Kayne Maniti

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Education

University of California San Diego — **La Jolla, CA**
B.S. in Computer Science; GPA: 3.61 — *Sep. 2023 – Jun. 2027*

Experience

Software Engineer Intern — **Jan. 2025 – Present**
Design Lab — *La Jolla, CA*

- Completed **rPPG-Playground**, a CLI-driven hub hosting **7+** rPPG model architectures and **34+** pretrained configurations, enabling one-command testing and real-time vital sign inference with **OpenCV** and **PyTorch.**
- Architected a **pipeline** using the **Google Cloud Vision API** for face and emotion detection
- Designed a **RESTful API** with **Flask** to serve heart rate detection results from live video streams.
- Enhanced **emotion recognition models** through multi-modal sensor fusion for more robust affective computing.

Machine Learning Intern — **Aug. 2024 – Dec. 2024**
DIRECTV — *El Segundo, CA*

- Developed **BERT-based sentiment classifiers** for aspect-based review analysis across **8k+ businesses**.
- Cut computation time by **94%** (6 hrs. to 20 min) via a parallelized lightweight, keyword-based classifier.
- Integrated NLP with regression models to **forecast KPIs** using **Python** & **TensorFlow**.
- Boosted model accuracy from **64%** to **86%** through hyperparameter tuning and k-fold cross-validation with **scikit-learn**.

AI Research Assistant — **Oct. 2023 – Dec. 2024**
ESBAI Lab — *La Jolla, CA*

- Developed **YOLOv8/DeepLabV3/Segnet models** achieving **83% precision** for on flight object detection in **PyTorch**.
- Increased dataset by **25%**, developing tilt correction software with **OpenCV** detecting & adjusting images of trees in turbulence
- Deployed Python backend for **Label Studio**, automating labeling of **6,000+ images** with **OpenCV** & **YOLOv8**.

Projects

TensorSANN — *C++, CUDA, OpenCL, CMake*

- Implemented memory-coalesced CUDA kernels achieving **8x speedup** on matrix operations.
- Built an MNIST loader & modular architecture following **OOP/TDD principles**.
- Implemented a **CI/CD pipeline** using **GitHub Actions** to run **CMake** builds, ensuring build integrity.

TritonTube — *Go, gRPC, AWS EC2, Consistent Hashing, SQLite*

- Designed and implemented a distributed video storage platform in Go, utilizing consistent hashing for automatic shard distribution and load balancing across AWS EC2 instances, achieving 99.9% availability.
- Created scalable gRPC microservices for node registration, replication, and data routing, orchestrating service discovery with etcd to ensure high availability and fault tolerance across the distributed system.
- Leveraged Go concurrency primitives (goroutines, channels) to handle multiple client requests simultaneously, achieving throughput of 100+ concurrent video uploads while maintaining low latency.

Habitizer — *Android Studio, Java, Espresso, JUnit*

- As SCRUM Master for a 6-person team, implemented Agile ceremonies and streamlined workflows using Github Projects, resulting in a 30% increase in team velocity and on-time delivery of all sprint commitments.
- Architected the application using Model View Presenter (MVP) pattern with Java, adhering to OCP and SRP principles to enhance code maintainability and testability, reducing bug resolution time by 35%.
- Established a CI/CD pipeline with GitHub Actions and Gradle, reducing build and deployment times by 40% and enabling faster iteration cycles for feature development and testing.

Sustainability Bot — *Python, Docker, Azure, SQLite3, MongoDB*

- Deployed a containerized Discord bot on the cloud with **Azure VM** promoting sustainability to **200+ users**.
- Integrated an abstracted database layer (**relational databases** such as **SQLite3** or NoSQL databases like **MongoDB**) for flexible data management.

Technical Skills

- **Languages**: Python, Java, C/C++, Go, SQL, JavaScript, ARM Assembly
  Frameworks/Tools: Node.js, Flask, TensorFlow, PyTorch, scikit-learn, OpenCV, Docker, Git, AWS, Azure
  Concepts: RESTful APIs, Microservices, CI/CD, Distributed Systems, Agile/Scrum, Computer Vision, NLP