16720A Computer Vision: HW 6

Single Image Super-Resolution using FSRCNN & SRCNN

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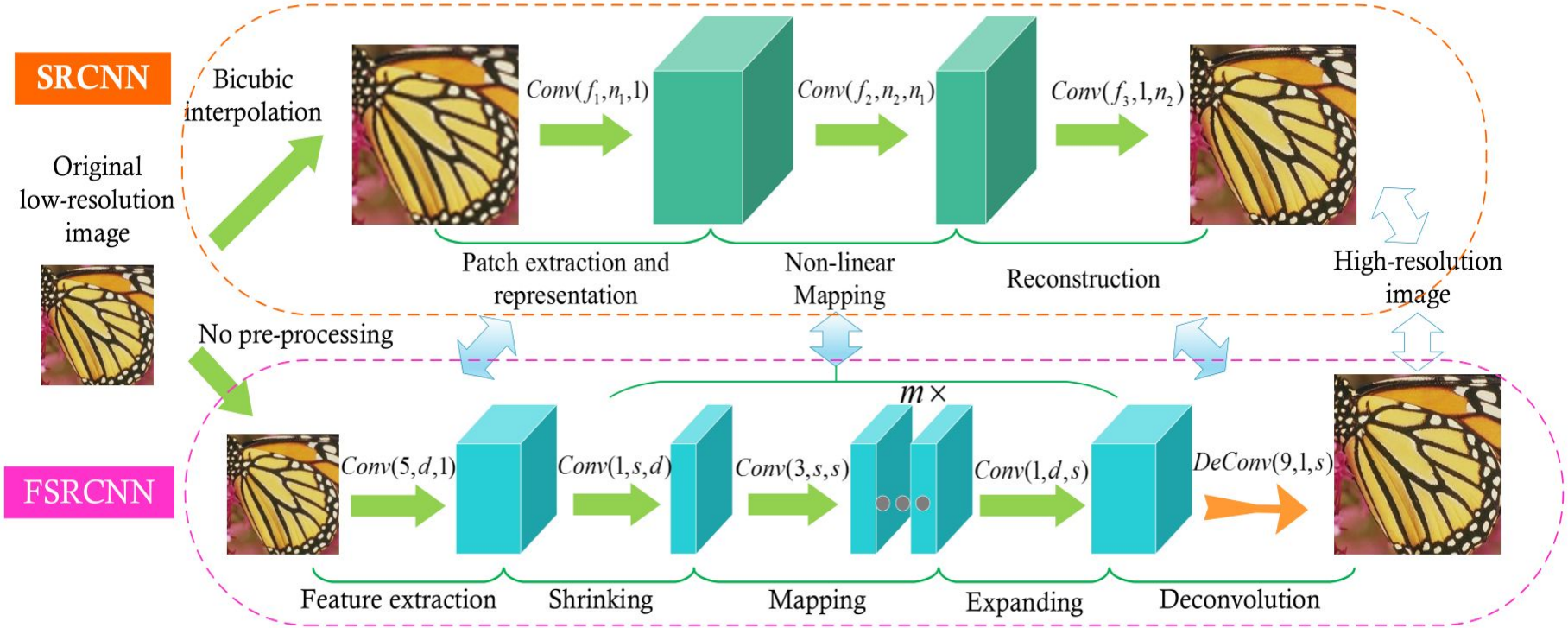
Super-Resolution in CV

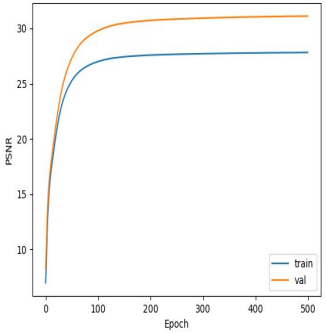
- Estimate given image at higher resolution than is currently present
- Required in the pre-processing sub-stage of a Computer Vision system
- Example: Construct high-resolution stills of faces from low-quality video feed

Deep-Learning Based Methods for Super-Resolution Using Convolutional Neural Networks



Output - FSRCNN

Input and output image, scale factor 3

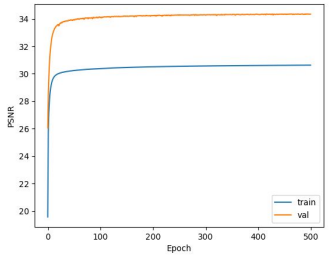


Results:

