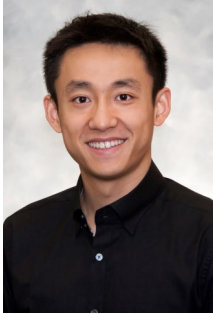




## Biomedical Informatics Grand Rounds



***Yihuan Lu, Ph.D.;***

***Associate Research Scientist, Department of Radiology and Biomedical Imaging, Yale University***

### Patient Motion Management in PET/CT

**Wednesday, November 20, 2019 3 pm—4 pm**  
**Health Science Center L2-3B**

**Abstract:**

PET imaging is a highly useful tool for biomedical research and clinical practice. Acquisition time of a clinical or research PET scan can vary from minutes to hours. Patient motion, including respiratory, cardiac, voluntary body and head motions, degrades the PET image quality and introduce image artifacts. Many motion correction methods have been proposed in the past, for each individual motion type. In this presentation, Dr. Lu will discuss about his latest developed framework for simultaneous body and respiratory motion correction. In addition, to detect motions, external devices are commonly used in research studies. Device-based methods typically require attachments to the patient, which is not clinically accepted. Dr. Lu will discuss about the newly developed data-driven approach, based on the PET raw count data, to detect motions, which is clinically more attractive. In addition, Dr. Lu will discuss his latest research in deep-learning based attenuation map generation, for whole body PET, based on the PET data only, as well as matched attenuation correction for continuous respiratory motion correction.

**Bio:**

Dr. Yihuan Lu is an Associate Research Scientist at the Yale PET Center, Department of Radiology and Biomedical Imaging, Yale University. He joined Yale in 2015 after obtaining his Ph.D. from Stony Brook University. Dr. Lu's current research interest includes PET data motion correction, imaging physics, image reconstruction and objective image quality assessment for PET imaging, and has established a track record in innovative quantitative imaging techniques using PET, SPECT and X-ray tomosynthesis. He has developed several state of the art correction techniques for respiratory motion, voluntary body motion, head motion and cardiac motion. Dr. Lu has also collaborated on novel direct parametric image reconstruction algorithms for both PET and SPECT. In addition, He has led and participated in multiple projects on applications of machine-learning to nuclear medicine, including PET attenuation map synthesis, cross-tracer image generation, image denoising and respiratory pattern classification. He has won two Young Investigator Awards from both the Computer and Instrumentation Council and Brain Imaging Council at the annual meeting of the Society of Nuclear Medicine and Molecular Imaging in 2018. Dr. Lu was also awarded the Hiruma-Wagner Award at the 2018 Conference of Peace through Mind/Brain Science in Hamamatsu, Japan.

**\*\*CME Credit Available\*\***

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**Questions? Please call the Biomedical Informatics Department at 631-638-2590.**