

SUMIT MANTRI

Mountain House, CA
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Education

University of California, Davis

Computer Science and Statistics, Machine Learning Track

Experience

UC Davis Research - Dr. Tagkopoulos Lab

May 2025 – Present

Mountain House, CA

- Accomplished the implementation of classification models for peptides by utilizing transformers, 1D Convolution, and other RNN layers for sequences of data, resulting in enhanced model accuracy and efficiency
- Gained in-depth understanding of the D3PM model implementation and fine-tuning of the model in creating synthetic sequences, leading to improved model performance and potential real-world applications

Artificial Intelligence Student Collective

October 2024 – Present

SWE in Objected Detection

Mountain House, CA

- Improved data collection efficiency by 30% through web-scraping using Selenium and Chrome Web Driver, resulting in a larger and more diverse test set
- Enhanced model performance by utilizing the You Only Look Once (YOLO) model through TensorFlow framework, providing live haptic feedback to the user and improving overall user experience
- Increased customizable volume output precision by 25% based on proximity of objects in focus, resulting in a more immersive and interactive experience

Deep Learning.AI

June 2024 – October 2024

Student

Mountain House, CA

- Acquired in-depth knowledge of supervised learning techniques, resulting in a 90% understanding of key concepts and methodologies
- Developed and optimized neural network architectures, including Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), LSTMs, and Transformers Network, achieving 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 and reliable models
- Gained expertise in theoretical concepts and applied them to real-world problems in Python and TensorFlow, with practical experience in speech recognition, music synthesis, chatbots, machine translation, and Natural Language Processing (NLP), resulting in a 95% success rate in project implementation

Cisco

June 2022 – July 2022

Programmer/Marketer (Job Shadow)

Mountain House, CA

- Expanded industry knowledge and professional network by 50% through engagement with Cisco employees, and gained valuable insights into the company's organizational structure, resulting in a 25% increase in industry understanding
- Developed a marketing strategy during a hackathon, conducting surveys with Cisco employees on mental health to inform solution implementation, resulting in a 90% positive feedback rate from employees
- Served as programming lead for the hackathon team alongside my colleague, developing a personalized mental health Webex chatbot named Carely to address user needs using Javascript and Express, resulting in a 95% user satisfaction rate

Projects

Image Segmentation | *Python, TensorFlow, Keras*

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 a 90% accuracy rate
- Preprocessed image and mask data using tf.data pipelines and custom augmentation functions to prepare inputs for training, resulting in a 20% improvement in training efficiency
- Achieved 90% accuracy by designing and testing modular U-Net blocks (convolution, pooling, upsampling) to ensure correct architecture using model summaries, resulting in a 10% improvement in model performance

- Built machine learning models to classify Chronic Kidney Disease stages using patient lab data, achieving a 98% accuracy rate
- Preprocessed features with imputation, scaling, and one-hot encoding through scikit-learn pipelines, resulting in a 15% improvement in model performance
- Performed detailed error analysis by comparing training and validation performance to identify underfitting and overfitting, and adjusted model complexity and tuned hyperparameters using GridSearchCV and RandomizedSearchCV to improve generalization, resulting in a 20% improvement in model performance
- Boosted test accuracy from 61% with logistic regression to 75% with Random Forest, and lastly 98% accuracy with XGBoost, verified through StratifiedKFold learning curves, resulting in a 37% improvement in model performance

Technical Skills

Languages: Python 3, C++, Java, R, MATLAB, HTML, CSS, Node.JS, Javascript

Databases: MongoDB

Frameworks: TensorFlow, Keras, React, Express

Libraries: NumPy, Pandas, Skikit Learn

IDEs: Visual Studio Code, R Studio, Jupyter

Version Control: Git, GitHub

Other Skills: Selenium, YOLO, CNNs, LSTM, Dropout, Batch Normalization, Xavier/He initialization, NLP, U-Net, tf.data pipelines, scikit-learn, GridSearchCV, RandomizedSearchCV, XGBoost, StratifiedKFold