Saqeeb **Hassan**

MSc · Image Processing Scientist · Researcher

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Summary

Hi! I'm an image processing scientist that recently received an MSc in Medical Biophysics. I worked on non-Cartesian image reconstructions and image quality evaulation metrics for MRI scar mapping in patients with ventricular tachycardia.

Skills

Science	Image Processing, Signal Processing, Machine Learning, Medical Imaging, Physics, MRI Physics
Research	Project-based work, Scientific and Technical Writing, Data Analysis, Operating an MRI Scanner
Programming	Python (Numpy, Scipy, Pandas, Pillow, Pytorch), Matlab, Java, Git, LaTeX

Education

M.Sc. in Medical Biophysics

Toronto, Canada

University of Toronto

January 2018 - September 2021

- Reduced scan times for scar mapping in ventricular tachycardia patients by over 70% by implementing non-Cartesian pulse sequences and image reconstruction techniques

B.Sc. in Physics, with Distinction

Kingston, Canada

Queen's University

September 2013 - June 2017

- Undergraduate thesis: Simulated a disk galaxy as a series of concentric massive rings which interact with one another gravitationally. This was to model the disk warping of galaxies such as UGC 3697

Work Experience

Sunnybrook Research Insitute

Toronto, Canada

Research Scientist

September 2021 - Present

- Developed two non-Cartesian pulse sequences using the Javascript-based MRI platform 'RTHawk' by HeartVista
- Implemented iterative image reconstruction techniques and non-uniform fast Fourier transforms
- Developed image quality evaluation metrics for comparing 3D cones and stack-of-spirals trajectory images with standard clinical Cartesian images. These included measurements for image sharpness and signal-to-noise comparisons
- Measured the accuracy of different MRI sequences in representing tissue characteristics
- Operated the MRI scanner for data collection with patients, volunteers and phantoms
- Currently translating my thesis work into a paper intended for Magnetic Resonance in Medicine

Queen's University

Kingston, Canada

Research Assistant

May 2016 - September 2016

- Organized and preprocessed data for a research lab investigating chronic kidney disease in rat models
- Evaluated the lab's data analysis needs and carried out the transition to Microsoft Access for database functionality
- interacted with rats to perform daily data collection

Publications and Presentations

Publication in Preparation

Toronto, Canada

Hassan S, Patel J, Addy, NO, Wright GA. "Improving the Magnetic Resonance Characterization of Cardiac Infarct Heterogeneity with Non-Cartesian Gradients." *Magnetic Resonance in Medicine*

Decemeber 2021

Peer Reviewed Conference Abstracts

Hassan S, Patel J, Addy NO, Sheagren C, Wright GA. "Improving Magnetic Resonance Volumetric T1 Characterization in Cardiac Sequences with Non-Cartesian Gradients." Proceedings of the 31st annual meeting of Intl. Soc. Mag. Reson. Med.

London, UK, May 2022

Hassan S, Patel J, Addy NO, Sheagren C, Wright GA. "Improving Volumetric Magnetic Resonance Arrythmia Substrate Characterization in Cardiac Sequences with Non-Cartesian Gradients" Imaging Network Ontario

Virtual, March 2022

Patel J, **Hassan S**, Addy NO, Wright GA. "Respiratory Motion Estimates for Catheter Tracking with Undersampled 3D Image-Based Navigators" Imaging Network Ontario — *Virtual, March 2020*

Awards

2018-2019 **Queen Elizabeth II Graduate Scholarship in Science and Technology**, U of T and Province of Ontatio

2019-2020 **Queen Elizabeth II Graduate Scholarship in Science and Technology**, U of T and Province of Ontatio

Extracurricular Activity

Social Committee President

Toronto, Canada

Graduate Student Association — *January 2018 - January 2020*

- Organized social and networking events for graduate students in the Department of Medical Biophysics
- Determined the best use of the events budget and developed strong interpersonal skills

Let's Talk Physics Symposium Co-organizer

Kingston, Canada

Let's Talk Science — *December 2016*

- Led a team of physics students in organizing a successful science outreach effort hosting over 200 local high school students
- Was featured in a local newspaper article here