Guangyan Cai

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Education

University of California, Irvine — **Irvine, CA**
Ph.D Candidate in Computer Science — *2020–Present*
- Advisor: Shuang Zhao

University of California, San Diego — **La Jolla, CA**
B.S. in Computer Science — *2016–2020*
- Advisor: Ravi Ramamoorthi
- Cumulative GPA: 3.6 / 4.0 (Major GPA: 3.9 / 4.0)
- Undergraduate Awards for Excellence in Research: 2020
- Provost's Honors: 2016-2020

Experience

Adobe Research — **San Jose, CA**
Research Scientist Intern, Graphics — *Jun 2023 - Sep 2023*
- Investigated geometric artifacts caused by specular highlights in 3D reconstruction and made promising progress.

Meta Reality Labs — **Redmond, WA**
Research Scientist Intern, Graphics — *Jun 2022 - Sep 2022*
- Investigated the baking artifacts in material reconstruction with inverse rendering and proposed a method to mitigate them.
- Participated in building a hybrid pipeline that combines NeRF and physics-based differentiable rendering to do high quality 3D reconstruction.
- Showcased our reconstruction results at Meta Connect 2022 (starting at 1:13:20).

Publications

[1] Cheng Sun*, **Guangyan Cai***, Zhengqin Li, Kai Yan, Cheng Zhang, Carl Marshall, Jia-Bin Huang, Shuang Zhao, and Zhao Dong. 2023. Neural-pbir reconstruction of shape, material, and illumination. In *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV)*. * equal contribution. (October 2023), 18046–18056.

[2] **Guangyan Cai**, Kai Yan, Zhao Dong, Ioannis Gkioulekas, and Shuang. Zhao. 2022. Physics-based inverse rendering using combined implicit and explicit geometries. *Computer Graphics Forum (EGSR 2022)*, 41, 4, 129–138.

[3] Lifan Wu*, **Guangyan Cai***, Ravi Ramamoorthi, and Shuang Zhao. 2021. Differentiable time-gated rendering. *ACM Trans. Graph. (SIGGRAPH Asia 2021)*, 40, 6, Article 287, (December 2021), 16 pages. * equal contribution.

[4] Lifan Wu, **Guangyan Cai**, Shuang Zhao, and Ravi Ramamoorthi. 2020. Analytic spherical harmonic gradients for real-time rendering with many polygonal area lights. *ACM Trans. Graph. (SIGGRAPH 2020)*, 39, 4, Article 134, (August 2020), 14 pages.

Reviewer

Eurographics: 2022

Teaching

CS112 Introduction to Computer Graphics: TA   *2021 Fall, UCI*
CS143A Principles of Operating Systems: TA   *2021 Spring, UCI*
CS143B Project in Operating System Organization: TA   *2021 Winter, UCI*
CS143B Project in Operating System Organization: Reader   *2020 Fall, UCI*
CSE168 Computer Graphics II - Rendering: Tutor   *2020 Spring, UCSD*
CSE167 Computer Graphics: Tutor   *2019 Fall & 2020 Winter, UCSD*

Skills

Programming Languages: C++, Python, Java, LaTeX
Software and Applications: NumPy, PyTorch, Matplotlib, Enoki, Mitsuba, Blender