MAIS 202 - Project deliverable 1
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1) Dataset

The datasets that I chose are: http://places2.csail.mit.edu/ , https://www.tensorflow.org/datasets/catalog/celeb_a_hq . From these datasets I plan on selecting low resolution and high resolution images of people so that I can focus on denoising mostly portraits and concentrating on facial details because I think the difference would be really noticeable. In addition to that I was thinking of adding some of my own photos that had low resolution and any other portraits that I can find on Kaggle. If I don't have enough training data, I will also train my model with photos of animals or landscapes.

2) Methodology

I think for data preprocessing I will need to have columns for the images and for the number of pixels to determine how much improvement the image needs and classify them if they have high or low resolution.

For the machine learning model, I want the image returned by the model to be of higher resolution, maybe by a percentage or some inputs given by the user. I think the best way to implement the model would be to use a Super-resolution convolution neural network (SRCNN) (1) or a deep neural network and use the gaussian blur to get rid of the noise. From what I read, the challenge is to improve the resolution of the image while making sure it doesn't come out too blurry.

For the final conceptualization, I would like to create a web app that allows people to upload a low resolution image and outputs the same with a higher resolution. I also want to give them the possibility to try it on the images from the dataset and to be able to choose which resolution they want for their new image.

1) Sik-Ho Tsang. "Review: SRCNN (Super resolution)" Sept 5, 2018, https://medium.com/coinmonks/review-srcnn-super-resolution-3cb3a4f67a7c