- Time taken for one forward pass-0.063697s
- Number of parameters-12637
- PSNR-**32.285**

Output - SRCNN

Input and observed image, scale factor 3



Results:

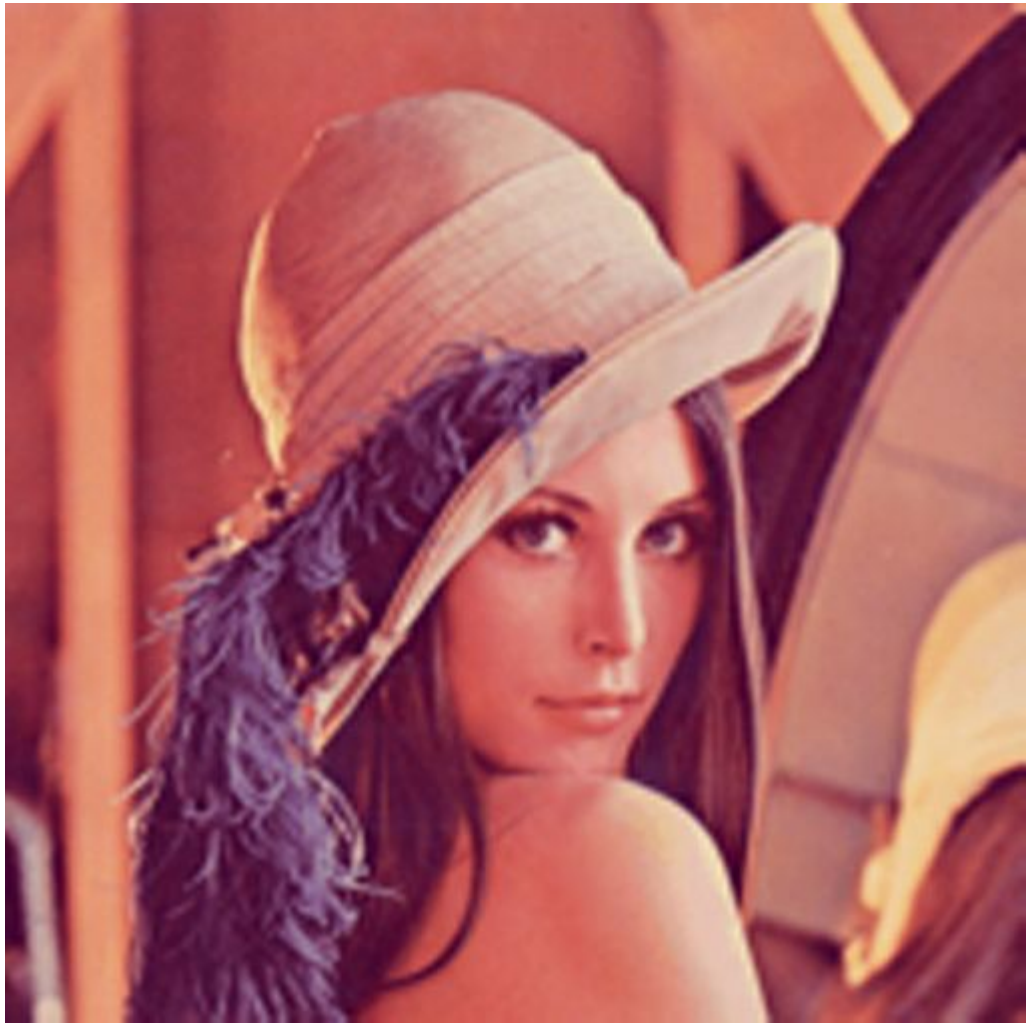
- Time taken for one forward pass-0.03511s
- Number of parameters-57281
- PSNR-**31.9746**

Bicubic Results

Input and output image, scale factor 3

Results:

- Time taken for one forward pass-0.015347s
- Number of parameters-NA
- PSNR-**26.63528**



Network Parameters

SRCNN	"f": [9, 5, 5], n1= 64,n2= 32	Low resolution subsize: 11, Low resolution stride: 5	Optimizer : Adam, Epochs: 500	
FSRCNN	d=56,s=12,m=4	Low resolution subsize: 11, Low resolution stride: 5	Optimizer : Adam, Epochs: 500	

Original High-Res Image

PS: WE were present till end!