



Artificial intelligence for healthcare using multimodality medical data

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Monday, May 15, 2023

11:00am – 12:00pm

EEB 349

<https://usc.zoom.us/j/98341725765?pwd=Zm56d2tJWEhTN2JxM1kzd1IEUUhhdz09>

Meeting ID: 983 4172 5765 | **Passcode:** 331055

Abstract: The development of Artificial Intelligence (AI) in healthcare is currently at a critical moment, with tremendous potential for the future but an uncertain trajectory, given the rapid development over the past five years and the emergence of foundation models with astonishing capabilities. In this talk, I will discuss our recent work on using deep neural networks for PET and MR image reconstruction and denoising. Additionally, I will demonstrate how we can leverage deep learning for clinical applications using various multimodality medical data, including imaging, waveforms, electronic health records (EHRs), video, and pathology. Furthermore, I will present some of our preliminary results on the medical application of foundation models (such as GPT and SAM) and discuss potential opportunities and challenges of AI in healthcare.

Bio: Quanzheng Li is an Associate Professor of Radiology at Massachusetts General Hospital (MGH), Harvard Medical School. Dr. Li is also the senior director for research and development, data science office, Massachusetts General Brigham, and the director of the Center for Advanced Medical Computing and Analysis, Massachusetts General Hospital. He received his Ph.D degree in Electrical Engineering from the University of Southern California (USC) in 2005 and had his postdoc training also at USC with Richard Leahy. Dr. Li is the recipient of 2015 *IEEE NPSS early achievement award*. He is an associate editor of *IEEE Transaction on Image Processing*, *IEEE TMI*, *Medical Physicis* and members of editorial boards of *Theronostics* and *Physics in Medicine and Biology*. Dr. Li has more than 200 peer reviewed articles and his team has won AAPM-NIH low dose CT challenge and 2018 Camelyon Challenge on digital pthology. His research interests include image reconstruction for PET, SPECT, CT and MRI, and multimodality medical data analysis using artificial intelligence.

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