Computational advances applied to medical image denoising: a short update

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Abstract

Medical imaging provides a high fidelity, non-invasive or minimally invasive means for effective diagnostic and routine checks, and has become an established tool in both clinical and research settings. The interpretation of medical images commonly requires the analysis by an experienced individual with the necessary acquired skill set. This dependence on individualś evaluation limits, in part, the broader scope and widespread use medical images.

The analysis of the medical images by an expert may also influence the reliability, with different users attaining alternative conclusions from the same data set. It is beneficial, therefore, to support the experienced user with a robust and fast processing of the medical images for further analysis, that would rely as little as possible on user interaction. In the existing literature, a variety of methods have been proposed for medical image filtering, which have been broadly used in the context of improving the visual quality and robustness to subsequent automated procedures, such as feature detection or segmentation of pathological regions. Here an analysis of state-of-the-art methodologies for image denoising through Partial Differential Equations is presented. From the results comparison, a robust and automatic pipeline procedure for medical image processing is put forward and results for different imaging acquisition techniques are presented.

Keywords: Medical imaging , Image filtering, optimal evaluation, object extraction.

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