



Washington University in St. Louis

SCHOOL OF ENGINEERING & APPLIED SCIENCE

Preston M. Green Department of Electrical & Systems Engineering

Seminar Announcement

Paul Scott Carney
Electrical and Computer Engineering
University of Illinois at Urbana-Champaign

Friday, November 11, 2016
Green Hall, Room 0120
10:00AM

Lens vs. Algorithm: Optical Imaging in the Age of Computers

Abstract: Optical elements may be thought of as effecting a linear transformation of the optical field. Given access to the field, those same transformations, and many more, may be performed with a computer and so hardware may be replaced with software. I will mainly discuss the application of this idea in optical coherence tomography (OCT) where we have replaced complicated hardware with physics-based algorithms to produce a high-resolution 3D imaging system with infinite depth of field in a compact form factor. I will give examples of the method in use in biological systems and results from a recent clinical trial in breast cancer.

Bio: Professor Carney holds a BS in Engineering Physics from UIUC (1994), and a PhD in Physics from the University of Rochester (1999). He was a post-doctoral associate at Washington University from 1999 to 2001 when he joined the faculty of UIUC ECE. He is a theorist with research interests in inverse problems, imaging, coherence theory and other branches of optical physics. He is also the cofounder of Diagnostic Photonics, Inc., a company bringing innovations in computed imaging to the surgical market. He is active in the community beyond his research, serving as the editor-in-chief of the Journal of the Optical Society of America A and General Co-Chair of the 2016 Frontiers in Optics conference

Host: Dr. Joseph O'Sullivan