

# Dolores Miao

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## Education

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<b>University of California, Davis</b> <i>Computer Science, PhD</i>	Sept 2020 – Present <i>Davis, CA, USA</i>
<b>Fudan University</b> <i>Communication Science and Engineering, BEng</i>	Sept 2003 – July 2007 <i>Shanghai, China</i>

## Research Experience

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<b>Graduate Student Researcher</b> <i>University of California, Davis</i> <ul style="list-style-type: none"><li>Academic Advisor: Cindy Rubio-González</li><li>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.</li></ul>	July 2021 – Present <i>Davis, CA, USA</i>
<b>Computer Science Graduate Intern</b> <i>Lawrence Livermore National Laboratory</i> <ul style="list-style-type: none"><li>Developed a tool that detects floating-point exceptions in AMD HIP kernels.</li></ul>	June 2024 – Sept 2024 <i>Livermore, CA, USA</i>
<b>Computer Science Graduate Intern</b> <i>Lawrence Livermore National Laboratory</i> <ul style="list-style-type: none"><li>Worked on software testing with source code mutations in OpenMP program directives in order to generate program variants with performance speedup.</li></ul>	June 2023 – Sept 2023 <i>Livermore, CA, USA</i>
<b>Computer Science Graduate Intern</b> <i>Lawrence Livermore National Laboratory</i> <ul style="list-style-type: none"><li>Floating-point correctness research projects.</li></ul>	June 2022 – Sept 2022 <i>Livermore, CA, USA</i>

## Research Publications

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- 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*

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<b>Hans Mauer Award for Best Research Paper</b> <i>ISC High Performance</i>	2023
<b>Director's Excellence in Publication Awards</b> <i>Lawrence Livermore National Laboratory</i>	2024

### *Teaching Experience*

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<b>Teaching Assistant - ECS 140A: Programming Languages</b> <i>University of California, Davis</i>	Spring 2023, 2024 <i>Davis, CA, USA</i>
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### *Lectures & Talks*

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<b>Tutorial Session</b> <i>International Conference for HPC, Networking, Storage, and Analysis (SC'24)</i>	Nov 2024 <i>Atlanta, GA, USA</i>
<ul style="list-style-type: none"><li>• Presentation at tutorial: Tools to Diagnose and Repair Floating-Point Errors in Heterogeneous Computing Hardware and Software</li></ul>	

### *Industry & Other Experience*

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<b>Assistant Technical Director</b> <i>Virtuos Games</i>	Jan 2017 - Feb 2021 <i>Shanghai, China</i>
<b>Lead Software Engineer</b> <i>Virtuos Games</i>	Aug 2011 - Dec 2016 <i>Shanghai, China</i>
<b>Software Engineer</b> <i>Virtuos Games</i>	Feb 2007 - Jul 2011 <i>Shanghai, China</i>

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*

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**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