



Daniel Meister

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Education

The Czech Technical University in Prague	PRAGUE, CZECH REPUBLIC
Ph.D. in Information Science and Computer Engineering	2014 – 2018
M.Sc. in Computer Graphics and Interaction	2012 – 2014
B.Sc. in Software Engineering	2009 – 2012

Work Experience

Member of Technical Staff, Advanced Micro Devices, Inc.	2023/7 – PRESENT
Senior Software Engineer, Advanced Micro Devices, Inc.	2021/9 – 2023/6
Postdoctoral Researcher, The University of Tokyo	2019/9 – 2021/8
Researcher, Czech Technical University in Prague	2017/11 – 2019/8
External Developer, Škoda Auto	2014/10 – 2017/3

Computer Skills

C/C++, CUDA, HIP, OpenCL, OpenGL, OptiX, Embree, Matlab, Python, PyTorch, Bash, Git, CMake, L^AT_EX

Research Interests

Data Structures for Ray Tracing, Real-Time Ray Tracing, GPGPU, Parallel Computing, Global Illumination, Machine Learning for Rendering

Languages

Czech (*native language*), English (*fluent*), Japanese (*pre-advanced - JLPT N2*), French (*basic knowledge*) and Spanish (*basic knowledge*)

Professional Visits Abroad

National Institute of Informatics, Japan (5 months)	2017
Vienna University of Technology, Austria (1 month)	2014

Teaching

CTU Algorithms of Computer Graphics (English)	2018
CTU Algorithms of Computer Graphics (Czech)	2015

Awards

JSPS Postdoctoral Fellowship (standard)	2019
Finalist of Antonín Svoboda Award for the Best Ph.D. Thesis	2019
Dean's Award (Outstanding Dissertation, Doctoral course)	2019

Professional Society Membership

Upsilon Pi Epsilon Honor Society

Reviewer

Eurographics, Eurographics Symposium on Rendering, Pacific Graphics, High-Performance Graphics, ACM Transactions on Graphics, Computer Graphics Forum, Journal of Computer Graphics Techniques, Graphical Models, IEEE Computer Graphics and Applications

Publications

- Carsten Benthin, Daniel Meister, Joshua Barczak, Rohan Mehalwal, John Tsakok, and Andrew Kensler. H-PLOC: Hierarchical Parallel Locally-Ordered Clustering for Bounding Volume Hierarchy Construction. *Proceedings of the ACM on Computer Graphics and Interactive Techniques (High-Performance Graphics)*, 2024
- Daniel Meister, Paritosh Kulkarni, Aaryaman Vasishta, and Takahiro Harada. HIPRT: A Ray Tracing Framework in HIP. *Proceedings of the ACM on Computer Graphics and Interactive Techniques (High-Performance Graphics)*, 2024
- Daniel Meister, Atsushi Yoshimura, and Chih-Chen Kao. Gpu programming primitives for computer graphics. In *ACM SIGGRAPH Asia 2023 Courses*, SIGGRAPH Asia 2023, 2023
- Daniel Meister and Jiří Bittner. Performance Comparison of Bounding Volume Hierarchies for GPU Ray Tracing. *Journal of Computer Graphics Techniques (JCGT)*, 11(4):1–19, 2022
- Daniel Meister and Toshiya Hachisuka. Lightweight Multidimensional Adaptive Sampling for GPU Ray Tracing. *Journal of Computer Graphics Techniques (JCGT)*, 11(3):46–64, 2022
- Sabyasachi Mukherjee, Sayan Mukherjee, Binh-Son Hua, Nobuyuki Umetani, and Daniel Meister. Neural Sequence Transformation. *Computer Graphics Forum (Pacific Graphics)*, 40(7), 2021
- Daniel Meister, Adam Pospíšil, Imari Sato, and Jiří Bittner. Spatio-Temporal BRDF: Modeling and Synthesis. *Computers and Graphics*, 97:279–291, 2021
- Daniel Meister, Shinji Ogaki, Carsten Benthin, Michael J. Doyle, Michael Guthe, and Jiří Bittner. A Survey on Bounding Volume Hierarchies for Ray Tracing. *Computer Graphics Forum (Eurographics)*, 40(2), 2021
- Daniel Meister, Jakub Bokšanský, Michael Guthe, and Jiří Bittner. On Ray Reordering Techniques for Faster GPU Ray Tracing. In *Proceedings of Symposium on Interactive 3D Graphics and Games*, 2020
- Jakub Hendrich, Adam Pospíšil, Daniel Meister, and Jiří Bittner. Ray Classification for Accelerated BVH Traversal. *Computer Graphics Forum (Eurographics Symposium on Rendering)*, 38(4):49–56, 2019
- Daniel Meister and Jiří Bittner. Parallel Reinsertion for Bounding Volume Hierarchy Optimization. *Computer Graphics Forum (Proceedings of Eurographics)*, 37(2):463–473, 2018
- Daniel Meister and Jiří Bittner. Parallel Locally-Ordered Clustering for Bounding Volume Hierarchy Construction. *IEEE Transactions on Visualization and Computer Graphics*, 24(3):1345–1353, 2018
- Jakub Hendrich, Daniel Meister, and Jiří Bittner. Parallel BVH Construction Using Progressive Hierarchical Refinement. *Computer Graphics Forum (Eurographics)*, 36(2):487–494, 2017
- Daniel Meister and Jiří Bittner. Parallel BVH Construction Using k -means Clustering. *Visual Computer (Computer Graphics International)*, 32(6-8):977–987, 2016
- Jiří Bittner and Daniel Meister. T-SAH: Animation Optimized Bounding Volume Hierarchies. *Computer Graphics Forum (Eurographics)*, 34(2):527–536, 2015
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Patents

- Daniel Meister and Jiří Bittner. Simulated Annealing for Parallel Insertion-Based BVH Optimization, 2024. US Patent 20240202178

Invited Talks

Bounding Volume Hierarchies for Ray Tracing, Huawei Tokyo Research Center

5/2020