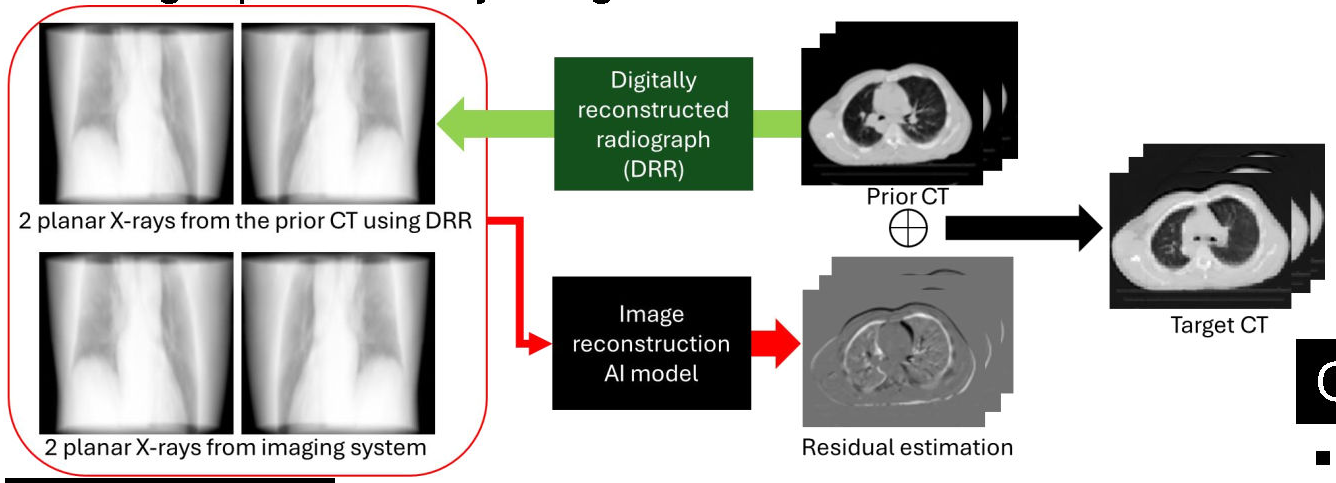
AI-driven ultra-sparse-view volumetric reconstruction algorithm for radiotherapy

PI: Hoyeon Lee, Diagnostic Radiology and Centre of Cancer Medicine

Proposed approach

- We will develop a prior-guided AI image reconstruction algorithm utilizing prior images available for radiotherapy.
- Our goal is to acquire **diagnostic CT-quality images** using 4 planar X-ray images.

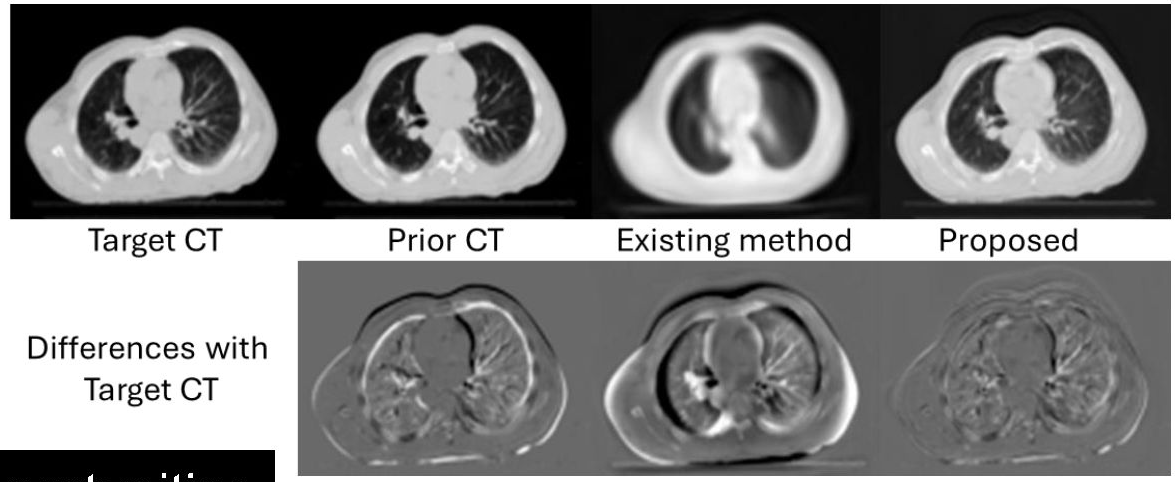


Significance

- The proposed AI algorithm will reconstruct **3D images** of patients using **4 planar X-ray** images.
- Thus, it will make radiotherapy systems more affordable without compromising treatment accuracy.
- Furthermore, it will contribute to implementing advanced treatment methods, e.g., adaptive radiotherapy, more easily.

Preliminary results

- AI-driven Image reconstruction results of lung CT using 10 planar X-ray images using the proposed approach.



Opportunities

- Volumetric imaging is critical for accurate patient setup and treatment verification in radiotherapy.
- Despite devices designed for 3D imaging offering the most precise results, they may not be available due to space or budget.
- Thus, it is desirable to develop a novel image reconstruction algorithm to offer high-quality images with a more straightforward imaging setup.

Contact: Hoyeon Lee (hlee01@hku.hk)