

# CV Assignment 1 Report

Aryan GD Singh

2019459

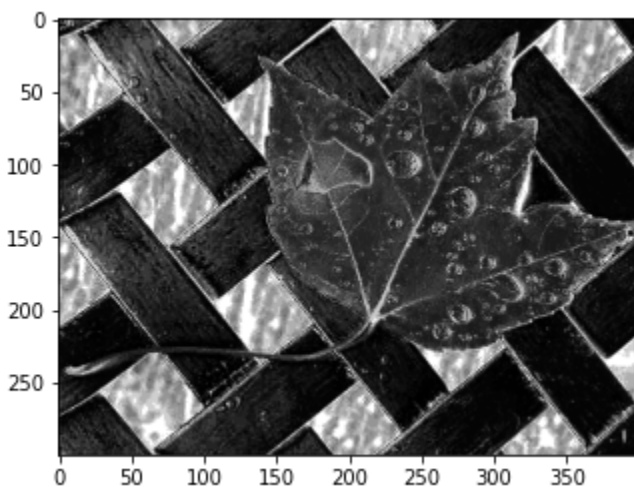
---

- Check included ipynb files for images in order of production

## Q1.

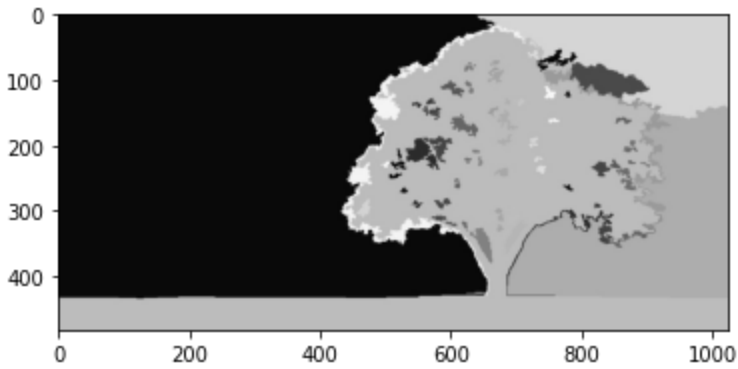
### EQN 3

- kmeans clustering is performed to reduce number of colors to 85
- We count the frequency of each color and use this data to compute saliency values for each color in the image.
- the saliency values are scaled to range 0-255
- Each pixel in the image is changed according to the scaled saliency value.



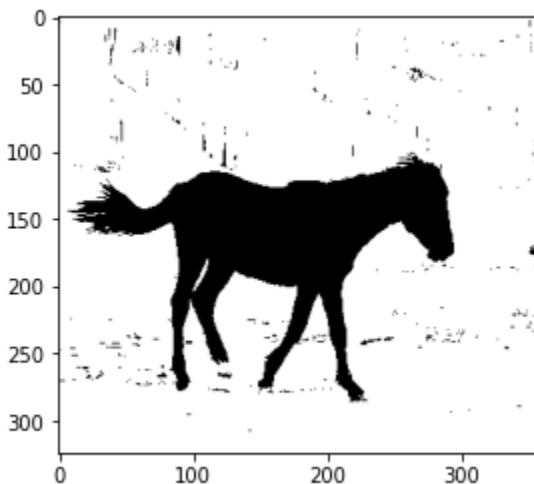
### EQN 5

- kmeans clustering was used to reduce number of colors to 85
- The given image was segmented using the given code on google classroom



## Q2.

- The image is read then converted to grayscale.
- A function `find_means()` is defined that for a given threshold, returns the mean value of pixels below the threshold and above the threshold.
- We loop through the thresholds(0-255) and for each threshold, the Total sum of squared(tss) is calculated. This is the summation of the square of the difference of pixel values with the mean value on their side of the threshold.
- The minimum tss was observed for a threshold of 118, and this value was used to create the binary mask for the horse.



### Q3.

- We cycle through the video and save all the frames.
- Median frame is calculated using the numpy mean function. This gives us the background.
- median frame is converted to grayscale
- We loop through all the frames in the video, convert them to grayscale, then take the absolute difference with the median grayscale frame. After this binary thresholding is done.
- Contours are the joined points that outline our subject(ie, object in motion), these contours are found using the thresholded data, and for each frame a circle is drawn around the subject.
- We write all these frames in order and get the final video output.