

# Charley Sanchez

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## Education

**UCLA Samueli School of Engineering** – MEng, Artificial Intelligence  
**University of California, Santa Barbara** – BS, Physics

September 2025  
2023

## Skills

**Programming:** Python, SQL, C, C++, JavaScript, HTML, CSS, Bash, Git, Flask

**Machine Learning:** Supervised/Unsupervised Learning, Transfer Learning, CNN, LSTM, RNN, OpenCV, GAN, VAE, Diffusion, Transformers, YOLO, Model Evaluation

**Tools & Frameworks:** PyTorch, TensorFlow, Keras, NumPy, Pandas, scikit-learn, HuggingFace

## Experience

**Software Engineer** – Econ One Research

03/2024 – 09/2024

- Led design and implementation of a PostgreSQL database system with automated metadata indexing, cutting down query times by 40% across 100,000+ documents
- Engineered a multithreaded document processing pipeline using Python's ThreadPoolExecutor, improving efficiency by 3x and laid groundwork for future ML-based document classification
- Collaborated with cross-functional teams to develop a computerized time tracking system, optimizing task assignment and decreasing manual workflow time for 50+ employees
- Built an integrated billing system by partnering with finance and data teams, connecting multiple databases to achieve over 95% accuracy in hours tracking and financial reporting

**Lab Assistant** – Pacific Diagnostic Laboratories

04/2023 – 03/2024

- Managed SQL-based tracking system for lab workflows, enabling real-time monitoring of 500+ daily samples and generating summary reports
- Created and maintained version controlled documentation for standard operating procedures using Git, resulting in 30% training time reduction for new lab technicians
- Provided live specimen tracking updates and issue resolution, maintaining a >95% physician satisfaction rate based on monthly feedback surveys
- Coordinated directly with physicians and nursing staff to prioritize STAT orders and critical samples, reducing turnaround time by 50% for urgent cases

## Projects

**NLP Spurious Attribute Analysis**

[github.com/spurious-learning-analysis](https://github.com/spurious-learning-analysis)

- Constructed a token-level interpretability framework using DecompX to analyze pretrained NLP models
- Evaluated BERT and RoBERTa models of varying sizes on datasets with annotated spans, quantifying alignment between token importance and human annotations
- Conducted experiments with toxic span datasets and counterfactually augmented data, analyzing token importance ratios and correlation with model performance

**Bridging the Generalization Gap in sEMG Keystroke Recognition**

[github.com/SOTA-4](https://github.com/SOTA-4)

- Designed and trained a bidirectional LSTM model with residual connections to improve generalization for sEMG-based keystroke recognition
- Achieved a 12% relative improvement to baseline in Character Error Rate (CER) on the EMG2QWERTY dataset (346 hours, 108 users)
- Applied domain transfer learning to enable adaptation across datasets with varied channel and sampling rate configurations, diminishing need for user-specific retraining