JONATHAN MACOCO

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EDUCATION

Masters of Science, Computer Science

- San José State University, San José, California
- GPA: 3.0

Bachelor of Science, Computer Science

Chico State University, Chico, California

• GPA: 3.2

TECHNICAL SKILLS

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

EXPERIENCE

Full Stack Software Engineer, Coinable, Remote

- Implemented email verification system utilizing Amazon Simple Email Service, resulting in reliable and secure communication within seconds for a seamless user authentication for up to 50,000 users
- 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 and organization
- Build and managed NGINX reverse proxy for load balancing, improving backend efficiency, scalability, and security

Computer Science Expert Al Training, Remotask, Remote

- 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

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

N-Bodies Simulation

- Parallelized N-Bodies simulation in CUDA, achieving 14x increase in particle generation and processing performance
- Engineered custom graphics pipeline allowing for real time rendering using OpenGL, resulting in a consistent 60 FPS
- Developed simulation that can model the gravitational force over 50,000 particles in real time

Factoring a Large Semi prime

- Parallelized code leveraging C++ with OpenMP, resulting in a 28% speed up using 4 shared memory cores
- Implemented character array to store prime numbers up to 10 billion optimizing memory using bitwise operations
- Employed prime density analysis and Sieve's algorithm to generate a list of prime numbers

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

Plant Social

- Led collaboration as a scrum leader in creating and building a social application, ensuring sprint deadlines were met
- Designed intuitive front end interfaces with Flutter enhancing UI
- Integrated Firebase functionality to retrieve, manage and store user data, ensuring a seamless user experience

Expected: May 2026

May 2023

May 2023 - Feb 2024

Feb 2024 - June 2024