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.
- **Objective:** Implemented **7** different models to evaluate performance on classifying if patients have diabetes.
- **Models Used:** Logistic Regression, Random Forests, Boosted Decision Trees, Feedforward Neural Networks, Deep Neural Networks, Convolutional Neural Networks
- **Logistic Modeling:**
  - 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).
  - 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