Kaiqin Kong

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EDUCATION

University of California San Diego — La Jolla, CA, USA
Master of Science in Computer Science and Engineering — *Sep 2025 – Jun 2027 (expected)*

Zhejiang University — Hangzhou, Zhejiang, China
Bachelor of Engineering in Industrial Design — *Sep 2020 – Jun 2024*

PROJECTS

LLM from Scratch
Tiny Language Model Implementation
- **Model Architecture**: Designed and implemented a tiny LLM using PyTorch, including Tokenizer, Multi-Head Causal Attention, and Feed-Forward Networks (FFN).
- **Optimization**: Implemented Flash Attention 2 using Triton to optimize attention mechanisms, improving training efficiency.
- **Training**: Trained the model from scratch, achieving functional performance for small-scale language tasks.

InnoWeaver — ZJU International Design Institute
Agentic Innovation Platform — *Nov 2024 – May 2025*
- **Agentic Backend**: Using FastAPI and LangGraph, engineered a highly concurrent agentic backend; all methods were implemented asynchronously to power complex, LLM-driven design ideation workflows.
- **Data & Frontend**: Architected the data stack with MongoDB for primary storage and Meilisearch for efficient retrieval-augmented generation (RAG). Developed a responsive, modern frontend with Next.js and Tailwind CSS.

Needle
Micro Deep Learning Framework Implementation
- **Automatic Differentiation**: Implemented computational graph-based automatic differentiation system supporting gradient computation and backpropagation.
- **Operator Implementation**: Developed various operators including basic arithmetic, linear algebra, and reduction operations, then used them to build fundamental modules.
- **CUDA Backend**: Implemented NumPy-like array computation backend using CUDA for efficient tensor operations.

Pastor — Graduation Thesis
Unity Evacuation Simulation Serious Game — *Jan 2024 – May 2024*
- **Crowd Simulation**: Implemented the Social Force Model and integrated it with Unity's NavMesh to enable complex, pathfinding-driven agent behavior in dense crowds.
- **Software Architecture**: Utilized the MVC pattern alongside the QFramework to architect a decoupled and maintainable codebase for game logic and UI systems.
- **Editor Tooling**: Developed an in-game map editor for dynamic obstacle placement and modification, significantly streamlining the level design workflow.
- **Game Feel & VFX**: Employed the Feel plugin to create and polish numerous UI and in-game visual effects, substantially enhancing the player experience.

EXPERIENCE

International Design Institute, Zhejiang University — Hangzhou, China
Research Assistant Intern — *Jun 2024 – Jun 2025*
- **Multi-agent Research**: Developed LLM-driven autonomous agents for design ideation and evaluation.

Zhejiang University — Hangzhou, China
Teaching Assistant — Computer Game Programming — *Sep 2023 – Jan 2024*
- **Course Support**: Led weekly labs and graded assignments for students.

PROGRAMMING SKILLS

- **Languages**: Python, C++, TypeScript, C#
  Technologies: CUDA, PyTorch, Triton, FastAPI, Next.js