

Matthew (Linghe) Zhang

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EDUCATION

University of California, Santa Barbara

Goleta, CA

B.S. Computer Science & B.S. Statistics and Data Science

Aug. 2023 – March 2027

- Major GPA: 3.98/4.00
- Relevant Coursework: Data Structures and Algorithms, Operating Systems, Computer Networks, Computer Architecture, Machine Learning, Artificial Intelligence, Computer Vision, Probability, and Distributed Systems

EXPERIENCE

Lucid Motors | *SWE, In-Vehicle AI Assistant Engineer*

June 2026 – Sep 2026

- Built a Kotlin testing framework deployed in-vehicle to validate agent behavior across voice activation, WebRTC transport, backend services, and vehicle-signal execution, reducing in-vehicle testing time by 80%
- Built stateful agents with structured memory to simulate diverse personas across user, and environment conditions, using failure memory and clustering to refine generation and uncover 4× more failures than manual testing
- Engineered a multi-agent validation framework using deterministic checks, metric scoring, and semantic validation across new vehicle builds and conditions, matching manual precision and recall

MOMENT Lab | *Undergraduate Researcher*

July 2025 – April 2026

- Second-authored *DualPI2 for Mahimahi* (ACM SIGCOMM CCR), introducing an L4S-capable DualPI2 emulator and a statistically grounded methodology for improving fidelity to kernel space behavior
- Engineered an automated concurrent network experimentation system using Linux network namespaces, routing, traffic control, and TUN, enabling parallel collection while maintaining over 99% valid experiment completion
- Statistically quantified fidelity gaps between Mahimahi's DualPI2 emulator and Linux kernel implementation using packet-level ECN, queue, and throughput time-series

Mayer Lab | *Full-stack Software Engineer*

July 2025 – June 2026

- Sole-developed a U.S. Navy-funded classroom research platform powering daily behavioral studies across UCSB labs, simulating realistic classrooms with real-time agents for human-subject research (Award UC-2026-822-1)
- Built a distributed video-delivery system with custom ABR and edge caching across private VPS nodes, supporting 30+ concurrent streams per room in production with 55% lower startup latency than S3/CloudFront
- Engineered horizontally scaled video synchronization with Redis Pub/Sub, event versioning, and automated failover for 400+ clients, delivering 99.9% of sync events within 200 ms with sub-second recovery

RESEARCH PROJECTS

Agentic Network Experimentation | *System and Networking Lab*

May 2026 – Present

- Enhanced an agentic network experimenter with Kubernetes orchestration and Linux networking primitives to reproduce consistent home-network conditions across concurrent applications with under 5% cross-run variance
- Developed a centralized observability system tracing execution order, latency, and user intent across multiple microservices and LangGraph workflows, reducing mean time to root cause by 8×

Semantic Gaussian Scene Editing | *Vision Lab*

November 2025 – Present

- Engineered a 3D Gaussian Splatting cleanup pipeline using geometric point-cloud constraints and lineage-based pruning, matching segmentation-based isolation quality; preprint in preparation
- Developed and evaluated a ReAct agent for autonomous 3D scene cleanup, measuring how episodic memory, learned Gaussian features, and tool/action-space design affect editing performance

AWARDS

UCSB Hackathon (Aryan.AI — First place, 2025) – Built LLM vision scraper achieving 96% accuracy on 20 sites

UCSB Datathon (Groq.AI — First Place, 2025) – Built a multi-agent pandemic simulator across 20 agents

Unwrap.AI (Winner, 2025) – Developed Qwen Video Understanding Pipeline for Ad Generation

SKILLS

Infra: AWS (EC2, ALB, VPC, S3, RDS, ElastiCache, ECR, CloudWatch, IAM), Kafka, RabbitMQ, Cassandra, Spark

Languages: TypeScript, Kotlin, Python, C++, Java, JavaScript, SQL, R, Bash, GoLang

Tools: React, Three.js, Django, OpenCV, Docker, Swagger, Celery, Nginx, Storybook, Playwright, Redis

AI: NumPy, PyTorch, CNNs, R-CNNs, transformers, RAG, reinforcement learning, prompt engineering