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Abstract

Image fusion is essential in enhancing visual quality by blending complementary images, which are derived from different captured conditions or different sensors in the same scene. The role of image fusion in the Internet of Things has become considerably important in the future. For instance, data captured by multiple visual sensors need further computation or fusion, which is based on a network of making a decision or an analysis. A new image fusion method is proposed by using rolling guidance filter and joint bilateral filter in this paper. First, the saliency maps of two source images are extracted by the Kirsch operator. Subsequently, the two source images are decomposed by rolling guidance filter to obtain multi-scale images. Second, joint bilateral filter and optimal correction are utilized to optimize the saliency maps and obtain the final weight maps. Finally, two fusion rules are used to restore the final fused image. The proposed method not only preserves the details of source images, but also suppresses the artifacts effectively. Experimental results prove that our method generates better effects on both visual perception and objective quantization than traditional methods.

Keywords: Image fusion, Internet of things, Multi-scale decomposition, Rolling guidance filter, Joint bilateral filter

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