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Various Color Transformation Methods

Image registration process involves aligning identical shapes or structures in pairs of related images. In order to accomplish this, one image must be transformed into another. The selection of the appropriate transformation model is essential for accurate registration and it should be selected based on the data. In this study, we focus on color transformation methods and apply two different approaches to our data. The first method is based on Reinhard et al. paper[1], which utilizes the Lab color space and the means and standard deviations of each channel to transfer colors from one image to another. However, this method has limitations, such as not preserving the background luminance of the source image. The second method we used is CycleGAN, a type of generative adversarial network (GAN) for image-to-image translation, as proposed by Zhu et al[2]. This approach learns to translate images between source and target domains without paired examples. This approach uses two generators to create images that look real and two discriminators to check if the images are real or fake. However, this approach may not be effective for all tasks, particularly when the source and target domains are significantly different. Another limitation is the time it takes for the model to train. Further research is needed to explore the suitability and limitations of these color transformation methods in different image registration scenarios.

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