ECS795P Deep Learning and Computer Vision, 2019

**Course Work 1: Image Super-resolution Using Deep Learning**

1. Suppose the settings of a SRCNN as: f1=9, f2=3, f3=5, how many pixels of the low-resolution image are utilized to reconstruct a pixel of the high-resolution image with the SRCNN? (10% of CW1)

(9+5-1)^2 = 169

1. Why the deep convolutional model is superior to perform image super-resolution? Give one reason to explain it. (10%of CW1)

Deep convolutional model paid attention not only on the learning, optimizing the dictionaries and building efficient mapping functions but also on the rest of the process of the model.

1. Please explain the physical meaning of peak signal-to-noise ratio (PSNR) in the context of image super-resolution. PS: place here the ground truth (GT) image, and the high-resolution images by SCRNN (HR-SRCNN) and bicubic interpolation (HR-BI) for reference. Also put the PSNR value below the high-resolution images. (10% of CW1)

PSNR is an image restoration quality evaluating method. The higher the PSNR, the better the quality of the image restoration.

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| GT |
| HR-BI (PSNR=20.497630173285614) |
| HR-SRCNN (PSNR=21.771247960034188) |