



Washington University in St. Louis

SCHOOL OF ENGINEERING & APPLIED SCIENCE

Preston M. Green Department of Electrical & Systems Engineering

Seminar Announcement

Mathews Jacob Ph.D
Associate Professor
Department of Electrical and Computer Engineering
University of Iowa



Friday, December 14, 2018
Green Hall, Room 0120

10:00 A.M.

Fast MRI Using Image Structure Learning

Abstract:

Modern MRI machines are highly versatile, enabling the in-vivo visualization of various biophysical parameters of the tissue. However, the slow nature of image acquisition introduces several inconvenient tradeoffs, including long scan time, low temporal resolution, and presence of artifacts resulting from patient or physiological motion. These tradeoff results in several challenges in cardio-vascular applications on subjects, who have difficulty holding their breath. In this talk, I will introduce learning based algorithm to overcome these problems. The basic idea is to learn and exploit the significant structure in the data to reduce the data-demand. I will introduce self-learning strategies, where the structure is learned from the measured data itself, as well as exemplar schemes that learn the structure from training data. The talk will briefly summarize our recent work in cardiac MRI and neuro-imaging, which is available at <https://research.engineering.uiowa.edu/cbig/content/publications>

Mathews Jacob is an associate professor at the Department of Electrical and Computer Engineering and is heading the Computational Biomedical Imaging Group (CBIG) at the University of Iowa. His research interests include image reconstruction, image analysis and quantification in the context of magnetic resonance imaging. He obtained his B.Tech in Electronics and Communication Engineering from National Institute of Technology, Calicut, Kerala and M.E in signal processing from the Indian Institute of Science, Bangalore. He received his Ph.D degree from the Biomedical Imaging Group at the Swiss Federal Institute of Technology. He was a Beckman postdoctoral fellow at the University of Illinois at Urbana Champaign. He is the recipient of the CAREER award from the National Science Foundation in 2009 and the Research Scholar Award from American Cancer Society in 2011. He is currently the associate editor of the IEEE Transactions on Medical Imaging and IEEE Transactions on Computational Imaging.

Host: Ulugbek Kamilov