

# Saqeeb Hassan

MSC · IMAGE PROCESSING SCIENTIST · RESEARCHER

☎ (647) 224-8873 | ✉ saqeeb@saqeeb.com | 🏠 saqeeb.com | 📱 saqeebhassan

## 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 evaluation metrics for MRI scar mapping in patients with ventricular tachycardia.

## Skills

<b>Science</b>	Image Processing, Signal Processing, Machine Learning, Medical Imaging, Physics, MRI Physics
<b>Research</b>	Project-based work, Scientific and Technical Writing, Data Analysis, Operating an MRI Scanner
<b>Programming</b>	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 Institute

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*

December 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 ARRHYTHMIA

SUBSTRATE CHARACTERIZATION IN CARDIAC SEQUENCES WITH NON-CARTESIAN GRADIENTS" IMAGING NETWORK ONTARIO

Virtual, March 2022

## Awards

---

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

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

## 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](#)