

# 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

<b>Coding Language:</b>	C, C++, C#, Java, Python, SQL, HTML/CSS, Javascript, Unity, PyTorch, Tensorflow
<b>Frameworks and Database:</b>	<b>React</b> , SpringBoot, Zookeeper, MySQL/PostgreSQL, Redis, MongoDB
<b>Tools and Technologies:</b>	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 **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*.