[Super-Resolution using Deep Learning](../Desktop/1706.09077.pdf)



Final Project : INFO 7374 Special Topics in Info Systems – Sec 01, Spring 2018, Cognitive Computing

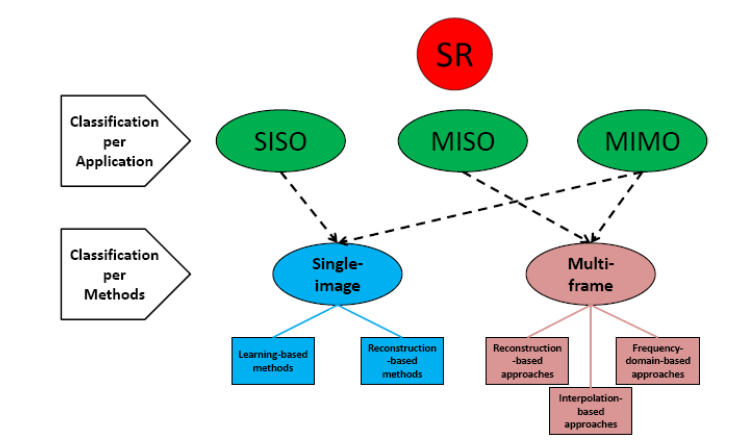
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Overview :

Super-resolution is the estimation of a High resolution image/video from one or more low resolution observation of the same scene, using digital image processing and ML techniques. There is 3 tier classifications – Single Input Single Output (SISO), Multiple Input Single Output(MISO) and Multiple Input Multiple Output (MIMO). MIMO is used in video Super resolution, which can be merged with MISO, making SISO redundant. Hence, most often, classification is done in two categories - Single Input Super Resolution and Multiple Image or multi-frame super-resolution.



The Single Input Single Resolution (SISR) called Super Resolution CNN(SRCNN) is when we introduce large filters and additional mapping layers as very deep CNN between the Low Resolution and High Resolution.

Objective :

We aim to use Low Resolution images as input images to our network and get a High-Resolution Image as the output.

Dataset :

We plan to use the [CelebA](http://mmlab.ie.cuhk.edu.hk/projects/CelebA.html) dataset. This dataset is a large scale face attributes dataset with more than 200k celebrity images. Images in this dataset cover large pose variations and background clutter. are currently in the process of finalizing a dataset for our analysis. We will first build the model for some Low Resolution images to validate the output as expected(High Resolution). From the variety of face images in this dataset, we resort to using ‘aligned & cropped’ images dataset. We intend to use the 16x16 image to make it to High resolution(4x times) which is 64x64 pixels using GANs.

Steps to be followed :

(write this)

Project Coverage plan :

(write this)

Particulars :

Programming Language used : **Python**

Tool Used : **Jupyter Notebook**

Cloud Tools : **Amazon Web Services EC2**

Tools for Analysis : **Tableau**

Optional additional platform : **Google Cloud Platform**

References and Resources :

<https://arxiv.org/pdf/1706.09077>