# Saqeeb **Hassan**

MSc · Image Processing Scientist · Researcher

(647) 224-8873 | saqeeb@saqeeb.com | saqeeb.com | saqeebhassan

## Summary

I'm an image processing scientist that recently received an MSc in Medical Biophysics. I worked on non-Cartesian MRI imaging pipelines and image quality evaluation metrics for faster MRI scar mapping in patients with ventricular tachycardia as well as deep learning for medical image segmentation. I am most proficient in Python.

## Skills

**Programming** Proficient: **Python (2 years)**. Comfortable: Pytorch, Pandas, Matlab, Git. Some Experience: Java, Javascript, C, Docker, LaTeX

**Research** Project-based work, Scientific and Technical Writing, Data Analysis, Operating an MRI Scanner

**Science** Image Processing, Signal Processing, **Machine Learning**, Medical Imaging, Physics, MRI Physics

## Work Experience

### Sunnybrook Research Institute

*Toronto, Canada*

Research Engineer

*September 2021 - Present*

- Developed MRI image processing pipelines and integrated them into internal software tools (e.g. Python modules) for convenient use by others
- Developed a deep learning model to automatically segment lungs in chest images, enabling a future collaboration with a startup interested in using patient specific lung geometry - also took several online machine/deep learning courses
- Developed two MRI sequences using the Javascript-based MRI platform 'RTHawk' by HeartVista to enable faster data acquisition in time-sensitive scans
- Created image quality evaluation metrics for comparing novel imaging pipelines against the clinical standard to validate results. These included measurements for image sharpness and signal-to-noise comparisons
- Engaged with patients while operating the MRI scanner to ensure a good experience for them

## Education

### M.Sc. in Medical Biophysics

*Toronto, Canada*

University of Toronto

*January 2018 - September 2021*

- Reduced scan times for MRI scar mapping in ventricular tachycardia patients by over 70% by implementing new or underutilized image processing pipelines and reconstruction techniques. Mainly used Python with some development in Matlab and Javascript.

### B.Sc. in Physics, with Distinction

*Kingston, Canada*

Queen's University

*September 2013 - June 2017*

- Undergraduate thesis: Investigated rotational dynamics of disk galaxies by simulating them 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

## Awards

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

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## Extracurricular Activity

### Social Committee President

*Toronto, Canada*

Graduate Student Association

*January 2018 - January 2020*

- Improved the graduate student experience by organizing social and networking events for 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