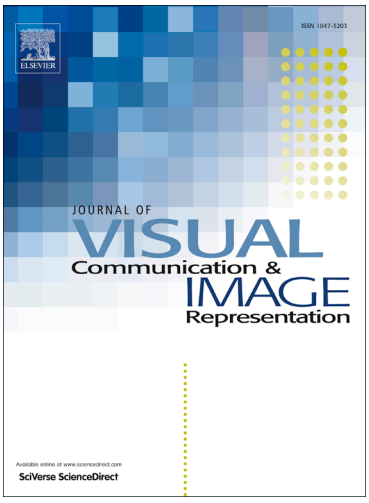

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Abstract

Satellite imagery is a kind of typical remote sensing data, which holds preponderance in large area imaging and strong macro integrity. However, for most commercial space usages, such as virtual display of urban traffic flow, virtual interaction of environmental resources, one drawback of satellite imagery is its low spatial resolution, failing to provide the clear image details. Moreover, in recent years, synthesizing the color for grayscale satellite imagery or recovering the original color of camouflage sensitive regions becomes an urgent requirement for large spatial objects virtual reality interaction. In this work, unlike existing works which solve these two problems separately, we focus on achieving image super-resolution (SR) and image colorization synchronously. Based on multi-task learning, we provide a novel deep neural network model to fulfill single satellite imagery SR and colorization simultaneously. By feeding back the color feature representations into the SR network and jointly optimizing such two tasks, our deep model successfully achieves the mutual cooperation between imagery reconstruction and image colorization. To avoid color bias, we not only adopt the non-satellite imagery