

Western University

Scholarship@Western

---

Inspiring Minds – Showcasing Western’s Graduate Research, Scholarship and Creative Activity

---

September 2021

## Reducing Residual Motion and Noise from Myocardial Perfusion for Assessment of Coronary Artery Disease using Deep Learning Coronary

Mahmud Hasan

Western University, mhasan62@uwo.ca

Follow this and additional works at: <https://ir.lib.uwo.ca/inspiringminds>

---

### Citation of this paper:

Hasan, Mahmud, "Reducing Residual Motion and Noise from Myocardial Perfusion for Assessment of Coronary Artery Disease using Deep Learning Coronary" (2021). *Inspiring Minds – Showcasing Western’s Graduate Research, Scholarship and Creative Activity*. 167.

<https://ir.lib.uwo.ca/inspiringminds/167>

## **Reducing Residual Motion and Noise from Myocardial Perfusion for Assessment of Coronary Artery Disease using Deep Learning**

*Coronary Artery Disease (CAD) occurs when coronary artery(ies) become blocked or narrower, lowering the blood supply to the heart. CAD is assessed/scored based on how much the arteries became narrower as compared to their average healthy size. The CT imaging technique that offers foundation for this scoring is known as Myocardial Perfusion Reserve (MPR).*

*Although MPR can successfully detect and score the CAD, it often deals with noise and residual motion. MPR uses low-dose radiation as the myocardium is radio sensitive. But when the radiation is low, the constructed image is noisy. Besides, in MPR, the images are taken over a period so if the patient moves or the organ has motion itself, then the time point images have residual motion. These problems make CAD scoring a challenging problem.*

*Our target is to solve these two optimization problems, denoising and registration, together as one shot using Deep Learning.*

Mahmud Hasan  
PhD Student  
Dept. of Computer Science  
University of Western Ontario