WENJUN "DOLORES" MIAO

Davis, CA · (1) 707-867-5747 · captainmieu@gmail.com · github.com/doloresmiao · doloresmiao.github.io

SUMMARY & KEY SKILLS

HPC/compilers researcher and former games-industry tools/engineer, building high-performance GPU tooling and numerics at scale. Lead developer on floating-point correctness tools and LLVM/Clang passes; shipped production code and guided performance/debugging workflows across CUDA and HIP.

Core: C/C++, Python · **GPU:** CUDA, HIP · **Parallel:** OpenMP, MPI · **Compilers:** LLVM/Clang (IR, analysis & transformation passes, libTooling) · **Perf/Debug:** Nsight, ROC-Toolkit/rocprof, VTune, Valgrind, sanitizers · **Build/DevOps:** CMake, Git, Jenkins, Docker · **Platforms:** Linux, Windows, PlayStation, Xbox, Nintendo Switch

WORK EXPERIENCE

Lawrence Livermore National Laboratory - Graduate Student Intern

Summers 2022-2024

- Built LLVM/Clang analyses & transformation **passes** to detect and fix floating-point behavior issues in heterogeneous code.
- Targeted **OpenMP** regions and **CUDA/HIP** kernels; packaged with **CMake/Docker** for reproducible builds and adoption.
- Co-authored publications across leading HPC/PL venues (**ISC'23-HPDC'25**).
- **Awards:** Director's Excellence in Publication Award - LLNL (Aug 2024); Hans Mauer Award for Best Research Paper - ISC High Performance (May 2023).

Virtuos Games - Software Engineer → Lead → Assistant Technical Director

2007-2021

Scope & leadership (cumulative across roles)

- Co-led technical direction on proposals/design docs; set rendering/engine architecture and **porting strategy** across platforms.
- Managed multi-disciplinary teams; owned schedules, code reviews, hiring/mentoring, and growth plans.
- Delivered feasibility studies and implemented features across **rendering/shaders/engine/jobs**; drove CPU/GPU/I/O optimizations using profiling tools and build pipelines.

Shipped titles & role highlights

- *FINAL FANTASY XII THE ZODIAC AGE (2015-2020):* Guided major technical decisions; designed/implemented rendering modernization and porting framework; shader pipeline work (**HLSL/GLSL**); CPU/GPU/I/O optimization and stabilization. *Best Remaster of 2017 - Game Informer.*
- *FINAL FANTASY X|X-2 HD Remaster (2012-2016):* Led data serialization; built modern rendering paths; resolved 64-bit/endian portability; CPU/GPU optimizations; drove fixes for high-impact defects; contributed to key technical decisions.

- *BioShock & XCOM 2 Collections (2019-2020):* Defined end-to-end porting strategy; implemented rendering API and **Unreal Engine transition solutions; targeted CPU/GPU performance improvements.**

- *Tales from the Borderlands (2020):* Led engine upgrade and multi-platform republishes; oversaw Switch port planning and delivery.

Recognition & enablement

- **Awards:** Virtuos Best Employee (2014, 2015).

- **Training:** Led internal courses on C# and intro to performance optimization.

EDUCATION

University of California, Davis - Ph.D., Computer Science (expected March 2026)

Research: PL/Compilers; Software Testing; Numerical Reliability; Performance; Parallel/Distributed & Heterogeneous Computing

Fudan University - B.Eng., Communication Science & Engineering (2007)

Specialization: Computer Networks

SELECTED PUBLICATIONS

- **FloatGuard:** Efficient Whole-Program Detection of Floating-Point Exceptions in AMD GPUs. *HPDC '25.*

- An Automated OpenMP Mutation Testing Framework for Performance Optimization. *Parallel Computing (PARCO), 2024.*

- Input Range Generation for Compiler-Induced Numerical Inconsistencies. *ICS '24.*

- **MUPPET:** Optimizing Performance in OpenMP via Mutation Testing. *PMAM @ PPoPP '24.*

- Expression Isolation of Compiler-Induced Numerical Inconsistencies in Heterogeneous Code. *ISC High Performance '23.*