

TPA 6: Image enhancement using Super-resolution technique on low-resolution images

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Problem Statement: This project is aiming at construct high-resolution (HR) images from several observed low-resolution (LR) images, thereby removing the degradations caused by the imaging process.

Input:

- A low resolution image.

Expected Output:

- A high resolution image.

Dataset[11]:

- MDSP
- LCAV

Hint for excellence: *Extra points will be rewarded if your software super-resolves your image by 4 times*

References

1. W. Zuo, L. Zhang, C. Song and D. Zhang, Texture Enhanced Image Denoising via Gradient Histogram Preservation, in CVPR 2013.
2. W. Xue, L. Zhang and X. Mou, Learning without Human Scores for Blind Image Quality Assessment, in CVPR 2013.
3. W. Dong, L. Zhang and G. Shi, Centralized Sparse Representation for Image Restoration, in ICCV 2011.

4. Weisheng Dong, Lei Zhang, Guangming Shi, Xiaolin Wu, Nonlocal Back-Projection For Adaptive Image Enlargement, ICIP 2009
5. W. Dong, L. Zhang, G. Shi and X. Li, Nonlocally Centralized Sparse Representation for Image Restoration, IEEE Trans. on Image Processing, vol. 22, no. 4, pp. 1620-1630, Apr. 2013.
6. S. Wang, L. Zhang, Y. Liang and Q. Pan, Semi-Coupled Dictionary Learning with Applications to Image Super-Resolution and Photo-Sketch Image Synthesis, in CVPR 2012.
7. P. Vandewalle, S. Ssstrunk and M. Vetterli, A Frequency Domain Approach to Registration of Aliased Images with Application to Super-Resolution, EURASIP Journal on Applied Signal Processing (special issue on Super-resolution), 2006
8. <http://lcav.epfl.ch/software/superresolution>.
9. <http://www.robots.ox.ac.uk/vgg/software/SR/>
10. <http://decsai.ugr.es/pi/superresolution/software.html>
11. <http://reproducibleresearch.net/super-resolution/>