Image Fusion using Waveatom Transform for Medical Applications

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Abstract: *Image fusion is the process of gathering all the important information of multiple images into a single fused image. It is used in many fields like medical, military, remote sensing etc... Image fusion in a medical field is extensively used by physicians for analysis and treatment, as the fused image contains complementary features present in different medical images obtained from imaging devices. The wave atom transform based medical image fusion is proposed as the potential capabilities of wave atoms have been exploded in many applications like image denoising, fingerprint identification, compression etc. Medical image techniques became important tool for medical diagnosis and treatment. Medical images of different modalities such as MRI, CT, PET, SPECT provide information in a limited domain. In medical resources, MRI and CT images contain structural information whereas PET and SPECT images contain functional Information. Thus, single modality does not provide complete and accurate information, both structural as well as functional information is required. So far, many medical image fusion methods have been developed. The easiest way to perform image fusion is to perform weighted average of input images pixel by pixel. But this method produces side effects such as artifacts & contrast reduction. The proposed method is experimented on various medical images and compared with recent state of fusion methods. Results prove that images obtained from proposed method have better clarity and enhanced information and are practically more helpful for better treatment and quick analysis.*

Keywords: MRI, CT,PET, SPECT, Image Fusion, Contrast Reduction

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