GRACE ZHANG

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EDUCATION

Cornell University, New York, NY — May 2024
Master of Engineering in Computer Science (Merit Scholarship)
Relevant Coursework: Deep Learning, VR/AR, Machine Learning Hardware, Computer Vision, Full Stack Engineering

University Of California Berkeley, Berkeley, CA — May 2020
Bachelor of Arts in Computer Science and Data Science | GPA: 3.81
Relevant Coursework: Database Management, Computer Architecture, Algorithms, Data Structures, NLP, Optimization

TECHNICAL SKILLS

Coding Language:	C, C++, C#, Java, Python, SQL, HTML/CSS, Javascript, Unity, PyTorch, Tensorflow
Frameworks and Database:	React**,** SpringBoot, Zookeeper, MySQL/PostgreSQL, Redis, MongoDB
Tools and Technologies:	Maven, Git, IDEA, OpenAI Gym, OpenCV, Docker, CI/CD Pipelines, Linux

PROFESSIONAL EXPERIENCE

Founding Software Engineer, Infinitrips.ai, Berkeley — July 2024 - Jan 2025
- Collaborated with a team of 4 to build an AI-powered app, pitching the product's unique values to potential investors
- Designed and implemented backend storage and functionality using **AWS Amplify** to generate contents entries and ensure efficient data storage and retrieval for the app; integrated APIs with the frontend for seamless performance

Researcher, BAIR, Berkeley — Oct 2023 - Jan 2024
- Collaborated with Prof. Bin Yu's group to research on computer vision interpretability, enhancing the state-of-the-art model
- Generalized the **R-3 ProtoPNet** framework to the **Vision Transformer (ViT) ProtoPNet** architecture, comparing it with the original to evaluate improvements in interpretability, performance, and generalization

Researcher, ROAR AI Racing, Berkeley — Nov 2022- Dec 2023
- Led a team of 3 in developing advanced lane detection algorithms for autonomous racing cars in the Indy Autonomous Challenge
- Initiated **SAM serverless backend** with **Docker** on cvat for automated and efficient data labeling, developed **YOLO-v8** training pipeline for lane detection, optimized and fine-tuned the model using **quantization aware training**
- Enhanced the reinforcement learning pipeline by integrating real-time visualization of car waypoint data for each observation step, using **OpenAI Gym** to improve training insights

Software Engineering Intern, Hirebeat, Remote — Feb 2022 - May 2022
- Co-developed a user-interactive virtual social platform in Unity using **C++**, enabling interviewees to practice and refine their skills in a virtual environment; implemented voice-chatting and texting functions using the **photon OS package**
- Developed a solution for **MySQL** migration to **AWS RDS**, used **AWS DMS** to achieve a seamless migration based on a double-write policy to ensure data integrity during the migration process
- Implemented a data storage solution to migrate historical image and video data to **Amazon S3** to significantly reduce storage costs, and adopted data lifecycle policies and version control to automate data management

PROJECTS

Distributed KV Storage System (Java) — Summer 2024
- Ensured high availability and strong consistency by implementing the **Raft** consensus algorithm, focusing on Leader election, log replication, and snapshot updates, resulting in seamless fault tolerance and data integrity
- Achieved high performance with **20,000 QPS** for 4KB KV mixed read and write workloads, maintaining a P99 delay of 800 milliseconds by optimizing the system with **asynchronous Apply**, **ReadIndex**, and **FollowerRead**
- Optimized data partitioning and migration using **consistent hashing architecture**, distributing data into Shards across multiple Raft groups for efficient load balancing and scalability
- Reduced master switching frequency by integrating **Prevote**, enhancing system stability and reliability under stress conditions
- Implemented a **fault prediction mechanism** to detect and isolate potentially faulty machines through a a **deep residual shrinkage network** to ensure the high availability of the distributed KV system

PUBLICATIONS

Aaron Jiaxun Li, Robin Netzorg, Zhihao Cheng, Zhuoqin Zhang, and Bin Yu. "Improving Prototypical Visual Explanations with Reward Reweighting, Reselection, and Retraining." *Submitted and accepted to ICML.*