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Georges El Fakhri*, Gordon Center, Radiology, Suite 660, 125 Nashua Street, Boston, MA
02114. *PET Tomographic Reconstruction in the era of AI.*

In this invited talk, recent developments in Positron Emission Tomography (PET) are explored in relation to Artificial Intelligence. The unique sensitivity of PET (picomolar) and its quantitative capabilities can be associated with the superb spatial and temporal resolution of MR as well as its excellent soft tissue contrast to provide an ideal imaging modality for many cancers as well as cardiac and brain explorations. Improvements in image quality and diagnostic accuracy are illustrated in specific cases and synergies between PET and MR spectroscopy are discussed in the context of guiding radiotherapy using AI for tumor delineation. Beyond oncology, applications in cardiac (viability, perfusion) and brain imaging (neurodegenerative disease, traumatic brain injury) are presented. (Received January 21, 2022)