Agatha S. Mallett, PhD - Résumé

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Recent Positions

2025 – 2026 **Senior Graphics R&D Engineer**, Bolt Graphics: responsible for novel hardware raytracing architecture design and modeling, as well as related graphics research.

2023 – 2024 **Research Associate**, the University of Utah: implemented, optimized, and developed a novel statistics algorithm. (Contract)

Summer 2015 **Graduate Intern**, NVIDIA Research: work on VR-related rendering issues.

Education

2023 **PhD, Computer Science**, University of Utah.

2014 **BSc, Computer Science**, University of New Mexico. (*Summa cum laude*, highest honors)

BSc, Pure Mathematics, University of New Mexico.

Selected Publications

For additional publications, see my research webpage.

- **Agatha Mallett**, Larry Seiler, and Cem Yuksel. "Patch Textures: Hardware Support for Mesh Colors". In: *IEEE Transactions on Visualization and Computer Graphics* 28.7 (Nov. 2020), pp. 2710–2721. DOI: 10.1109/TVCG.2020.3039777.
- **Agatha Mallett** and Cem Yuksel. "Constant-Time Energy-Normalization for the Phong Specular BRDFs". In: *The Visual Computer* 36.10 (Aug. 2020), pp. 2029–2038. DOI: 10.1007/s00371-020-01954-x.
- **Agatha Mallett**, Cem Yuksel, and Larry Seiler. "Efficient Adaptive Deferred Shading with Hardware Scatter Tiles". In: *Proceedings of the ACM on Computer Graphics and Interactive Techniques* 3.2 (Aug. 2020), pp. 1–17. DOI: 10.1145/3406184. **Wolfgang Straßer Best Paper Award**.
- Daqi Lin, Konstantin Shkurko, **Agatha Mallett**, and Cem Yuksel. "Dual-Split Trees". In: *Proceedings of the ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games*. I3D '19. May 2019, pp. 1–9. DOI: 10.1145/3306131.3317028. **Best Conference Paper Award**.
- **Agatha Mallett** and Cem Yuksel. "Spectral Primary Decomposition for Rendering with sRGB Reflectance". In: *Proceedings of the 30th Eurographics Symposium on Rendering*. EGSR '19. July 2019, pp. 9–15. DOI: 10.2312/sr.20191216.
- Konstantin Shkurko, Tim Grant, Erik Brunvand, Daniel Kopta, Josef Spjut, Elena Vasiou, **Agatha Mallett**, and Cem Yuksel. "SimTRaX: Simulation Infrastructure for Exploring Thousands of Cores". In: *Proceedings of the 2018 on Great Lakes Symposium on VLSI*. GLSVLSI '18. May 2018, pp. 503–506. DOI: 10.1145/3194554.3194650.
- Elena Vasiou, Konstantin Shkurko, **Agatha Mallett**, Erik Brunvand, and Cem Yuksel. "A Detailed Study of Ray Tracing Performance: Render Time and Energy Cost". In: *The Visual Computer* 34.6 (Apr. 2018), pp. 875–885. DOI: 10.1007/s00371-018-1532-8.
- Konstantin Shkurko, Tim Grant, Daniel Kopta, **Agatha Mallett**, Cem Yuksel, and Erik Brunvand. "Dual Streaming for Hardware-Accelerated Ray Tracing". In: *Proceedings of High Performance Graphics*. HPG '17. July 2017, pp. 1–11. DOI: 10.1145/3105762.3105771.

Skills

Programming
- Fluent: C, C++, Python. Familiar: GLSL, x86 assembly, LaTeX. Web: HTML/XML, CSS, PHP, JavaScript, TypeScript, Emscripten, Liquid, Ruby, Jekyll.

Technologies, SW, Analysis
- Extensive experience with raytracing techniques and OpenGL raster rendering. Moderate experience with Embree and OpenCL. Limited experience with OptiX, CUDA, Vulkan, Direct3D.

Dev. Tools
- MSVC, gcc/g++, clang, icc, Git, CMake, VTune, VSCode, Visual Studio, etc.

Mathematics
- Real and complex analysis, differential equations, dynamical systems, formal logic, vector and higher-dimensional calculus, linear algebra, descriptive and inferential statistics.