Dolores Miao

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Other name(s): Wenjun Miao
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Education

University of California, Davis Sept 2020 – Present
Computer Science, PhD *Davis, CA, USA*

Fudan University Sept 2003 – July 2007
Communication Science and Engineering, BEng *Shanghai, China*

Research Experience

Graduate Student Researcher July 2021 – Present
University of California, Davis *Davis, CA, USA*

- Academic Advisor: Cindy Rubio-González
- Use various tools (ROSE Compiler, LLVM IR, Clang plugins, scikit-learn, C++ and Python) to research numerical correctness in scientific programs using floating-point arithmetic.

Computer Science Graduate Intern June 2024 – Sept 2024
Lawrence Livermore National Laboratory *Livermore, CA, USA*

- Developed a tool that detects floating-point exceptions in AMD HIP kernels.

Computer Science Graduate Intern June 2023 – Sept 2023
Lawrence Livermore National Laboratory *Livermore, CA, USA*

- Worked on software testing with source code mutations in OpenMP program directives in order to generate program variants with performance speedup.

Computer Science Graduate Intern June 2022 – Sept 2022
Lawrence Livermore National Laboratory *Livermore, CA, USA*

- Floating-point correctness research projects.

Research Publications

Miao, D., Laguna, I., Georgakoudis, G., Parasyris, K., & Rubio-González, C. (2024, August). An Automated OpenMP Mutation Testing Framework for Performance Optimization. In Parallel Computing (PARCO), Volume 121

Miao, D., Laguna, I., & Rubio-González, C. (2024, June). Input Range Generation for Compiler-Induced Numerical Inconsistencies. In International Conference on Supercomputing (ICS'24).

Miao, D., Laguna, I., Georgakoudis, G., Parasyris, K., & Rubio-González, C. (2024). MUPPET: Optimizing Performance in OpenMP via Mutation Testing. In Proceedings of the 15th International Workshop on Programming Models and Applications for Multicores and Manycores (PMAM'24).

Miao, D., Laguna, I., & Rubio-González, C. (2023, May). Expression Isolation of Compiler-Induced Numerical Inconsistencies in Heterogeneous Code. In International Conference on High Performance Computing (ISC'23).

Awards & Honors

Hans Mauer Award for Best Research Paper 2023
ISC High Performance

Director's Excellence in Publication Awards 2024
Lawrence Livermore National Laboratory

Teaching Experience

Teaching Assistant - ECS 140A: Programming Languages Spring 2023, 2024
University of California, Davis *Davis, CA, USA*

Industry & Other Experience

Assistant Technical Director Jan 2017 - Feb 2021
Virtuos Games *Shanghai, China*

Lead Software Engineer Aug 2011 - Dec 2016
Virtuos Games *Shanghai, China*

Software Engineer Feb 2007 - Jul 2011
Virtuos Games *Shanghai, China*

Assistant Technical Director work summary:

- Work with teams and technical director to make technical decisions w.r.t. project proposals and technical design documents for projects
- Managing teams, tracking work progress and career growth of team members
- Feasibility research, feature implementation (rendering and shaders, engine framework, job scheduler, CPU and GPU performance optimizations), and fixing critical bugs

Notable projects under leadership roles:

- FINAL FANTASY X|X-2 HD Remaster (PS4, PC, Switch & Xbox one)
- Final Fantasy XII Zodiac Age (PS4, PC, Switch & Xbox one)
- Bioshock Infinite (Switch)
- XCOM 2 Collection (Switch)
- Tales from the Borderlands (Switch)

Specialized Skills

Programming Languages: C/C++/C# (advanced), Python/FORTRAN (intermediate)
Tools: CUDA, ROCm, Shader languages (HLSL/GLSL), OpenGL, Direct3D 11
Skills: parallel programming with pthread, OpenMP; Clang plugins, LLVM passes