

Using data analytics, machine learning and deep learning techniques across clinical and imaging datasets to provide the opportunity for establishing personalised medicine approaches to cancer treatment.

## Competitive advantage

- Leading a strong collaboration of national and internationally linked hospital-based radiotherapy datasets
- Distributed learning to enable machine learning and advanced imaging analysis across the network of datasets
- Imaging datasets that are annotated during the routine course of radiotherapy including defined treatment regions and normal tissue structures, all in 3D

# More Information

Associate Professor Lois Holloway

**Faculty of Medicine** 

E: lois.holloway@unsw.edu.au

UNSW Knowledge Exchange knowledge.exchange@unsw.edu.au www.capabilities.unsw.edu.au +61(2) 9385 5008

## **Impact**

- Outcome models can provide additional clinical evidence where directly applicable clinical trial evidence is not available
- Variability in patient cohorts, treatment and outcome can be assessed in a streamlined fashion
- The impact of new technology that is unsuitable for a clinical trial, can be assessed

#### Successful outcomes

- Validated published prediction models using this approach to accessing data
- Used imaging datasets available in this network to incorporate radiomics features into an outcome prediction model
- Develop autosegmentation algorithms using image datasets for use within a radiotherapy clinical environment

# Capabilities and facilities

- · An established network across both national and international radiotherapy clinics
- A developed platform for undertaking machine learning on distributed datasets, and for calculating and analysing radiomics features and assessing correlation with other clinical factors or outcomes

## Our partners

- NSW Local Health Districts
- Trans-Tasman Radiation Oncology Group
- Maastro clinic, Maastricht, The Netherlands
- Odense University Hospital Denmark
- Oslo University
- CSIRO
- Cancer Institute NSW