

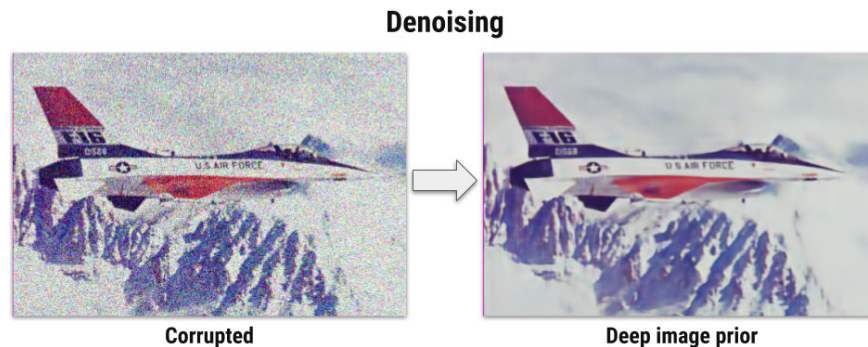
# Image processing algorithms can fix corrupted images, improve low quality images

Some new algorithms launched at the end of 2017 also achieved remarkable success in recovering corrupted images or low quality images.

**Deep** convolutional network (**Deep Convolutional Neural Networks CNN** ) has become a popular tool for creating and restoring images. Some new algorithms launched at the end of 2017 also achieved remarkable success in recovering corrupted images or low quality images.

One of the very impressive algorithms is **Deep Image Prior** developed by Russian scientists.

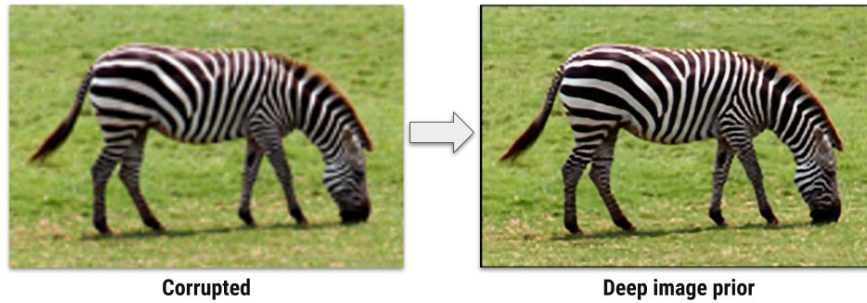
Deep Image stands out by different ways of working compared to other algorithms. Instead of using a large amount of data to determine how best to work with images, Deep Image Prior uses the same data from the corrupted image to restore the original image.



*Deep Image Prior suppresses image noise*

The researchers say their algorithm can eliminate image noise, remove text from images, recreate deleted image areas, remove jagged edges, and even improve low-resolution images.

