Assignment 4

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- Libraries required -
  - OpenCV
  - Numpy
- Python Version - 3.6
- Put the input images in the **"input"** folder. The output images are also saved in **"output".**
- An existing set of sample outputs has been provided in the **"Results"** folder.

Instructions to run the code

- In order to run the code, just use the command :
  - *python3 Assignment4_16EE35018.py*

Note to Teaching Assistants

Please select the Region of Interest(ROI) manually in the source and target image when the corresponding window pops up. A copy of each result is also stored in the "output" folder.

In order to select different images as source and target, please change the path of the source and target image in the main function.

Explanation of Code Execution

Part 1 : Function to obtain dominant colour in an image

The input image is converted to CIE domain from the RGB domain. Clustering is applied on the CIE image using KMeans clustering algorithm and the cluster with the maximum number of points is considered to be the dominant cluster representing the dominant colour.

Part 2 : Read and display source and target image

Given image paths, the source and target images are read and displayed.

Part 3 : Function for interactively specifying a rectangular region on the source image

A Region of Interest(ROI) is selected manually by the user in the input image and the input image is cropped to the region specific to the ROI.

Part 4 : Obtain pixels of the dominant colours of source image

The pixels corresponding to the dominant cluster are marked white in the new image and the rest are kept black.

Part 5 : Obtain pixels of the dominant colours of target image

The pixels corresponding to the dominant cluster of the target image are marked using previous procedures.

Part 6 : Transferring the dominant color of the source region to the target region

The mean colour of pixels belonging to the dominant cluster in the source image is calculated and this mean colour is filled in the pixels corresponding to the dominant cluster in the target image.

Part 7 : Saving results

The results corresponding to a set of source and target image are stored in the "outputs" folder.