BENNETT AUSTIN

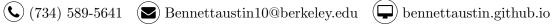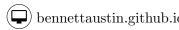📞 (734) 589-5641   ✉ Bennettaustin10@berkeley.edu   🖥 bennettaustin.github.io

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 National Laboratory   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.