JIAWEI LIU

(+1) 217 200 1084 ⋄ jiawei6@illinois.edu ⋄ GitHub ⋄ HomePage

RESEARCH INTEREST

Making next-generation software stack **high-performance** (Systems), **reliable** (SE) and **easy-to-use** (PL).

On-going research: Programming and Auto-Testing Support for Scalable Machine Learning Systems;

Undergrad research: High-performance Computing & Scalable Data Systems;

EDUCATION

University of Illinois at Urbana-Champaign, IL, US *Aug. 2021 - Present*
Ph.D. in Computer Science; GPA: 4.0/4.0 Advisor: Lingming Zhang

Tongji University, Shanghai, China *Sept. 2017 - Jul. 2021*
B.Eng. in Computer Science

PUBLICATION

OOPSLA'22 | **Coverage-Guided Tensor Compiler Fuzzing with Joint IR-Pass Mutation**

- **Jiawei Liu**, Yuxiang Wei, Sen Yang, Yinlin Deng, Lingming Zhang. (to appear) [code] [artifact] [paper]

ACMMM'21 OSC | **Fast and Flexible Human Pose Estimation with HyperPose**

- Yixiao Guo*, **Jiawei Liu***, Guo Li*, Luo Mai, Hao Dong. (*equal contribution) [code] [paper]

PROFESSIONAL EXPERIENCES

Research Intern at OctoML (Incoming) *May. 2022 - Aug. 2022 (expected)*
Advised by: *Dr.* Yuchen Jin, *Prof.* Tianqi Chen (CMU) Topic: *DL Compilers*

Research Assistant at PL/FM/SE Group, UIUC *Apr. 2021 - Present*
Advised by: *Prof.* Lingming Zhang Topic: *Auto-Testing MLSys*

Research Intern at DAMO Academy, Alibaba-Inc *Mar. 2021 - Aug. 2021*
Advised by: *Dr.* Yuanwei (Kevin) Fang, *Prof.* Yuan Xie (UCSB) Topic: *Scaling GNN Systems*

Research Assistant at NYU Systems Group *Jul. 2020 - Mar. 2021*
Advised by: *Prof.* Jinyang Li Topic: *Cloud Video Systems*

Research Assistant at Hyperplane Lab, CFCS, Peking University *Jan. 2020 - Aug. 2020*
Advised by: *Prof.* Hao Dong (Peking Univ.), *Prof.* Luo Mai (Univ. of Edinburgh) Topic: *Pose Estimation Systems*

Intern at AI Lab, ByteDance Ltd. *Feb. 2020 - Jul. 2020*
Advised by: Guanzhe Huang, *Dr.* Chuanxiong Guo Topic: *DNN Serving*

NOTABLE ACHIEVEMENTS

Qidi Innovation Scholarship of Tongji University (Top *1%*)	*Oct.2020*
Selected Entrant for 2020 Google Machine Learning Winter Camp[†]	*Dec.2019*
Winner of International Data Science Hackathon (Chinese Region), Covestro[†] [news]	*Nov.2019*
National *2nd* Prize and Province-level *1st* Prize in RoboMaster, DJI Inc.	*Aug.2019*
Honorable Prize of COMAP's Mathematical Modeling Contest (MCM/ICM)[†]	*Feb.2019*
2nd Prize of Outstanding Student Scholarship, Tongji Univ.	*Nov.2018*
National *2nd* Prize (0.75~3.84%) and Province-level *1st* Prize of Chinese Modeling Contest[†]	*Nov.2018*

†: as the team leader.

OPEN-SOURCE CONTRIBUTIONS

I embrace and grow with open-source communities.

As the main committer of TensorLayer community, I lead the HyperPose to support various performance-critical computer vision applications, winning over **1100 stars** since developed.

My current research facilitates the reliability of the fundamental machine learning systems, helping detect and fix over **70** real-world bugs for TensorFlow, PyTorch, TVM, etc. Notably, my recent work Tzer detected **49** bugs in the state-of-the-art DL compiler – TVM that I am nominated as a reviewer in TVM community.

STUDENT MENTORING

Yuxiang Wei (Summer 2021)	Undergraduate at Tongji Univ. → UIUC Ph.D.
Sen Yang (Summer 2021)	Graduate at Fudan Univ. → Duke Ph.D.

SKILL STACK

Proficient in code optimization, parallel programming, system testing, ML systems and ML.

Common: C++ (expert), Python, Go, Rust, Docker, Shell, Git, SQL, LaTeX, Grafana, GDB

High-Perf. Computing: LLVM, CUDA, C++ Thread Library, gRPC, Kafka, Protobuf, Thrift, OpenMP

Machine Learning & Systems: PyTorch, TensorRT, TensorFlow, TVM, ONNX, OpenCV

System Correctness: z3, Dafny, LLVM Sanitizers, Valgrind