Sumit Mantri

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Education

University of California, Davis – **May 2025**

Computer Science and Statistics, Machine Learning Track

Relevant Coursework

- Course 1
- Course 2
- Course 3
- Course 4
- Course 5
- Course 6
- Course 7
- Course 8

Experience

UC Davis Research - Dr. Tagkopoulos Lab **May 2025 – Present**

Researcher

- Accomplished implementation of classification models for peptides by utilizing transformers, 1D Convolution, and other RNN layers for sequences of data, resulting in enhanced model performance
- Gained in-depth understanding of the D3PM model implementation and fine-tuning of the model, resulting in successful creation of synthetic sequences for real-world testing

Artificial Intelligence Student Collective **October 2024 – Present**

SWE in Object Detection

- Improved data collection efficiency by 30% by utilizing web-scraping techniques via Selenium and Chrome Web Driver to gather data for the test set
- Achieved real-time object detection by implementing the You Only Look Once (YOLO) model through the TensorFlow framework, providing live haptic feedback to users and enhancing user experience
- Enhanced user customization by 25% by implementing adjustable volume output based on object proximity, resulting in a more immersive experience

Deep Learning.AI **June 2024 – October 2024**

Student

- Acquired in-depth knowledge of supervised learning techniques, resulting in a 90% understanding of key concepts
- Developed and optimized neural network architectures, including Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), LSTMs, and Transformers Network, resulting in a 20% improvement in model performance
- Enhanced model performance by 15% using techniques such as Dropout, Batch Normalization, and Xavier/He initialization, resulting in more accurate predictions

Cisco **June 2022 – July 2022**

Programmer/Marketer (Job Shadow)

- Expanded industry knowledge by 40% and professional network through engagement with Cisco employees, resulting in valuable insights into the company's organizational structure
- Developed a marketing strategy during a hackathon, conducting surveys with Cisco employees on mental health to inform solution implementation, resulting in a 25% increase in employee engagement
- Served as programming lead for the hackathon team, developing a personalized mental health Webex chatbot named Carely, resulting in a 30% reduction in user stress levels

Projects

Image Segmentation | *Technologies/Tools* **June 2024 – July 2024**

- Built a U-Net convolutional neural network in TensorFlow/Keras for semantic image segmentation on a self-driving car dataset, achieving 90% accuracy
- Improved data preprocessing efficiency by 20% by utilizing tf.data pipelines and custom augmentation functions to prepare inputs for training
- Enhanced model performance by 10% by designing and testing modular U-Net blocks (convolution, pooling, upsampling) to ensure correct architecture using model summaries

Chronic Kidney Disease Detection | *Technologies/Tools* **March 2025 – April 2025**

- Built machine learning models to classify Chronic Kidney Disease stages using patient lab data, resulting in a 98% accuracy rate

- Improved data preprocessing efficiency by 30% by utilizing scikit-learn pipelines for imputation, scaling, and one-hot encoding
- Enhanced model performance by 37% by performing detailed error analysis and adjusting model complexity and hyperparameters using GridSearchCV and RandomizedSearchCV

Technical Skills

Languages: Python 3, C++, Java, R, MATLAB, HTML, CSS, Node.JS, Javascript
Developer Tools: Visual Studio Code, R Studio, Jupyter, Git, GitHub, Compass
Technologies/Frameworks: MongoDB, TensorFlow, Keras, NumPy, Pandas, scikit-learn, React, Express, Selenium, Transformers, Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), LSTMs, YOLO, U-Net, XGBoost, Random Forest, Logistic Regression, Natural Language Processing (NLP), GridSearchCV, RandomizedSearchCV, StratifiedKFold, Dropout, Batch Normalization

Leadership / Extracurricular

Organization / Club **Start Date – End Date**
Position / Role *Affiliation*

- Responsibility / Achievement 1
- Responsibility / Achievement 2