Washington University in St. Louis
Office of Technology Management

MYOCARDIAL PERFUSION SPECT OPTIMIZATION

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T-020357

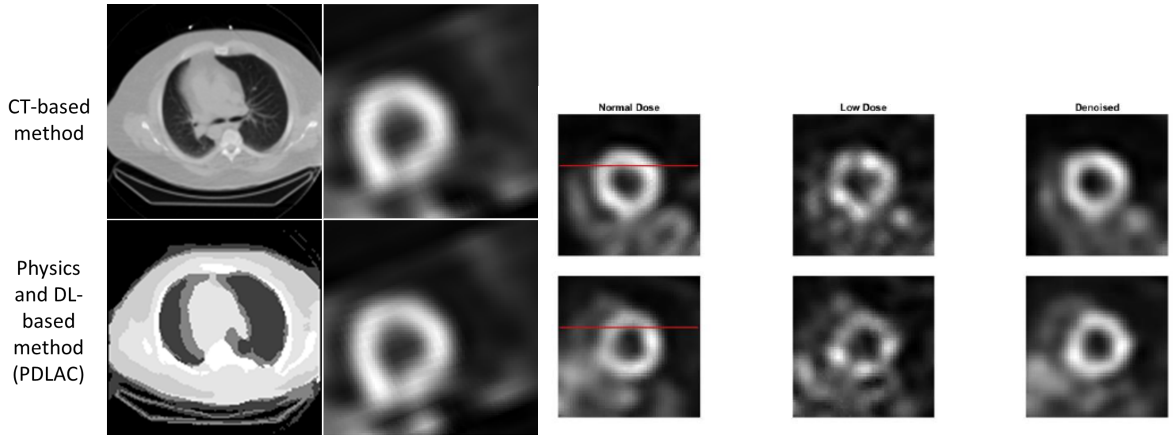
T-020357, T-020358, T-020744 Myocardial perfusion SPECT optimization

Technology Description

Researchers from the laboratory of Abhinav Jha at Washington University have devised methods to reliably improve and personalize myocardial perfusion SPECT imaging. The inventions include the following capabilities:

- Performing attenuation compensation without requiring a CT scan
- Estimating normal-dose images from images acquired at much lower doses
- Patient specific optimization strategies for MPI-SPECT

Stage of Research



Left: Attenuation correction (bottom) compared to CT (top). Right: De-noised cardiac SPECT images.

Methods have been validated and described in-depth in the publications below.

Publications

Rahman et al. (2023) - A task-specific deep-learning-based denoising approach for myocardial perfusion SPECT. Proc SPIE Int Soc Opt Eng 2023. doi: 10.1117/12.2655629.

Yu et al. (2023) - Development and task-based evaluation of a scatter-window projection and deep learning-based transmission-less attenuation compensation method for myocardial perfusion SPECT. *Proc SPIE Int Soc Opt Eng*. doi: 10.1117/12.2654500.

Yu et al. (2023) - Need for objective task‐based evaluation of deep learning‐based denoising methods: A study in the context of myocardial perfusion SPECT. *Medical Physics*. doi: 10.1002/mp.16407.

Jin et al. (2023) - A quality assurance framework for routine monitoring of deep learning cardiac substructure computed

tomography segmentation models in radiotherapy. *Medical Physics.*
doi: 10.1002/mp.16846

Patents

Patent applications filed.