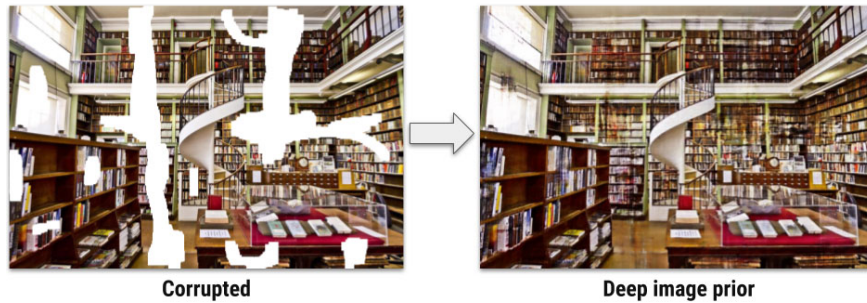
### Super-resolution



*Improve the quality for low resolution images*

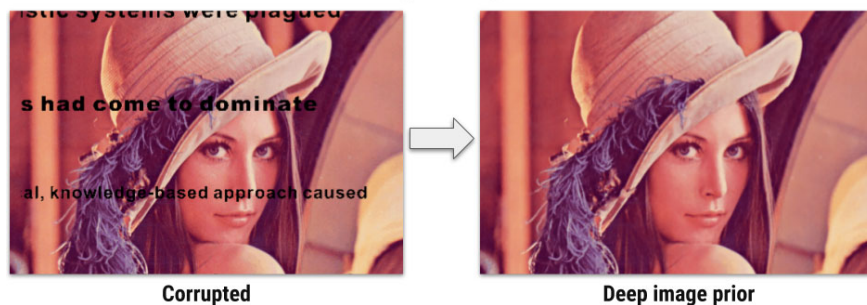
The ability to reproduce deleted photo areas is impressive. This is also the first time scientists have recreated the Content Aware Fill / Brush feature that Adobe has put into Photoshop many years ago - the technology is kept secret by them and no image processing software company can create .

### Inpainting



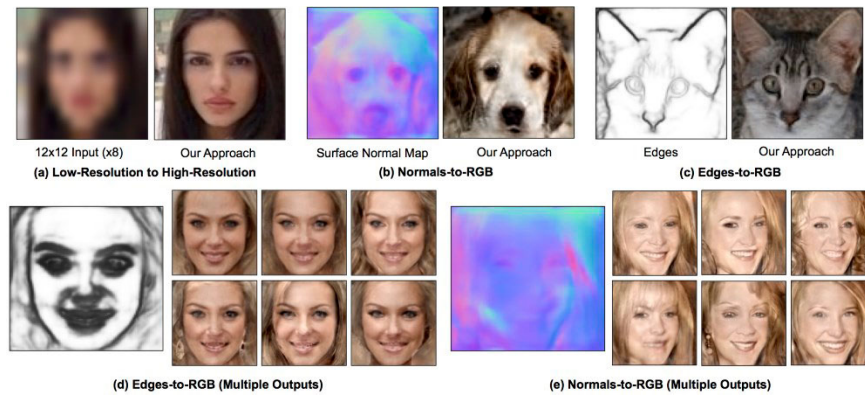
*Deep Image Prior restores deleted areas*

### Inpainting



*Delete text on photos*

Deep Image Prior is just one of CNN's research projects in the field of image processing this year. Another name is **PixelNN**.



### *PixelNN's ability to reproduce images*

Developed by three researchers from Carnegie Mellon University, PixelNN can reproduce blurry, jagged images. The algorithm uses a lot of data but is more accurate than other projects, creating images from broken images.

Another algorithm, **EnhanceNet-PAT**, focuses on improving bad image quality, creating higher resolution versions. Deep Image Prior also does this but the results are not comparable to the EnhanceNet-PAT. But like PixelNN, EnhanceNet-PAT needs a lot of sample images.

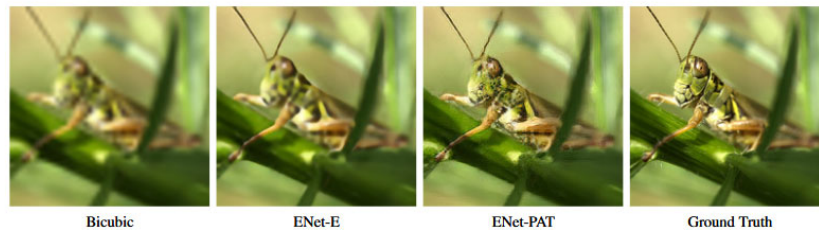


Figure 3. Our results on an image from ImageNet for 4x super-resolution. Despite reaching state-of-the-art results by PSNR, ENet-E produces an unnatural and blurry image while ENet-PAT reproduces faithful high-frequency information, resulting in a photorealistic image, at first glance almost indistinguishable from the ground truth image.

### *The practical applications of EnhanceNet-PAT will be very useful*

The researchers hope that the EnhanceNet-PAT will be included in the software to improve the quality of old movies up to 4K, restore old family photos or enhance the resolution for CCTV images for investigation. The practical applications of this algorithm are very promising.

See more:

1. 3 tips to improve low-resolution image quality
2. How to convert PNG images to JPG does not degrade quality
3. Does the JPEG file size accurately reflect the image quality?

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