

An AI-driven Magnetic Resonance Imaging synthesis framework

Key challenge:

- Cross-comparison of magnetic resonance brain images acquired in different machines is difficult.

- MRs are often repeated, which is inefficient and time-consuming

Objective:

- Explore the efficacy of using modern generative models for synthesizing realistic MR imaging data using the T1-weighted images as input

Training datasets

0 A D N I C I D 1 0 0 0

• BratS2021 (total $n \sim 2000$)

Models: 3D-UNET (baseline), Pix2Pix-GAN

CIFAR

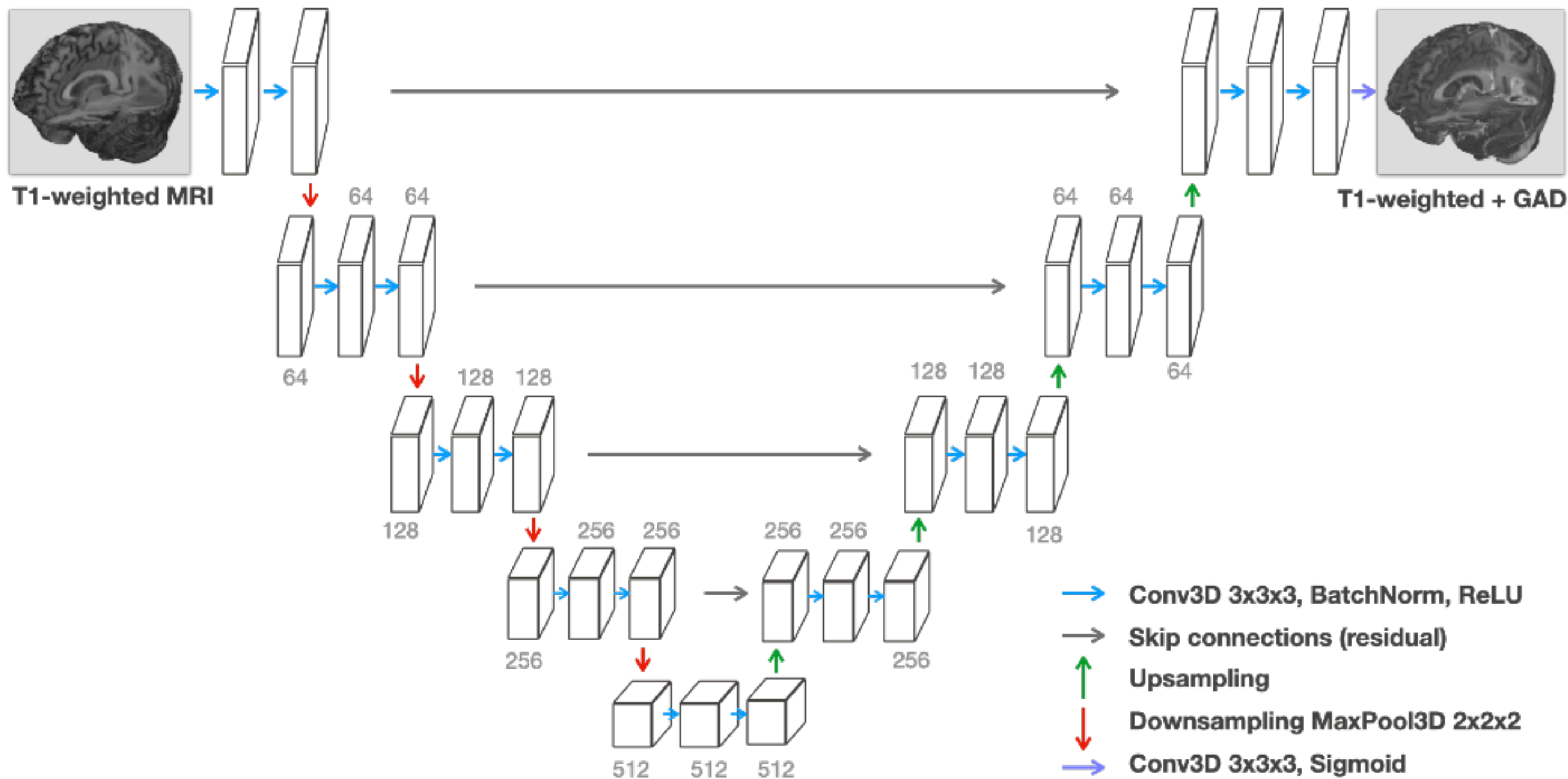


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and Education in Medicine

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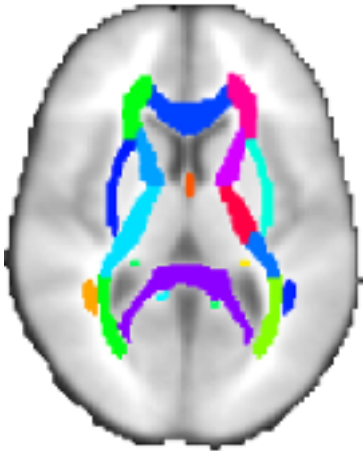


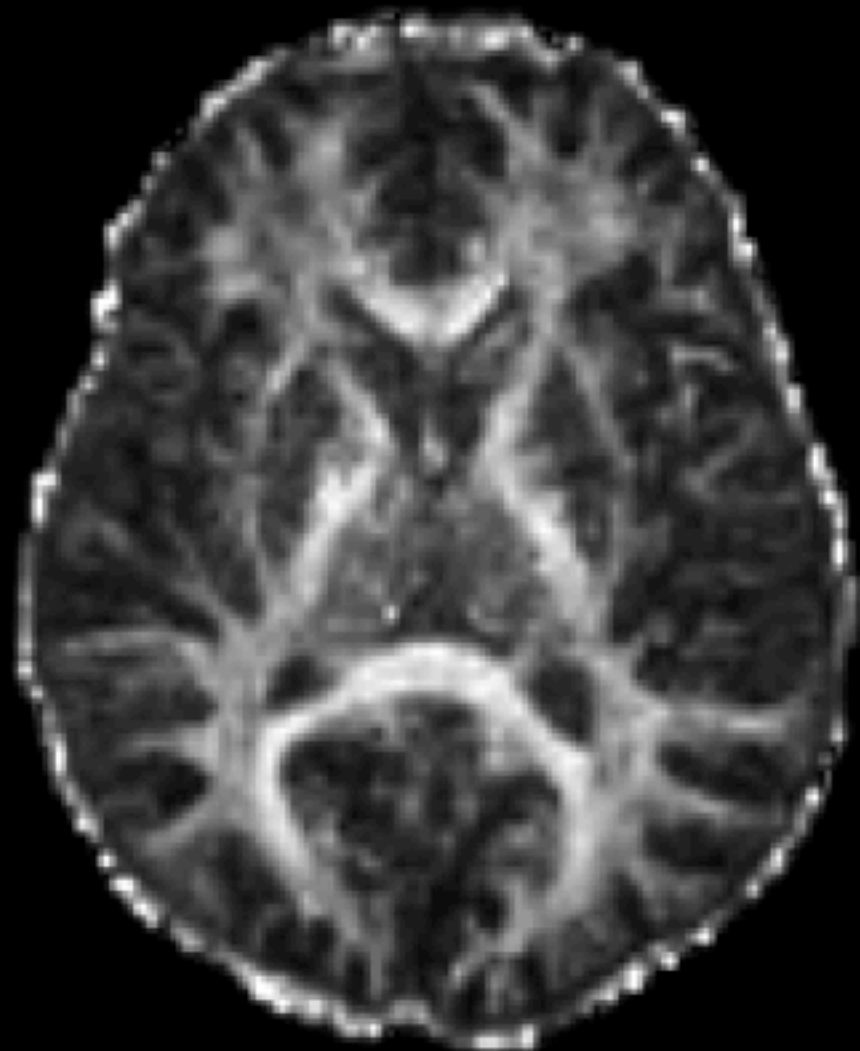
- Minibatch size 2
- LR=0.0001
- 150 epochs
- SSIM+L1 loss



Framework Output - DTLFA

Measure	Value
SSIM	0.91
R sq.	0.89
Regional	$p < 0.0001$





Results (DTFA synthesis):

