Image Super-Resolution Using Deep Convolutional Networks

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This paper proposes a solution to a fundamental problem in Computer Vision which improves the quality of an image which is generally referred to as single image super-resolution (SR). The proposed method establishes an end to end mapping between low and High-resolution images using deep learning. The mapping is developed using Convolution Neural Network that takes the low-resolution image as input and outputs an improved high-resolution image. The paper also approximates traditional sparse coding methods as deep convolution networks. Compared to the previous state of the art methods which optimize each layer separately, Proposed approach SRCNN optimizes all layers jointly. SRCNN approach involves three phases i.e., patch extraction and representation, Non-linear mapping and Reconstruction. The performance of results is analyzed using different Network structures and parameter settings as a trade-off between speed and Performance. SRCNN has a lightweight structure and performed better than the previous state of the art sparse coding-based techniques.