Image synthesis in multi-contrast MRI with conditional generative adversarial networks

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Abstract

Acquiring image of the same anatomy lead to great diversity and better diagnostic, but it has some limitations which may prohibits acquisition of certain contrast which led to the corruption due to noise and artifacts. Here they proposed a new approach for multi-contrast MRI synthesis based on

conditional generative adversarial networks. The proposed approach preserves high-frequency details

via an adversarial loss; and it offers enhanced synthesis performance via a pixel-wise loss for registered

multi-contrast images and a cycle-consistency loss for unregistered images. Information from

neighbouring cross-sections are utilized to further improved synthesis quality.

Introduction

Due to the MRI, its clinical application and diversity in contrast it can capture soft tissue. But due to its time consuming and cost prolonged exams and uncooperative patients it is not possible to collect the fill array of contrast.

They demonstrate an end-to-end image synthesis approach for MRI that successfully estimated the image in the target contrast given the image in the source contrast.

This is the first method that can perform multi contrast MRI synthesis based on unregistered image using conditional Generative Adversarial Network with pixel-wise and cycle consistency loss function.

Survey

Their main am to generate a multi contrast MRI synthesis. There is no data regarding the image quality of the MRI result.