

Practical Image Registration Workshop:

Accounting for Previous Treatment and Replans

Background

The workshop on Sunday, 15 March 2020 is being conducted by a group of keen Medical Physicists, Radiation Therapists and Radiation Oncologists. Our group is referred to as MIRSIG (Medical Image Registration Special Interest Group) as a subgroup of the Australasian College of Physical Scientists & Engineers in Medicine (ACPSEM), with this workshop run in collaboration with the Trans-Tasman Radiation Oncology Group (TROG).

The workshop is focused on accounting for previous treatment and best available solutions for efficient and high quality replans. Participants will have a refresher on some of the principles of medical image registration as well as informal break-out sessions to cover roles and responsibilities of each discipline.

Objectives

At the end of the day participants will be able to:

- Assess datasets for data integrity and apply appropriate actions as required
- Critically assess multiple datasets and use appropriate multimodality datasets for target delineation and replanning
- Understand the limitations of rigid and deformable image registration
- Perform qualitative and quantitative quality assurance of image registration
- Create a safe and efficient clinical workflow for replans
- Account for uncertainties with motion management with image registration
- Understand how dose accumulation can affect clinical outcomes
- Understand the roles of each discipline for replanning radiation treatments
- Appreciate the need for adequate training of staff with image registration
- Understand quality requirements for image registration in clinical trials

Workshop delegates will also be participating in a scientific study which aims to investigate the qualitative and quantitative QA of deformable image registration. This will involve a pre- and post- workshop evaluation of clinical decisions made in processes relating to replanning, to help improve the confidence and quality of using image registration to adapt radiotherapy to changes in patient anatomy.