# Matthew (Linghe) Zhang

San Jose, CA | 925-967-7726 | linghe@ucsb.edu | linghezhang.me | LinkedIn | Google Scholar

## Education

**University of California, Santa Barbara** Goleta, CA
*B.S. Computer Science & B.S. Statistics and Data Science* Aug. 2023 – May 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

- Developed a multi-agent system in Kotlin with self-reflection and adversarial testing to test Lucid's LLM-based in-vehicle AI assistant, increasing new failure-scenario discovery by 4×
- Engineered a WebRTC startup tracer that isolated connection-establishment delays in moving vehicle, then redesigned the audio capture transport to reduce average response latency by 25%.

**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
- Quantified Mahimahi DualPI2 fidelity against the Linux kernel implementation using time-series analysis and robust nonparametric tests, identifying statistically significant gaps in packet timing and shaping
- Engineered a concurrent network experimentation system using Linux namespaces, traffic-control, and virtual-networking primitives, enabling parallel collection while being 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).
- Developed a video delivery platform supporting 40+ streams per experiment using private edge nodes, predictive caching, and custom ABR, cutting compute costs 75% and startup latency 55% versus S3 and CloudFront
- Engineered real-time synchronization supporting 400 concurrent users across three self-hosted WebSocket servers using Redis Pub/Sub, maintaining <100 ms p95 playback drift with health-checked failover.

## Research Projects

**Semantic Gaussian Scene Editing** | *Vision Lab* Novemeber 2025 – Present

- Engineered a lineage-based Gaussian filtering pipeline for high-fidelity building isolation without segmentation masks; documented the methodology in a technical whitepaper
- Developed a custom PyTorch optimization pipeline for 3D Gaussian Splatting using SAM-derived semantic labels, and built a ReAct agent system to identify scene objects and remove object-level Gaussian artifacts

**Agentic Network Experimentation for CPUC** | *System and Networking Lab* May 2026 – Present

- Engineered an agentic system for the California Public Utilities Commission (CPUC) to simulate realistic household network usage, orchestrating multi-app/device workflows, traffic shaping, and bandwidth/latency constraints.
- Reduced agent latency by 45% by parallelizing ReAct-based web navigation across browser and application workflows, with self-correction and concurrent tool execution.

## 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, Kotln, 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