Zavier Andrianarivo

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EDUCATION

New York University

New York, NY

B.A. in Computer Science, Minor in Mathematics - Courant Institute of Mathematics

Expected May 2025

- Honors/Awards: POISE Scholarship Recipient STEM Full Scholarship
- Extracurriculars: Academic Achievement Program, Tech Treks Tech@NYU, NYU Climbing
- Relevant/Future Coursework: Linear Algebra, Software Engineering, Web Development, Calculus III, Probability and Statistics, Artificial Intelligence, Fundamentals of Machine Learning, Introduction to Robotic Intelligence

TECHNICAL SKILLS

Programming Languages: Python, C/C++, SQL

Programming Frameworks: NumPy, Scikit-Learn, PyTorch, Pandas, Matplotlib, Seaborn Developer Tools: Machine Learning, Deep Learning, Git, Bash, Zsh, Docker, Weights and Biases

EXPERIENCE

NYU CILVR Lab

Nov. 2024 - Present

Research Assistant

New York University

- Literature Review: Read 6+ research papers on reinforcement learning, deep learning, and computer vision.
- Data Engineering:
 - Assisted in developing a dataset integrating 3D-depth videos and RGBD formats for a 3D-printed two-joint gripper end-effector, improving model performance on unseen tasks.
 - Processed over 2+ hours of high-resolution RGBD data from 2000 demonstrations, using techniques like data augmentation, filtering, and discretization to enhance learning robustness.
- Computer Vision: Working on implementing an edge-detection model to produce a continuous set of aperture values while also optimizing number of frames
- Model Testing: Contributed to deployment, fine-tuning, and evaluation, using weights and biases to analyze model performance.

Diabetes Prediction Model Evaluation | Python, Pandas, PyTorch, Scikit-Learn, Matplotlib, Seaborn, Pandas

- Dataset: Dataset includes over 260,000 samples, being split 80-10-10, 80% training, 10% validation, 10% testing.
- $\bullet \ \, {\bf Objective:} \ \, {\bf Implemented} \ \, {\bf 7} \ \, {\bf different} \ \, {\bf models} \ \, {\bf to} \ \, {\bf evaluate} \ \, {\bf performance} \ \, {\bf on} \ \, {\bf classifying} \ \, {\bf if} \ \, {\bf patients} \ \, {\bf have} \ \, {\bf diabetes}. \\$
- Models Used: Logistic Regression, Random Forests, Boosted Decision Trees, Feedforward Neural Networks, Deep Neural Networks, Convolutional Neural Networks
- Logistic Modeling:
 - $\circ\,$ Performed normalization and scaling of certain features based on input dataset.
 - Analyzed model performance with metrics such as *Confusion Matrices*, F1-Score, and MCC Score, achieving an F1-score of **0.23** and MCC score of **0.22**, indicating the model generalizes well, but is prone to majority class sensitivity.
 - Analyzed AUCROC and AUCPRC graphs for insight on the classifier's decision threshold to increase F1-Scores, MCC scores, and overall model performance.
 - Achieved accuracy scores of 86% after feature engineering and on logistic regression model.

• Neural Network Modeling:

- Implemented **3** different neural network models a Multi-Layer Perceptron (MLP), Deep Neural Network with **3** hidden layers, and a Convolutional Neural Network (CNN).
- \circ Utilized PCA to reduce dimensionality of dataset, reducing training time by 25% and collinearity among features.
- Analyzed AUCROC and AUCPRC to determine model efficiency achieving accuracy scores of 91% and an F1-Score of 34%.

Multivariate Regression Housing Model - GitHub Repo | Python, NumPy, MATLAB, Pandas, SciPy

- Built a multivariate regression model to predict housing values based on prior California census data.
- Analyzed input features performed standardization and normalization on that features were closely related, indicating collinearity in data provided.
- Implemented RMSE error calculation on each feature, modularly breaking down features into univariate regression for analysis on best features to include in multivariate model, achieving scores as high as **0.47**.
- Achieved accuracy scores of 60.2% after feature selection on multivariate model.

MISCELLANEOUS INFORMATION

Work Authorization: United States (U.S. Citizen - no sponsorship required)

Hobbies: Baking/Cooking, Car Maintenance, Rock Climbing, Fashion, Piano, Baseball, Basketball, Snowboarding, Woodworking, Video Games, Drawing, Photography

Languages: English, French