Hello. I'm Robert Finnegan.

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My Background.

I am a current PhD student in medical physics at the University of Sydney, undertaking research at the Ingham Institute with linkage to Liverpool Hospital and the South West Sydney Local Health District, in collaboration with researchers from institutes around Australia and internationally. The overarching theme of my research is the use of image processing, in particular deformable image registration, in radiation oncology. My current research projects focus on automatic delineation of cardiac structures in computed tomography images, with the aim of providing the consistent and robust delineations necessary to accurately measure the radiation dose received by these structures during treatment for breast cancer. I am interested in many fields of research and have previously undertaken projects in intergalactic astrophysics and astronomy.

Education.

2016 - Current

Doctor of Philosophy, Science (Physics)

University of Sydney

Thesis title: Deformable Image Registration for Multi-Modality Image-Based Radio-therapy Treatment Planning and Verification.

2013 - 2015

Master of Physical Science, with Distinction

University of Western Australia

Refining Photometric Redshifts in the GAMA Survey
This degree was an equal split of postgraduate coursework and a dissertation. The research extended recent work on creating a catalogue of gravitationally bound galaxy clusters, by using this catalogue to improve measurement of the distances to galaxies. The successful completion of this dissertation provided new knowledge and capabilities for astronomers, as well as a suite of programs and data manipulation tools for easier and faster application of work in the future.

2010 - 2013

Bachlor of Science

University of Western Australia

Majors in Astrophysics and Applied Mathematics
Graduated with Physics Achievement Prize (Level III).
Undergraduate projects include measuring the mass of the Milky Way using the SRT radio telescope atUWA and imaging of nearby star clusters using the SPIRIT II optical telescope, also located at UWA.

2005 - 2009

High School Certificate

Prendiville Catholic College

Graduated as House Captain and Dux.

Research Experience.

2018

Syddansk Universitet, Odense Universitethospital

Odense, Denmark

Endeavour Research Fellowship

Project details:

· Develop, implement and apply a processing pipeline for the automatic delineation of computed tomography images collected from hospitals around Denmark. Analyse and validate this pipeline in the context of the dose received by the heart during radiotherapy for breast cancer. The aim of this project is to understand the link between radiation dose to susceptible parts of the heart and the increased risk of coronary events later in the patient's life.

· Strengthen collaboration between research groups in Australia and Denmark,including presentations and discussions with researchers and clinicians from around Denmark.clusters, by using this catalogue to improve measurement of the distances to galaxies. The successful completion of this dissertation provided new knowledge and capabilities for astronomers, as well as a suite of programs and data manipulation tools for easier and faster application of work in the future.

2014 - 2015

Gravity Discovery Centre

Gingin, WA

John De Laeter Scholarship Student

Project details:

· Research and design of a gamma ray detector to be used for cosmic ray detec-
tion, including liaising with staff off the centre for support and decision making.

· Fabricate cosmic ray detector with all supporting hardware and structures, us-
ing the on-site workshop and available materials.

· Design software to process detector output, analyse data stream and present
visualisations.

2012 - 2013

Australian Astronomical Observatory

North Ryde, NSW

Student Research Fellow

Project details:

· Working with a large research group to process optical imaging data from the Hubble Space Telescope. The subject of study was the physical properties and history of extragalactic star clusters.

· Accurately monitoring, investigating and analysing all statistical information.

· Presenting results from the study at conferences to professional astronomers.

My project results prompted the submission of a Hubble Space Telescope (HST) proposal to acquire further imaging of nearby star clusters from space-borne and ground-based telescopes.