Lei Huang

leih5@illinois.edu https://winlere.github.io Lei Huang

Education

University of Illinois at Urbana-Champaign Illinois, USA

Computer Science, *Master of Science* Aug. 2025 - May 2027

ShanghaiTech University Shanghai, China

Computer Science and Technology, *Bachelor of Engineering* **(3.78/4.0, top 4%)** Sep. 2021 - Jul. 2025

Work Experience

Quantitative Systems Engineer (Intern) Shanghai, China

Sixie Capital Dec. 2024 - Present

- GPU Support: Provided GPU/CUDA/PyTorch support for the quantitative research team. Discovered a PyTorch bug that was later triaged by the cutlass team.
- Distributed ML Training: Implemented multi-node, multi-GPU distributed model training on a GPU cluster, enabling one-click start/stop and saving significant time for the research team.
- Continuous Data Monitoring: Delivered an automated data testing framework for ongoing market data production monitoring, successfully preventing a data production incident.

Research Assistant Singapore and Shanghai, China

National University of Singapore (NUS) Dec. 2023 - Dec. 2024

- Formal Verification Research: Responsible for literature review, algorithm design, coding, testing, and experimentation, culminating in a paper accepted at a top-tier programming languages conference.
- GPU-Accelerated Formal Verification Algorithm: To enhance the above research, developed CUDA implementations of the algorithm, achieving a 1000x speedup.

Teaching Assistant Shanghai, China

ShanghaiTech University Feb. 2023 - Dec. 2023 and 2024 Fall

- (2023 Spring) Programming Lang and Compiler, (2023 Fall) Intro to Progrmg (Outstanding Teaching Assistant Award)
- (2024 Fall) Parallel Computing

Competitions

Student Cluster Competition (SCC) Hamburg, Germany; Denver, USA

ShanghaiTech University GeekPie_HPC Team Jan. 2023 - Nov. 2023

- ISC'23 Student Cluster Competition: Third Place. Compiled, ran, analyzed, and optimized a fluid simulation program on FAU and Bridges-2 supercomputers.
- SC'23 Student Cluster Competition: Seventh Place, with an Outstanding Reproducibility Report. Over 48 continuous hours, compiled, ran, and analyzed large-scale matrix decomposition algorithms, successfully reproducing key results.

International Collegiate Programming Contest (ICPC) Shanghai, Nanjing, Hefei (China)

- ICPC Asia Regional: Solved 13 complex algorithmic problems within five consecutive hours. As team captain and a core member, led the team to win 3 silver medals.

Publications

Verification of Bit-Flip Attacks against Quantized Neural Networks OOPSLA 2025 (CCF-A)

Yedi Zhang, **Lei Huang**, Pengfei Gao, Fu Song, Jun Sun, Jin Song Dong Feb. 2025

Flipping just a few bits in the binary storage of neural network weights can enable malicious attacks. We propose a formal approach that rigorously proves the absence of vulnerable bits or pinpoints all potential risks. By introducing a novel abstract domain, SymPoly, and a mixed-integer linear programming (MILP) formulation, we developed BFAVerifier—an efficient, complete, and reliable targeted formal verification tool.

Skills

Programming **Modern C/C++**, **Python**, **CUDA/C++**, **PyTorch**, Not limited to any single language

Speaking Chinese (Native), English (Fluent)

Other Skills **Linux System-Level Programming & Administration**, Pandas, Gurobi Solver