Computer Vision and Pattern Recognition

Deep Convolutional Neural Networks for Dense Non-Uniform Motion Deblurring

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Abstract

The work in this paper address the problem of removing non-uniform motion blur from a single image. The motion vector for an image patch is estimated by using a convolutional neural network (CNN). All the predicted motion vectors are combined to form a dense non-uniform motion estimation map. Furthermore, a second CNN is trained to perform deblurring given a blurry image patch and the estimated motion vector. Combining the two trained networks result in a deep learning approach that can enhance degraded images. The results show that this approach can accurately determine non-uniform motion blur and restore blurred images.