

AIM

**Image Super-Resolution using an Efficient
Sub-Pixel CNN**

[DEEP LEARNING]
(Case Study)

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Aim:- Image Super-Resolution using an Efficient Sub-Pixel CNN

Introduction: -

ESPCN (Efficient Sub-Pixel CNN), is a model that reconstructs a high-resolution version of an image given a low-resolution version. It leverages efficient "sub-pixel convolution" layers, which learn an array of image upscaling filters.

In this code example, we will implement the model from the paper and train it on a small dataset.

Dataset:-

We use the built-in `keras.utils.get_file` utility to retrieve the dataset.

Crop and resize images:-

Let's process image data. First, we convert our images from the RGB color space to the [YUV colour space](#).

For the input data (low-resolution images), we crop the image, retrieve the y channel (luminance), and resize it with the area method (use BICUBIC if you use PIL). We only consider the luminance channel in the YUV color space because humans are more sensitive to luminance change.

For the target data (high-resolution images), we just crop the image and retrieve the y channel.

Build a Models

Compared to the paper, we add one more layer and we use the relu activation function instead of tanh. It achieves better performance even though we train the model for fewer epochs.

Run Model Prediction and plot the results

Let's compute the reconstructed version of a few images and save the results.

Conclusion

Using the cnn we can easily get a better accuracy for image super resolution using efficient sub-piel cnn.