Assignment 3-CIS694/EEC693/CIS593 Deep Learning
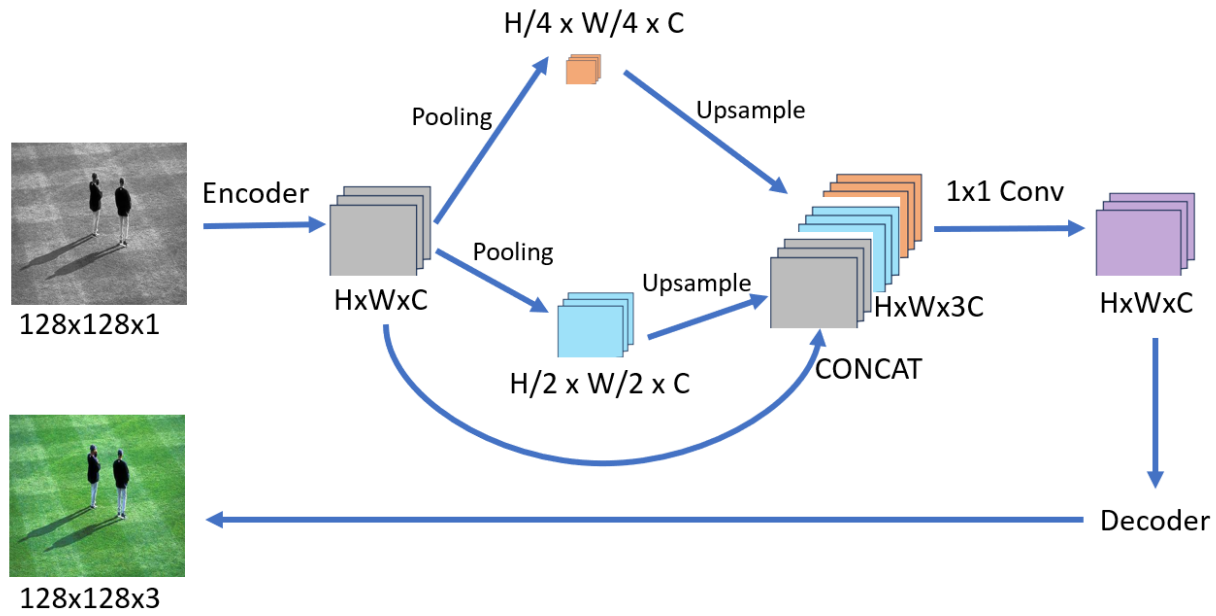
Let us implement a deep neural network for **image colorizing** in this assignment. The network structure is shown as the following figure.

Training Data: You can use any training data from the internet. Hint: To obtain the training data, you can transfer any color images to grayscale images by simply calling an OpenCV function.

Testing Data: 4 grayscale images in the folder "testing_data". Note: your self-defined training data cannot include the testing data. TA might use other images for testing and grading.

Network Input: one grayscale images (128x128x1).

Network Output: a 128x128x3 color image of the input.

Loss functions: defined by yourself.

Encoder: defined by yourself, but we require to **have exactly three convolution layers**. Note: different encoder architectures might have different bottleneck feature dimensions (H, W, C).

Decoder: defined by yourself.

Submission: please submit a single zipped file to the Blackboard system, including the following files:

> 1) Your Python+PyTorch source code named as "training.py" for network training to save the trained model as "./colorizing_X.pth" on your local disk,

2) Your Python+PyTorch source code named as "testing.py" for network testing by loading the trained model on your local disk ("./colorizing_X.pth"),

where X is your CSU id.

3) A short video demo (less than 20MB) to show successful training and testing.

Note: No need to submit the trained model (.pth file).