

CV Project Evaluation

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Team ID - 26

Dheeraj, Kshitij, Trunapushpa

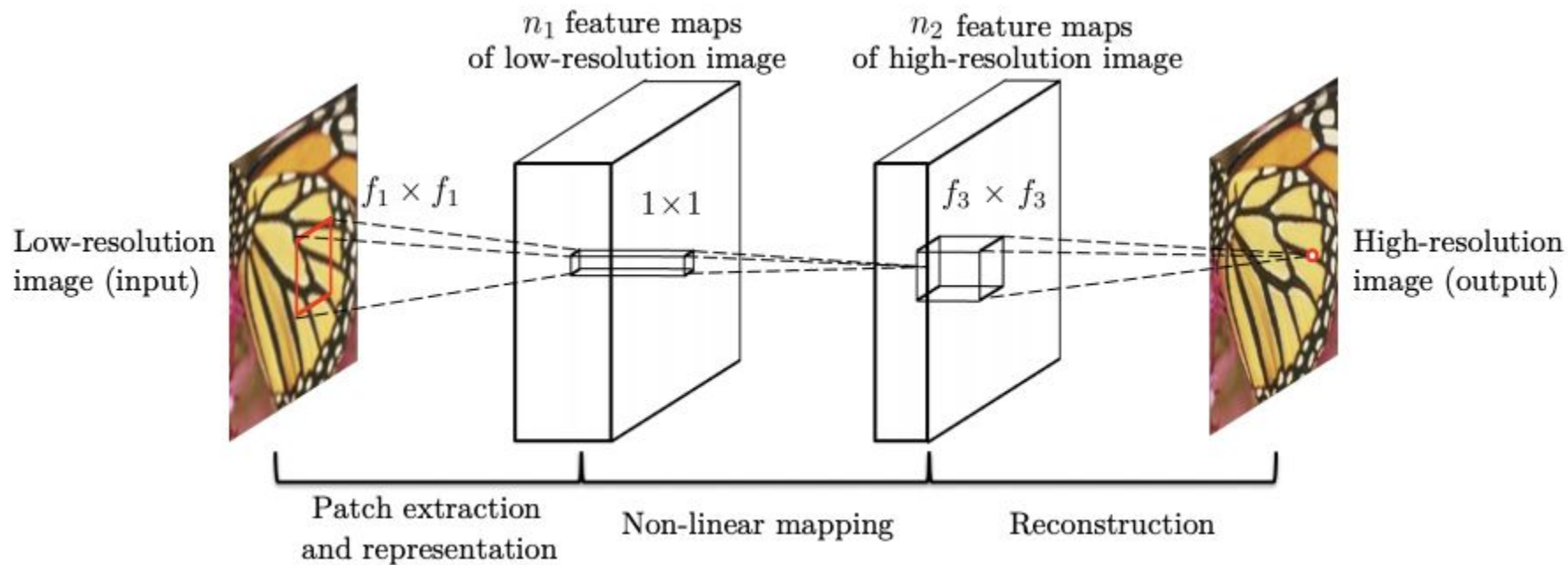
Paper

Learning a Deep Convolutional Network for Image Super-Resolution - Chao Dong, Chen Change Loy, Kaiming He, and Xiaoou Tang [ECCV 2014]

http://personal.ie.cuhk.edu.hk/~ccloy/files/eccv_2014_deepresolution.pdf

1. CNN for image super resolution
2. Establish a relationship between the deep-learning-based super resolution method and the traditional sparse-coding-based super resolution methods. This guides the design of the network structure.







Method



Dataset

2 datasets were used in this project. The T91 database, which consists of 91 images is transformed into a dataset of 22,000 images for this project using overlapping 32x32 windows with stride 14. Furthermore, the 300 images from BSD 300 dataset are also used.

Results

	Input Image	Target Image	Network Output	PSNR value
T91 $f_1 = 9$ $f_3 = 5$ $n_1 = 64$ $n_2 = 32$ MSE Loss Y channel 50 epochs				Avg. PSNR: 28.1654 dB Bicubic Avg. PSNR: 26.4436 dB
T91 $f_1 = 9$ $f_3 = 5$ $n_1 = 64$ $n_2 = 32$ MSE Loss RGB channel 50 epochs				Avg. PSNR: 27.8857 dB Bicubic Avg. PSNR: 26.0454 dB

Results

<p>T91 $f_1 = 9$ $f_3 = 5$ $n_1 = 64$ $n_2 = 32$ Perceptual Loss Y channel 50 epochs</p>				<p>Avg. PSNR: 27.5520 dB</p> <p>Bicubic Avg. PSNR: 26.4436 dB</p>
<p>T91 $f_1 = 9$ $f_3 = 5$ $n_1 = 64$ $n_2 = 32$ Perceptual Loss RGB channel 50 epochs</p>				<p>Avg. PSNR: 24.4652 dB</p> <p>Bicubic Avg. PSNR: 26.0454 dB</p>

Results

<p>T91 $f_1 = 9$ $f_3 = 5$ $n_1 = 64$ $n_2 = 32$ Gram Matrix Perceptual Loss Y channel 50 epochs</p>				<p>Avg. PSNR: 26.7261 dB</p> <p>Bicubic Avg. PSNR: 26.4436 dB</p>
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Future Work

A comparative study between super-resolution from a single image and current method implemented.

Codebase

GitHub repo - <https://github.com/dheerajpreddy/image-super-resolution>

Thank You