Assignment 1
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Question 1

Input: Image and segmented image
Code: m_2019472_1(image, segImage)

Note:- Please comment the 1b code to imshow the 1a image.

Working.(1a)

1. Use the given code for kmeans clustering into 85 colors.
2. Create a color histogram = [85 * 5] = (R, G, B, frequency, saliency Value)
3. Run a nested loop to calculate the saliency values of each color using Equation 3
4. Insert the new colors in the image using the color histogram
5. Show the image

Working (1b)

1. Run the code to find a segmented image
2. Use the segmented region to find the color distance between each region
3. Find the Saliency of each region

Question 2.

Input. Image
Code: m_2019472_2(Image)

Output: Binary Map and CSV file

Working.

1. Convert the image to grayscale
2. Make a histogram
3. Run a loop for all color values (0 to 255)
4. Calculate the mean using
   (Sigma (Pixel Color)*(Number of pixels of this color))/Total Number of Pixels in this region
   For both the regions
   Using the mean, calculate the TSS value
   Sigma ((color Value - Mean)*(Pixels with this color Value))^2
5. Sum the TSS values for both regions
6. Take the threshold value with minimum TSS sum
7. Use the value to make a binary Mask
   Final Threshold = **119**

Question 3

Input = Video and path to save the video and frames
Code: m_2019472_3(video, path / “”)
Output: Saved Video with a circle around the walking man

Working

1. Use all the video frames to calculate the pixel-wise median frame
2. Subtract the median frame from each frame and use the otsu threshold to generate a binary mask for the moving man visible.
3. Use the Matlab library region props to calculate the centroid and major axis length from the binary mask.
4. Draw a circle using centroid as center and radius as half of major axis length
5. Save the video