




BENNETT AUSTIN

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EDUCATION

University of California, Berkeley - Overall GPA: 3.975/4.0 August 2019 - December 2022
B.A. Mathematics - Major GPA: 4.0/4.0 *Berkeley, California*

- Coursework: Real and Complex Analysis, Linear and Abstract Algebra, Mathematical Cryptography, Calculus 1-3, Quantum Physics, Mechanics, Relativity, Differential Equations, Thermodynamics.
- Technical skills: Julia, Python, C++, Java, CERN ROOT, CAD, Excel, LaTeX.

EXPERIENCE

Plastic Omnium May 2021 - August 2021
Data Science Intern *Troy, Michigan*

- Wrote two machine learning (ML) algorithms in Julia to a predict fuel tank's thickness and weld quality with projected savings of several million dollars a year and reduction of manual labor by half by avoiding destructive testing and manual inspection.
- Tested and compared different ML models from Julia Flux and Scikit-learn such as deep neural networks, decision trees, random forests, and linear regression.
- Cleaned and merged four data sets with over 500,000 data points to form training and testing data.
- Performed preliminary statistical analysis and then calculated feature importance and correlation to provide insights about certain variables to my company.

Lawrence Berkeley Laboratory/Berkeley Physics Department September 2020 - May 2021
Particle Physics Research Assistant *Berkeley, California*

- Investigated machine learning variables to determine which are the most efficient in quark flavour classification using C++ and Cern ROOT.
- Used multiple data sets each containing over 100 variables to perform feature selection and make a training data set with a sample size of 5 million and a batch size of 15,000.
- Trained a Python algorithm with leptonic variables to show that these leptonic variables increase the quark identification efficiency and hence increase the algorithm's performance.
- Used Bash script to communicate to the CORI supercomputer to train ML algorithms.
- Hyperparameter optimization to find the ideal learning rate, nodes, layers, and activation functions.

Independent Research/Projects September 2016 -Present

- Wrote three ML algorithms to predict financial data for stocks, housing prices, fraud, and loans each with at least a 90% validation score. Used models such as long-short-term-memory (LSTM) and multi-layer perceptron classifiers.
- Found the eigenvalues of a Möbius strip by applying specific boundary conditions to the 2-D Schrödinger equation and solving the partial differential equations.
- Proved and implemented two cryptosystems, one using RSA and the other using Elliptic Curves.
- Wrote an image segmentation script using Chan-Vese and programmed a mesh generator using Delaunay triangulation.

Vvisions October 2014 - July 2019
Co-Founder *Plymouth-Canton, Michigan*

- Started a clothing company in high school, generating about \$20,000 in revenue and \$10,000 in profit.
- Each year we organized a community festival consisting of music, art, and skateboarding.