



Stephen Lombardi

Research Scientist

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Education

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| 2009–2016 | Ph.D. in Computer Science Advised by Dr. Ko Nishino | Drexel University |
| | Thesis: Radiometric Scene Decomposition: Estimating Complex Reflectance and Natural Illumination from Images | |
| 2009–2012 | M.S. in Computer Science | Drexel University |
| 2005–2009 | B.S. in Computer Science | The College of New Jersey |

Experience

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| 2022–Now | Drexel University <i>Instructor</i> “Introduction to Computer Vision” (Spring 2022) Instructed graduate course on computer vision fundamentals | Philadelphia, PA, USA |
| 2016–Now | Reality Labs Research, Meta <i>Research Scientist</i> Developed state-of-the-art neural rendering techniques for real-time photorealistic avatars in VR Implemented real-time VR telecommunication system Published work in SIGGRAPH, CVPR | Pittsburgh, PA, USA |
| 2010–2016 | Drexel University <i>Research Assistant</i> Developed inverse rendering algorithms Published work in CVPR, ECCV, 3DV, and TPAMI | Philadelphia, PA, USA |

Publications

Advances in Neural Rendering

Ayush Tewari, Justus Thies, Ben Mildenhall, Pratul Srinivasan, Edgar Tretschk, Yifan Wang, Christoph Lassner, Vincent Sitzmann, Ricardo Martin-Brualla, Stephen Lombardi, Tomas Simon, Christian Theobalt, Matthias Niessner, Jonathan T. Barron, Gordon Wetzstein, Michael Zollhoefer, and Vladislav Golyanik
arXiv: 2111.05849 (cs.GR), 2021

Deep Relightable Appearance Models for Animatable Faces

Sai Bi, Stephen Lombardi, Shunsuke Saito, Tomas Simon, Shih-En Wei, Kevyn Mcphail, Ravi Ramamoorthi, Yaser Sheikh, and Jason Saragih
ACM Trans. Graph. 40.4 (July 2021). 2021

Mixture of Volumetric Primitives for Efficient Neural Rendering

Stephen Lombardi, Tomas Simon, Gabriel Schwartz, Michael Zollhoefer, Yaser Sheikh, and Jason Saragih
ACM Trans. Graph. 40.4 (July 2021). 2021

Pixel-aligned Volumetric Avatars

Amit Raj, Michael Zollhöfer, Tomas Simon, Jason Saragih, Shunsuke Saito, James Hays, and Stephen Lombardi
Proceedings of IEEE Conference on Computer Vision and Pattern Recognition, 2021

The Eyes Have It: An Integrated Eye and Face Model for Photorealistic Facial Animation

Gabriel Schwartz, Shih-En Wei, Te-Li Wang, Stephen Lombardi, Tomas Simon, Jason Saragih, and Yaser Sheikh
ACM Trans. Graph. 39.4 (July 2020). 2020

State of the Art on Neural Rendering

A. Tewari, O. Fried, J. Thies, V. Sitzmann, S. Lombardi, K. Sunkavalli, R. Martin-Brualla, T. Simon, J. Saragih, M. Nießner, R. Pandey, S. Fanello, G. Wetzstein, J.-Y. Zhu, C. Theobalt, M. Agrawala, E. Shechtman, D. B. Goldman, and M. Zollhöfer
Computer Graphics Forum 39.2 (2020) pp. 701–727. 2020

Neural Volumes: Learning Dynamic Renderable Volumes from Images

Stephen Lombardi, Tomas Simon, Jason Saragih, Gabriel Schwartz, Andreas Lehrmann, and Yaser Sheikh
ACM Trans. Graph. 38.4 (July 2019). 2019

VR Facial Animation via Multiview Image Translation

Shih-En Wei, Jason Saragih, Tomas Simon, Adam W. Harley, Stephen Lombardi, Michal Perdoch, Alexander Hypes, Dawei Wang, Hernan Badino, and Yaser Sheikh
ACM Trans. Graph. 38.4 (July 2019). 2019

Deep Appearance Models for Face Rendering

Stephen Lombardi, Tomas Simon, Jason Saragih, and Yaser Sheikh
ACM Trans. Graph. 37.4 (July 2018). 2018

Reflectance and Illumination Recovery in the Wild

Stephen Lombardi and Ko Nishino
IEEE Transactions on Pattern Analysis and Machine Intelligence 38.1 (Jan. 2016). 2016

Radiometric Scene Decomposition: Scene Reflectance, Illumination, and Geometry from RGB-D Images

Stephen Lombardi and Ko Nishino
Proceedings of 4th International Conference on 3D Vision, 2016

Two-Point Gait: Decoupling Gait from Body Shape

Stephen Lombardi, Ko Nishino, Yasushi Makihara, and Yasushi Yagi
Proceedings of 14th International Conference on Computer Vision, 2013

Reflectance and Natural Illumination from a Single Image

Stephen Lombardi and Ko Nishino
Proceedings of 12th European Conference on Computer Vision, 2012

Single Image Multimaterial Estimation

Stephen Lombardi and Ko Nishino
Proceedings of IEEE Conference on Computer Vision and Pattern Recognition, 2012

Bayesian Defogging

Ko Nishino, Louis Kratz, and Stephen Lombardi
International Journal of Computer Vision 98.3 (June 2012). 2012

Directional Statistics-based Reflectance Model for Isotropic Bidirectional Reflectance Distribution Functions

Ko Nishino and Stephen Lombardi
Journal of the Optical Society of America A 28.1 (Jan. 2011). 2011

Awards

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| 2013 | Doctoral Research Excellence Award Highly Commended | Drexel University |
| 2012 | Jay Modi Award In recognition of academic excellence and the potential to become a leader in the field | Department of Computer Science, Drexel University |
| 2012 | Harry Brown, Jr. Endowed Fellowship | Drexel University |
| 2011 | George Hill, Jr. Endowed Fellowship For potential to achieve academic excellence at the Ph.D. level | Drexel University |
| 2009, 2010 | Provost Fellowship For doctoral students who show excellent promise in their field of expertise | Drexel University |
| 2009 | Dean's Fellowship For doctoral students who show excellent promise in their field of expertise | Drexel University |
| 2008 | Junior Computer Science Award For outstanding performance and lasting contributions | The College of New Jersey |

Skills

Languages **Python, C++, CUDA, GLSL, Latex, Max/MSP**

Libraries **NumPy, SciPy, PyTorch, OpenGL**