Review of Single Image Super Resolution

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Introduction

Image super-resolution (SR), which refers to the process of recovering high-resolution (HR) images from low-resolution (LR) images, is an important class of image processing techniques in computer vision. In general, this problem is very challenging and inherently ill posed since there are always multiple HR images for a single LR image but with the rapid development of deep learning techniques, Super-resolution models based on Deep learning have been extensively explored and they often achieve state-of-the-art performance on different benchmarks of Super-Resolution.

Our main goal for this project is to provide a theoretical and practical in-depth analysis of different techniques used for Super-Resolution.

Objectives

1) A deeper understanding of the topic of Super-Resolution based on but not limited to the literature references provided in the proposal.

2) Implementing some state of the art techniques which have performed well on different benchmarks of Super-Resolution such SRGAN/SRResNet, SRCNN, ESRGAN.

Literature references

1) A Deep Journey into Super-resolution: A Survey
https://arxiv.org/abs/1904.07523

2) Deep Learning for Image Super-resolution: A Survey
https://arxiv.org/abs/1902.06068

3) Photo-Realistic Image Super-Resolution Using a GAN
https://arxiv.org/abs/1609.04802