

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 – Present

- Built an automated Kotlin testing framework validating in-vehicle agent behavior across voice activation, WebRTC, backend services, and vehicle-signal execution, reducing QA time by 80%
- Engineered multi-agent testing to simulate realistic customer behavior, and validate assistant behavior through deterministic function checks, metric scoring, and semantic evaluation, increasing new failure discovery by 4×

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
- Verified Mahimahi's DualPI2 AQM against its Linux kernel implementation using iperf3, tcpdump, Wireshark, and tc statistics to collect packet-level time-series, ECN marks, and queue telemetry
- Engineered a concurrent network experimentation system using Linux network namespaces, routing, traffic control, TUN, and other Linux networking primitives, enabling parallel collection with under 5% cross-run variance

Mayer Lab | *Founding Software Engineer*

July 2025 – June 2026

- Sole-developed a U.S. Navy-funded classroom research platform supporting daily video-based HCI experiments across UCSB labs, with AutoGen multi-agent systems simulating student audiences (Award UC-2026-822-1)
- Built a custom ABR video-delivery system using Nginx reverse proxies across distributed VPS and a switched edge-node cluster, supporting 30+ concurrent streams with 55% lower startup latency than S3/CloudFront
- Engineered real-time synchronization system including horizontally scaled WebSocket servers using Redis Pub/Sub and automated failover, maintaining <100 ms p95 playback drift with sub-second recovery from server failures

RESEARCH PROJECTS

Agentic Network Experimentation | *System and Networking Lab*

May 2026 – Present

- Enhanced an agentic network-experimentation backend with Docker/Kubernetes orchestration, compute limits, and programmable bottleneck shaping, enabling parallel experiments 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