



# 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

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## 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

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## Computer Skills

C/C++, CUDA, HIP, OpenCL, OpenGL, OptiX, Embree, Matlab, Python, PyTorch, Bash, Git, CMake, L<sup>A</sup>T<sub>E</sub>X

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## Research Interests

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

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## Languages

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

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## Professional Visits Abroad

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

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## Teaching

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

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## 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

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## Professional Society Membership

Upsilon Pi Epsilon Honor Society

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## 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

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## 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