

Charley Sanchez

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github.com/charleysanchez

Education

UCLA Samueli School of Engineering – MEng, Artificial Intelligence	2025
University of California, Santa Barbara – BS, Physics	2023

Skills

Programming: Python, C/C++ , SQL, Bash, Git

Machine Learning: CNNs, Transformers, LSTMs, real-time inference, evaluation (Dice, Recall)

Computer Vision: InsightFace/SCRFD, RetinaFace, YOLO (v5/v8), SAM, OpenCV, RGB-D

Tools & Frameworks: PyTorch, ONNX Runtime, TensorRT (FP16), NVIDIA Jetson, Intel RealSense, Docker, Linux

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 workflow tracking for 500+ daily samples; generated operational reports to support clinical decision making
- Authored Git-versioned SOPs, reducing training time for new technicians by 30%; improved process consistency and auditability

Projects

PAVAC: Privacy-Aware Vehicular Autonomous Computation github.com/AVPrivacy-Jetson

- Replaced a generic person detector with a face-specialized SCRFD (InsightFace) and ONNX Runtime + TensorRT, delivering 16 ms face detection at 640×480 on Jetson and enabling 24.3 FPS end-to-end
- Designed a fast, non-invertible mosaic+noise anonymizer: mosaic once for the frame, then copy pixels only where the mask=1; adds bounded random noise to prevent reconstruction, cutting compute >92% vs prior per-pixel methods
- Created an evaluation harness against SAM masks with Dice and Recall, plus environment/face-count aggregates; final averages: Dice 0.827 and Recall 0.897, with 41.1 ms average latency
- Ported the full stack to the rover platform and validated on real-world sessions and CARLA edge cases (crowds, severe angles)

Bridging the Generalization Gap in sEMG Keystroke Recognition 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