environmental changes in multi-spectral satellite images.

Moog, inc. *Gilbert, AZ*

Engineering Intern *Apr 2019 - Sep 2019*

- Implemented a pipeline for the use of an AOI(automated optical inpection) device for inspecting space-grade PCBs.

Skills

Communication

- Presented research at The Minerals, Metals & Materials Society and American Physical Society meetings.
- Lead 10+ undergraduates in the BYU Biophysics group.
- Fluent in Spanish

Techincal

- **Programming Languages:** Python, Julia, Matlab, C++, Bash, git, SQL
- **Tools and Frameworks:** Numpy, Scikit-Learn, Pandas, PyTorch, Tensorflow/Keras, HuggingFace, SciPy, opencv-python, Matplotlib, Pillow

Extracurricular

- Member and contributor of the teamtomo github organization, a group of cryoET developers building software on their freetime.
- Build mechanical keyboards and configure my own keymaps using QMK.
- Eagle scout.
- Unity game development.
- 3D design in Blender.