

# Image palette extractor

## Brief project description

You have to develop a program that manages to extract top 5 colors from an image, export detailed statistics and read or save the report (csv file). The GUI should contain the image viewer, controls and the current palette info and overall palette statistics.

## Dataset

You are given with the pre-generated dataset with some arbitrary photos (just the palettes). The csv file has the following structure:

```
filename,color1,color2,...,color5,perc1,...,perc5
IMG_0001.jpg,#ab149A,...,#6711FF,32,...,2
```

- color1 - color5 are main hex colors of the image in the descending order.
- perc1 - perc5 are the corresponding percentages.
- filename - image filename

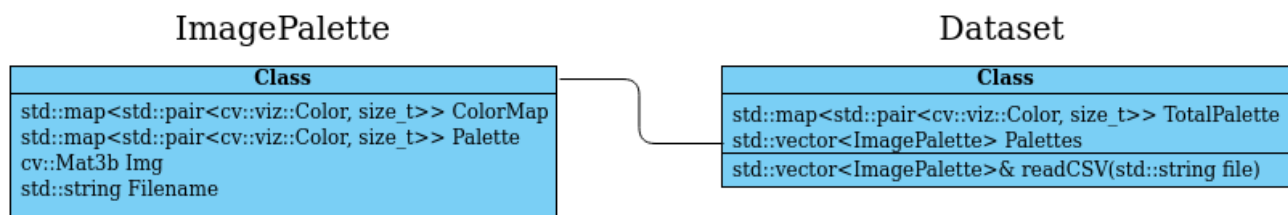
The csv report is stored in the same folder as the images.

The dataset generator is available here: <https://privatebin.net/?0d720febbf8193e2#ALWGW3iqJ1cq2rxSpXgkKdFhBGwJpYTwFz9C1k7NcdhL>

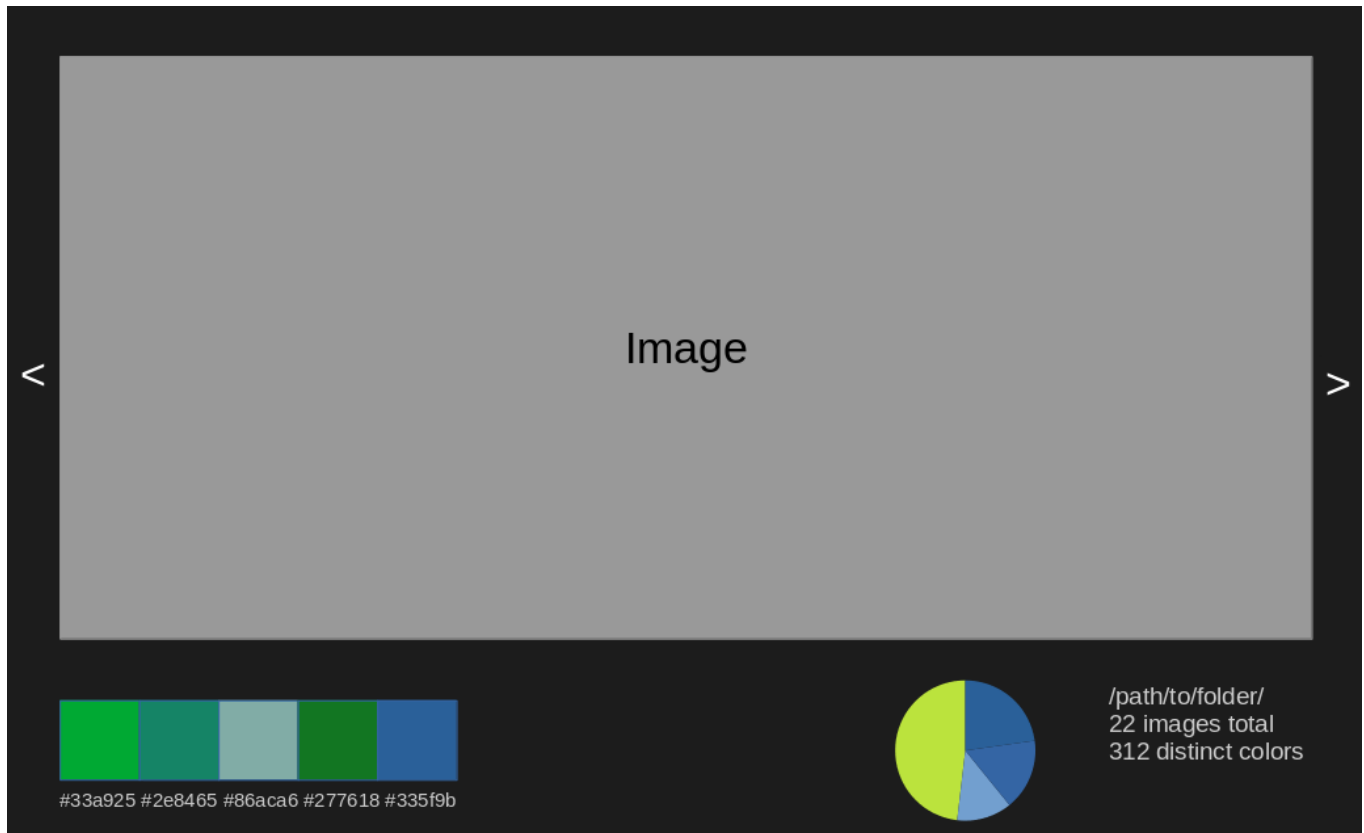
## Palette extraction

The image should be opened using the OpenCV library. The amount of colors should be reduced to  $n=65536$  using the image quantization method. You may iterate over the image and save the number of occurrences in the map. You should only pick the top 5 colors.

The total palette statistics [1] should be calculated as follows: the amount of colors should be reduced to  $n=256$  using the similar method.



## GUI



This is the desired application GUI. Palette information is located at the bottom left corner, while the detailed folder statistics are located at the right. The pie chart should represent all of the colors from the folder [1]. Clicking left and right should navigate through the images in the folder. Hovering over the color in the bottom should show the percentage of this color in the image and in the dataset.

### Menu entries

The menu should include following options:

- File -> Open folder
- File -> Save

If the .csv file is missing, then it should be created. Calling the Save option should save the report.

### Helpful resources

- Color quantization in OpenCV <https://stackoverflow.com/questions/34734379/is-there-a-formula-to-determine-overall-color-given-bgr-values-opencv-and-c/34734939#34734939>
- Calculating the palette of an image <https://stackoverflow.com/questions/35479344/how-to-get-a-color-palette-from-an-image-using-opencv>