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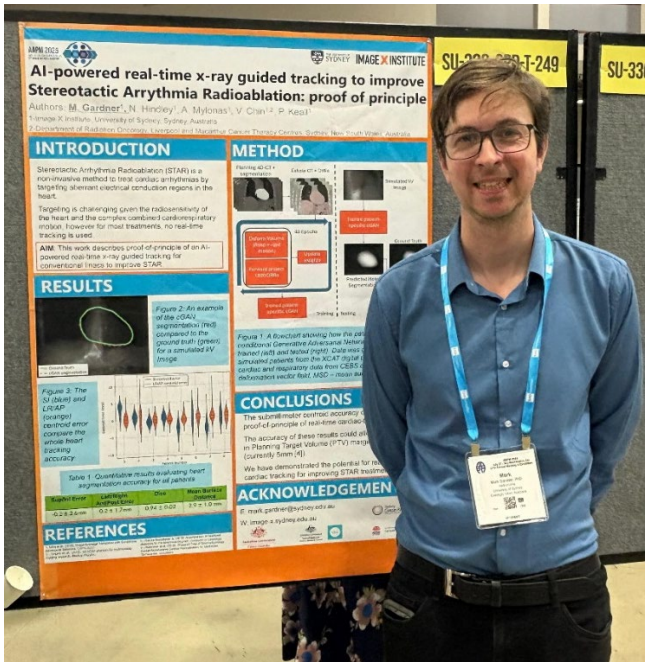
Full Reference: **Mark Gardner**, Nicholas Hindley, Adam Mylonas, Vicky Chin, Paul Keall, "*AI-powered real-time x-ray guided tracking to improve Stereotactic Arrythmia Radioablation: proof of principle*".
Conference/Meeting Name: Annual meeting of the American Association of Physicists in Medicine (AAPM) 2025
Location: Washington DC, USA
Dates: July 27-30
Presentation Type: Poster and invited symposium.



Presenting my poster in the poster session.

The annual meeting of the American Association of Physicists in Medicine is one of the largest medical physics conferences in the world, expecting approximately 4,000 medical physics professionals, representing over 85 countries. The scientific program incorporated over 2,000 abstracts featuring over 300 invited speakers, from groundbreaking data science innovations to the latest strides in imaging and therapy. The conference was attended by medical physics, researchers and engineering experts from around the world, making it the premiere medical physics conference. The theme of the conference was "Coming Together to Forge Ahead in Medical Physics" which was chosen to reflect AAPM commitment to fostering and celebrating diversity, equity, inclusion and belonging in the field of medical physics.

There were several new or emerging topics that were generating excitement at the conference. One of these emerging topics is direct treatment, in which a patient's treatment is planned and delivered in the one treatment session, rather than during two sessions with several weeks in between each session. This has the biggest advantage for rural patients who have to travel several hours to reach the hospital for each treatment, and so reducing the number of times the patient has to travel to the hospital will reduce the travel costs associated with receiving treatments.

There were also several presentations on quantifying cardiac motion independent on respiration motion. These studies were motivated by cardiac radioablation treatments, in which external beam radiation therapy devices are used to treat patients with severe arrhythmias. As cardiac and respiration motion can cause the heart to move significantly, determining this motion will increase cardiac radioablation treatment accuracy.

Finally, there were a large number of discussions on implementing AI methods in the radiation therapy workflow. Some novel applications of AI include using clinical notes to create patient-specific (or tumour specific) treatment plans and contours. There were also several methods AI-based methods for creating image volumes faster and using less computational resources, allowing for faster generating of images and results.

I will be utilising the cardiac motion and AI topics discussed to improve cardiac radioablation treatments being developed in NSW hospitals including Westmead hospital. I will further improve and develop AI methods for tracking the heart during treatment to ensure that radiation is continuously being delivered to key areas of the heart and minimising dose to surrounding healthy tissue.

Other highlights of the conference included organising and presenting a symposium which was well attended and well received, attending the Canadian night out, as well as the conference night out at the American History museum. I also had several conversations with senior AAPM mentors in which they provide career advice including tips for maintaining work/life balance.