AARON ZHENG

Software Engineer | Robotics · Reinforcement Learning · Language Models · AI Safety · Scalable Systems

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Education:

University of California Berkeley B.S *Electrical Engineering and Computer Science.* Aug 2022 - May 2026
Bachelor's Degree **Major GPA: 3.95**
Coursework: Robotics, Reinforcement Learning, Deep Learning, Machine Learning, Computer Graphics, Computer Vision, Computer Architecture, Data Structures, Discrete Math and Probability Theory, Advanced Circuits, Optical Engineering, Digital Signal Processing, Digital Design and Integrated Circuits

Experience:

Uniphore (Series E Enterprise AI) – AI Intern (Conversational AI / Systems Optimization) (Jun 2024- Present)
- Designed and deployed **large-scale LLM guardrail pipelines** (unsafe prompt filter, jailbreak detection, topic control) serving **750K+ enterprise users** and reduced latency by **90+%** with no reduction in accuracy
- Built **automated data collection, labeling, and retraining loops** for intent classification, leading to measurable accuracy improvements.
- Developed internal tools for **dataset curation, quality monitoring, and evaluation**, increasing dataset reliability and reducing noise.
- Collaborated with CTO and research teams on **GRPO-based RL fine-tuning**

OpenGym Copilot — Creator (Open Source RL Tool) (Aug *2025 – Present*)
- Built a **real-time RL rollout visualizer** with FastAPI backend + React/Three.js frontend, streaming metrics and frames over WebSockets.
- Added support for **training integration** (PPO, SAC, TD3) with Gymnasium/Isaac Gym environments and interactive episode control.
- Enabled multi-robot training via `torch.distributed`, increasing experience throughput and accelerating policy convergence.

UC Berkeley — Undergraduate Researcher (SkyRL Project) (Sep *2025 – Present*)
- Reproduced distributed RL training pipelines using Ray and TorchRL for cloud-scale experiments.
- Added **custom logging, checkpointing, and evaluation harnesses** to standardize debugging across heterogeneous clusters.

Language Engineering Intern - Ivoyant (June 2023 - Aug 2023)
- Developed **ANTLR-based parsers** and **TypeScript data-mapping models** for large-scale JSON pipelines.
- Automated translation of datasets into standardized expressions, cutting manual effort, improving consistency and speed.

Projects:

Undergraduate Researcher and Lead Contributor - JIPCAD (UC Berkeley)
- Extended a **3D CAD kernel** and used C++ and OpenGL to support **shelling, offsetting,** and **constraint-based modeling support**.
- Built a **compiler front-end (VSCode extension)** using ANTLR + custom language extensions for CAD workflows.
- Contributed to rendering optimizations for large-scale 3D modeling pipelines.

3D Voxel-based Cellular Automata Simulation
- Designed a **chunked mesh representation** and **real-time OpenGL renderer** with camera controls and frustum culling.
- Integrated **physics simulation** (rigid-body + collision detection) for interactive manipulation of voxel terrain.

Embodied AI (Research)
- End-to-end RL training with custom rewards enabling **somersault-like Unitree H1 locomotion** in IsaacSim. (https://tinyurl.com/dxxz5zzj)
- Developed **Soft Actor-Critic (SAC) agents** for BipedalWalker-v3 and **TD3/PPO agents** for Humanoid-v4 in PyTorch to 5600+ reward.
- Deployed **AMP reward models** with TorchScript to run on RTX 4070 under strict resource constraints.

Multi Agent Reasoning Framework (SallCo / Episodex)
- Led team of 6 to develop a reasoning agent that **outperformed ReAct** on ALFWorld benchmark.
- Won **3rd place out of 533 teams** at Berkeley RDI Hackathon Fall 2024 (Fundamentals), EMNLP paper in submission

RISC-V CPU Design (Verilog, FPGA)
- Designed and implemented a **pipelined RISC-V CPU** with memory-mapped I/O.
- Achieved stable operation at **105 MHz** on FPGA board.

Leadership:

HKN EECS Honor Society - (Industrial Relations Officer): Organized 2-3 company infosessions per semester for EECS community
Peer Leadership Consultant (Student Employee): Guided club signatories (~4000 people) through club registration logistics while processing registration data in Excel and helping with maintaining website, strengthening teamwork, communication, and front-end skills.
AI Safety Club (Tech Co-lead): Co-host the paper reading group, bringing together people to read / discuss AI safety papers.

Selected Publications:

Oral *COLING 2025* – First-author on LLM Safety Guardrails (encoder-based classifiers for safe deployment).
***EMNLP 2025 (submitted)* – Artificial cognition with prompt-tuning applied on an LLM Agent system.**

Skills:

Python, C++, PyTorch, Tensorflow, JAX, CUDA, Distributed Training (torch.distributed), sb3, RLlib, Docker, AWS EC2 clusters, Git.