

Shaw Liu

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Education

University of Wisconsin–Madison, B.S. in Computer Science Sep 2025 – Present

- GPA: 4.0

ShanghaiTech University, B.Eng. in Computer Science Sep 2022 – Jun 2025

- GPA: 3.51 | Major GPA: 3.91 (43 credits)

Publication

- Junhan Ouyang*, **Shaw Liu***, Jinlang Wang, and Jiawei Zhou. “KARMA: A Composable Framework for Evaluating LLM Agents on Stateful Kubernetes Operations.” *EMNLP 2026 System Demonstrations*.

Research Projects

Stateful Kubernetes Agent Benchmarking Framework (University of Wisconsin–Madison) Spring 2026

- Co-developed KARMA, an open-source framework composing Kubernetes test cases into stateful multi-stage workflows with per-stage oracles and a regression sweep that catches actions undoing earlier results
- Built parameterized cases and three prompt modes to isolate prompt visibility from persistent state, plus reversible adversary injection and an LLM-judge step to adjudicate flagged regressions
- Delivered 92 reusable cases and 327 workflows across eight systems as an open-source corpus

Formal Operations Modeling and Trace Validation for Production Systems Spring 2026

The project builds formal P models of production systems and their Kubernetes operators that capture the safety conditions management operations must satisfy, so they can later guide management software and AI agents.

(University of Illinois Urbana-Champaign)

- Extended the P runtime, which is built for model checking rather than consuming real execution data, with the capability to perform trace validation by replaying real system traces against a P model to check conformance
- Instrumented target operators and their applications to emit execution traces matching the event granularity documented in the models written by the project’s senior researchers, then used this pipeline to validate those models against real system behavior

Ethereum-to-Solana Smart Contract Transpiler (ShanghaiTech University) Spring 2025

- Contributed to an Ethereum-to-Solana transpiler using a custom intermediate representation
- Implemented portions of static analysis to ensure correctness of cross-blockchain contract translation

Deadlock Detection in Python Coroutines (ShanghaiTech University) Fall 2024

- Explored static analysis techniques for detecting deadlocks in Python coroutines
- Gathered and reviewed known deadlock scenarios and common programming patterns for background analysis

Working Experience

Head Teaching Assistant, Computer Programming (ShanghaiTech University) *Spring 2025 and Fall 2024*

- Managed a team of teaching assistants and coordinated schedules; designed recitation curriculum and slides
- Taught two recitations weekly to classes of 40–60 students; arranged and oversaw the overall teaching operation across 6–7 sections
- Developed quizzes, exams, and grading rubrics; ensured grading consistency and handled regrade requests across sections
- Upheld academic integrity through code-similarity checks and code interviews

Teaching Assistant, Operating Systems (ShanghaiTech University) *Spring 2025*

- Led project preview sessions covering processes, synchronization, memory management, and file systems
- Created and graded homework assignments and exams, including testing programming assignments and running plagiarism checks

Teaching Assistant, Computer Programming (ShanghaiTech University) *Spring 2024*

- Taught recitation sections; held office hours and exam review sessions
- Contributed to developing homework assignments and autograders; coordinated grading efforts

Involvement & Leadership

Vice President of Daily Bread Club, University of Wisconsin–Madison *2026 – 2027*

- Supported club operations, including event planning, member recruitment, and budget management

Founder and President of Cycling Club, ShanghaiTech University *2023 – 2025*

- Founded the cycling club and grew it to the second-largest student organization on campus
- Built a competitive cycling team and raced on it personally, winning first place at the provincial university cycling championship

Rowing Team Member, ShanghaiTech University *2024 – 2025*

- Competed as right oarsman; placed third at the national university rowing championship

Relevant Coursework

- **Operating Systems:** Built scheduling, synchronization, memory management, and file systems in PintOS
- **Computer Networks:** Built audio-based end-to-end network stack with custom protocols
- **Program Analysis:** Built static analysis tools using the Tai-e framework for Java program verification

Skills

- **Programming Languages:** C, C++, Go, Java, JavaScript, P, Python, Rust
- **Tools & Technologies:** Git, GDB, Linux/Unix, Make
- **Cloud & Infrastructure:** Kubernetes, Docker
- **Markup & Documentation:** $\text{\LaTeX}$, Markdown
- **Languages:** English (Working Proficient), Mandarin Chinese (Native)