JONATHAN MACOCO

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EDUCATION

Masters of Science, Computer Science May 2026
San José State University, San José, California
- GPA: 3.57

Bachelor of Science, Computer Science May 2023
Chico State University, Chico, California
- GPA: 3.287

TECHNICAL SKILLS

Programming Languages: C, C++, Python, JavaScript, HTML5, CSS
Tools/Technologies: PyTorch, Git, AWS, GCP, React, Docker, OpenMP, CUDA, Linux
Database: MongoDB, MySQL
Skills: Database Design, Agile, Scrum, Problem Solving, Communication, Quantitative Analysis, OOP, Adaptable

EXPERIENCE

Full Stack Software Engineer, Coinable, Remote Feb 2024 - June 2024
- Implemented email verification system utilizing Amazon Simple Email Service, resulting in reliable and secure communication within seconds for a seamless user authentication
- Devised a RESTful API with JavaScript for efficient retrieval, storage, and updating of database records, delivering streamlined data management and scalability
- Formulated and implemented database architecture in MongoDB resulting in efficient data management
- Setup NGINX reverse proxy for load balancing, improving backend efficiency, scalability, and security

AI Trainer, Remotask, Remote May 2023 - Feb 2024
- Trained machine learning models such as ChatGPT how to code in Python and C, resolving issues during training
- Conducted thorough code evaluations for machine learning models, increasing efficiency
- Documented and delivered clear explanations of model output, resulting in model improvement

PROJECT EXPERIENCE

N-Bodies Simulation
- Parallelized N-Bodies simulation in CUDA, achieving 14x increase in particle generation and processing performance
- Parallelized simulation using OpenMP resulting in a 3x increase in particle generation by leveraging 16 shared cores
- Engineered custom graphics pipeline allowing for real time rendering using OpenGL
- Developed simulation that can model the gravitational force over 10,000 particles in real time

Distributed Collaborative Code Editor
- Optimized traffic distribution with AWS load balancer across 3 nodes maintaining an average of 4.5% CPU utilization for 50 concurrent users editing documents
- Employed MongoDB distributing data queries using 3 shards ensuring scalability and efficient resource management
- Leveraged socket programing allowing real time, concurrent editing on the same document for over 10 users
- Created auto-recover mechanism to handle server failures, allowing high availability and data integrity across nodes

Deep Reinforcement Learning Agent
- Applied Deep-Q Network algorithm with a CNN using PyTorch to train RL agent to learn and play the Hex game
- Built custom environment leveraging PettingZoo API, ensuring accurate state representation and reward mechanic
- Implemented epsilon decay strategy balancing exploration and exploitation

Synthetic Malware Images
- Designed a Conditional GAN in PyTorch to generate synthetic malware images
- Successfully produce realistic images serving as effective training data, achieving a 92% accuracy in a CNN
- Processed data using one-hot encoding for class labels and applied balancing techniques to resolve class imbalance