

# **An effective approach towards Synthetic CT using MRI**

The usage of MRI(Magnetic Resonance Imaging)-Only method in treating prostate cancer has increased in recent years. Due to the superior soft tissue contrast of MRI compared to CT(Computed Tomography). The usage of both MRI and CT to get multimodal information requires registration among these images. Existing registration processes such as Atlas and Voxel-based approaches result in geometric uncertainty. Therefore, the concept of deep learning in sCT(Synthetic CT) generation is required for accurate estimation of geometry and HU(Hounsfield Scale).

The workflow of treatment of prostate cancer is augmented by replacing the registration process with CycleGANs(Generative Adversarial Networks) and using the sCT generated from the CycleGANs. CycleGANs has the upper hand among all other deep learning approaches such as UNet etc, in learning the unaligned images. The usage of CycleGANs would result in more accurate geometric calculations and dose estimation in radiotherapy treatment planning. Both the MRI-