DOLORES MIAO

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Education

PhD - Computer Science - University of California, Davis (2020 – 2026 est.)

Research Interests: Programming Languages and Compilers, Software Testing, Numerical Errors/Numerical Inconsistencies, Applied Numerical Linear Algebra, Performance Engineering of Software Systems, Parallel and Distributed Computing, Heterogeneous Computing.
Teaching Assistant for ECS140A - Programming Languages - in Spring 2023, 2024, 2025.

BEng - Communication Science and Engineering - Fudan University (2003 - 2007)

Computer network specialization. GPA: 3.21

Work Experience

Computing Graduate Student Intern - Lawrence Livermore National Laboratory (Summer 2022, 2023, and 2024)

- Worked on research projects related to parallel performance optimizations and floating-point exceptions, with findings published in leading academic conferences. See "Research Publications" section above.

Assistant Technical Director - Virtuos Games (Jan. 2017 – Feb. 2021)

Lead Software Engineer (C/C++) - Virtuos Games (Aug. 2011 – Dec. 2016)

Software Engineer (C/C++) - Virtuos Games (Feb. 2007 – Jul. 2011)

Works performed at Virtuos under the name **Wenjun Miao**.
Assistant Technical Director responsibilities:

- Work with teams and technical director to make technical decisions with regard to project proposals and technical design documents for projects
- Managing teams, tracking work progress and career growth of team members
- Feasibility research, feature implementation (rendering features, shader implementations, game engine programming, job scheduler, CPU/GPU/IO performance optimizations), and fixing critical bugs

Notable projects: (year numbers indicate years participated in development)

- Tales from the Borderlands (2020): engine upgrade/republishing on various platforms, ported to Nintendo Switch.
- Bioshock and XCOM 2 Collections (2019-2020): overall porting solution and implementation, rendering API and Unreal Engine 3 porting solutions, CPU and GPU optimizations.
- FINAL FANTASY XII THE ZODIAC AGE (2015-2020): Involved with all major technical and additional game design decisions, and made major contributions to game porting framework, rendering system modernization design and implementation, shader program implementation, collaborations with artists about material systems and post process framework, CPU, GPU, and I/O optimizations
- FINAL FANTASY X|X-2 HD Remaster (2012-2016): Involved with major technical decisions, made major contributions to data serialization, visual effect modern rendering pipeline design and implementations, solving major porting issues (64-bit and endian issues), CPU and GPU optimizations, and major bug fixes

Two term Virtuos best employee awards recipient (2014 and 2015).

In charge of employee training on C# programming, and introduction to performance optimizations.

Research Publications

1. [ISC 2023] Miao, D., Laguna, I., & Rubio-González, C. Expression Isolation of Compiler-Induced Numerical Inconsistencies in Heterogeneous Code. In the International Conference on High Performance Computing. https://doi.org/10.1007/978-3-031-32041-5_20
2. [PMAM@PPoPP 2024] Miao, D., Laguna, I., Georgakoudis, G., Parasyris, K., & Rubio-González, C. MUPPET: Optimizing Performance in OpenMP via Mutation Testing. In the 15th International Workshop on Programming Models and Applications for Multicores and Manycores. https://doi.org/10.1145/3649169.3649246
3. [ICS 2024] Miao, D., Laguna, I., & Rubio-González, C. Input Range Generation for Compiler-Induced Numerical Inconsistencies. In ACM International Conference on Supercomputing 2024. https://doi.org/10.1145/3650200.3656618
4. [PARCO] Miao, D., Laguna, I., Georgakoudis, G., Parasyris, K., & Rubio-González, C. An Automated OpenMP Mutation Testing Framework for Performance Optimization. In the Journal of Parallel Computing, Volume 121. https://doi.org/10.1016/j.parco.2024.103097
5. [HPDC 2025] Miao, D., Laguna, I., & Rubio-González, C. FloatGuard: Efficient Whole-Program Detection of Floating-Point Exceptions in AMD GPUs. In the 34th ACM International Symposium on High-Performance Parallel and Distributed Computing.

Technical Skills

Natural languages: fluent in English, Mandarin and Cantonese

Programming languages: C, C++, C#, Python, and Perl

Programming API/Platforms: NVIDIA CUDA, AMD HIP, LLVM passes, Clang source-to-source compiler (Clang plugins), ROSE Compiler, OpenMP, Shader programming (HLSL/GLSL), scikit-learn, scipy.