Brain MRI super resolution using 3D generative adversarial networks

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Abstract

In this work they propose an adversarial learning approach to generate high resolution MRI scans from the low-resolution images. Their architecture is based on the SRGAN model and adopts the 3D convolutions to exploit volumetric information. For discriminator they use the least square and for generator the uses the loss function and the least squares adversarial loss, and the content based on mean square error.

Introductions

In medical application high resolution images are required for early detection and diagnosis, but due to economical, technological or physical limitations it result into undesired resolution.

For this they propose an architecture for MRI super resolution that completely exploits the currently available volumetric information contained In MRI, the model is based on the SRGAN network and uses the adversarial loss and the least squares to stabilize the training and generator loss and uses the mean square and image gradient in order to improve the quality of image

Survey

Less dataset for the training and testing is used. A mean opinion score (MOS) test should be performed to evaluate the performance for this approach.