Reese Karo

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EDUCATION

University of California – Santa Barbara **Expected Graduation: June 2025**
Bachelor of Science (B.S.) - Applied Mathematics *Santa Barbara, CA*
Bachelor of Science (B.S.) - Statistics and Data Science
GPA**:** 3.6
Relevant Coursework**:** Optimization (Python), *Statistical Machine Learning (Python/R), Real Analysis, Numerical Analysis (Python), Stochastic Processes (R), Partial Differential Equations, Time Series Analysis (Python/R),*

EXPERIENCE

Data Scientist (Capstone Program) January 2025 – Present
SLAC National Laboratory *Remote*

- Developing deep learning models in PyTorch to classify protein crystal formations, improving crystallization efficiency by leveraging machine learning techniques and incorporating advanced statistical analysis methods.
- Training and fine-tuning multiple CNN models on over 400,000 pre-labeled datasets, utilizing Linux/Unix systems and Bash scripting to automate data manipulation, preprocessing, and augmentation, resulting in improved classification accuracy.
- Collaborating with others to interpret results and maintaining transparent communication through regular updates and code-sharing on GitHub within a Unix-based compute cluster.

Mathematics Tutor September 2024 – Present
UCSB Campus Learning Assistance Services *Santa Barbara, CA*

- Applying mathematical and statistical principles to enhance students' comprehension of advanced topics such as Differential Equations and Linear Algebra, emphasizing practical problem-solving for real-world applications.
- Cultivating strong communication and organizational skills by guiding students in self-directed learning and academic achievement, providing structured guidance and feedback.
- Identifying and addressing areas of weakness to strengthen student comprehension by addressing diverse challenges in mathematics, utilizing mathematics and data science techniques.

PROJECT EXPERIENCE

Brain Tumor Image Classification November 2024 – December 2024
UCSB Data Science Capstone *Santa Barbara, CA*

- Leveraged TensorFlow and Keras to evaluate multiple architectures, achieving 93% predictive accuracy with a ResNet50V2 transfer-learned model enhanced by four additional dense layers paired with a user interface.
- Preprocessed a dataset of 3,000+ images using OpenCV for image transformation, NumPy for array stacking and normalization, and Scikit-learn for splitting data into training, validation, and test sets.
- Designed and compared three distinct CNN architectures: a basic design, a tuned hyperparameter model, and a transfer-learned ResNet50V2, ensuring robust and reliable predictions.

Car Price Prediction January 2024 – April 2024
Statistical Machine Learning *Santa Barbara, CA*

- Achieved the lowest RMSE of 2380 for car auction prices using a Kaggle dataset by deploying machine learning models such as Elastic Net Regression, XGBoost, Random Forests, and a Deep Neural Network in Python and R.
- Performed data wrangling, preprocessing and data visualization, including cleaning, assessing, and transforming data, to improve data quality and facilitate insightful exploratory data analysis (EDA) for predictive modeling.
- Built robust regression models and validated their accuracy and reliability using cross-validation and hyperband hyperparameter tuning, to optimize the model training performance.

SKILLS

Languages: Python (intermediate), R (intermediate), SQL (intermediate)
Technical: Data Analysis, Financial and Statistical Modeling, Machine Learning, Natural Language Processing
Visualization & Frameworks: Matplotlib, Seaborn, Streamlit, ggplot, LangChain, OpenAI, Hugging Face