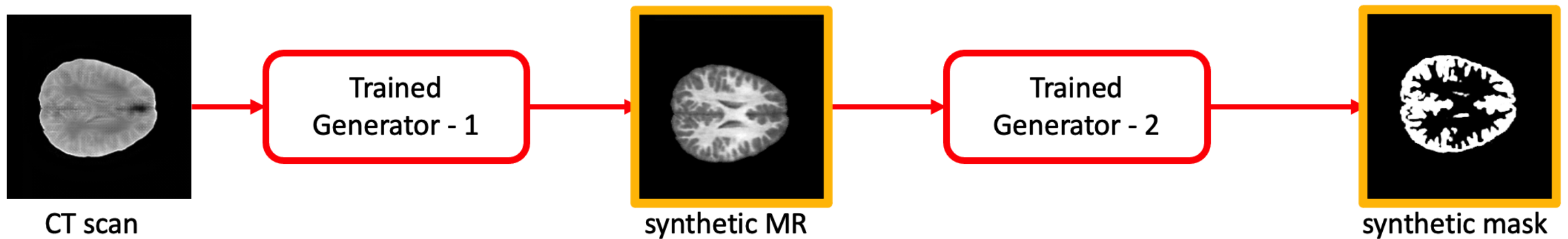


# CT brain image segmentation

## Segmenation via Generative Adversarial Nets

Student: Guo Mukun

Supervisor: Prof. Jagath Chandana Rajapakse



### Project Objectives:

Computerized tomography (CT) scans of brains are routinely used in neurology clinics for diagnosis and treatment planning. Compared with magnetic resonance (MR) scans, CT scans are cheaper and more accessible. However, it has lower soft tissue contrast. Hence, an effective, automated framework that delineates different tissues from CT brain scans can be very helpful to doctors and other medical workers.

### Method:

We tackle the CT brain scan segmentation issue with a two-phase image-to-image translation. The input CT scan slices will first be translated into corresponding synthetic MR scans by the first generator, which is trained to translate images from CT domain to MR domain. During this process, information that are only available in MR domain will be "guessed" and reflected in the intermediate synthetic MR scans. The second generator is trained to translate synthetic MR scans into segmentation masks.

### Conclusion:

We are one of the first that tries to tackle CT brain tissue segmentation problem with a deep learning approach. Our method has demonstrated effectiveness both quantitatively and qualitatively. Our framework is also universal and extensible in a way as it can be applied to almost any CT segmentation problem with slight modifications

