

MEDICAL PHYSICS SEMINAR SERIES



Daniel Huff

Visualization and quantification of immune-related adverse events by 18F-FDG PET/CT in immune-checkpoint blockade-treated metastatic melanoma

Immune-checkpoint inhibitors (ICI) have greatly improved outcomes for metastatic melanoma patients over the past decade. While ICI patients regularly receive 18F-FDG PET/CT scans to monitor their disease, information about inflammatory side effects caused by ICI, called immune-related adverse events (irAE), can also be gained from analyzing their PET scans. Here, we present a retrospective study of clinical 18F-FDG PET/CT images which makes use of automated organ segmentation tools to quantify 18F-FDG uptake as an indicator of irAE in the thyroid, lung, and bowel. We find that patients who experience irAE associated with these organs demonstrate elevated 18F-FDG uptake within the affected organ as compared to patients without irAE.



Chengzhu Zhang

Interior tomographic reconstruction via direct backprojection and deep learning

In this work, a new pathway is presented to address the interior tomographic reconstruction problem. The new scheme consists of two steps: 1) Direct backprojecting the acquired fully-truncated divergent beam projection data to form a backprojection image B_0 without the conventional differentiation operations and 2) The true image is then reconstructed from the blurred image B_0 using a trained deep neural network architecture. Experimental results demonstrated that the trained network can reconstruct small ROIs at arbitrary locations.

Monday, September 27
4:00PM (CT) via Webex

Seminar Link: <https://bit.ly/3hCxdQF>
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