

# MYOCARDIAL PERFUSION SPECT OPTIMIZATION

Jha, Abhinav Kumar, Rahman, Md Ashequr, Siegel, Barry, Yu, Zitong

Dahl, Lisa

T-020357

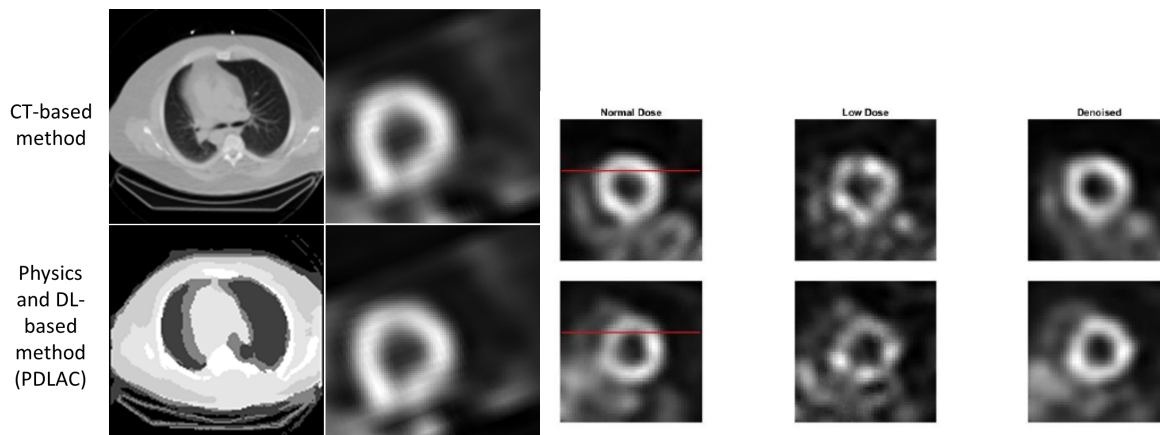
**T-020357, T-020358, T-020744 Myocardial perfusion SPECT optimization**

## 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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1002/mp.16846)

## **Patents**

Patent applications filed.