



Department of Computer Science

Deep Optics: Learning Cameras and Optical Computing Systems

Gordon Wetzstein
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Hosted by Przemyslaw Musialski

Date: Wednesday, November 17, 2021
Refreshments: 2:15 PM – 2:30 PM
Seminar: 2:30 PM – 3:30 PM
Location: GITC 4402 (4th Floor Seminar Lecture Hall)

Webex: <https://njit.webex.com/njit/j.php?MTID=md2a21323a467dce5ef8b6c1f8faa769e>

<https://cs.njit.edu/seminars>

Abstract:

Neural networks and other advanced image processing algorithms excel in a wide variety of computer vision and imaging applications, but their high performance also comes at a high computational cost and their success is sometimes limited. In this talk, we explore hybrid optical-digital strategies to computational imaging that outsource parts of the algorithm into the optical domain. Using such a co-design of optics and image processing, we can learn application-domain-specific cameras using modern artificial intelligence techniques or compute parts of a convolutional neural network in optics. Optical computing happens at the speed of light and without any memory or power requirements, thereby opening new directions for intelligent imaging systems.

Bio:

Gordon Wetzstein is an Associate Professor of Electrical Engineering and, by courtesy, of Computer Science at Stanford University. He is the leader of the Stanford Computational Imaging Lab and a faculty co-director of the Stanford Center for Image Systems Engineering. At the intersection of computer graphics and vision, computational optics, and applied vision science, Prof. Wetzstein's research has a wide range of applications in next-generation imaging, display, wearable computing, and microscopy systems.

Prior to joining Stanford in 2014, Prof. Wetzstein was a Research Scientist at MIT, he received a Ph.D. in Computer Science from the University of British Columbia in 2011 and graduated with Honors from the Bauhaus in Weimar, Germany, in 2006. He is the recipient of an NSF CAREER Award, an Alfred P. Sloan Fellowship, an ACM SIGGRAPH Significant New Researcher Award, a Presidential Early Career Award for Scientists and Engineers (PECASE), an SPIE Early Career Achievement Award, a Terman Fellowship, an Okawa Research Grant, the Electronic Imaging Scientist of the Year 2017 Award, an Alain Fournier Ph.D. Dissertation Award, and a Laval Virtual Award as well as Best Paper and Demo Awards at ICCP 2011, 2014, and 2016 and at ICIP 2016.