COMPUTER VISION

ASSIGNMENT 4

BY: Amit Anand(14CO102)

03/04/2018

Approach:

1. The function implements graph cut by partitioning a directed graph into two disjoint sets, foreground and background
2. convert all the images to arrays for calculation.
3. Take the mean of the histogram
4. initalize the foreground/background probability vector
5. define the graph, define source and sink nodes and add non-nodes.
6. Defining the Probability function and calculate the probability of a pixel being foreground and background.
7. Define the weight and check 4 neighbourhood pixels. Calculate the cost for two pixels.
8. The likelihood function:
   * used Bayes' theorem for conditional probabilities
   * The function is constructed by multiplying the individual conditional probabilities of a pixel being either foreground or background in order to get the total probability. Then the class with highest probability is selected.
9. Find and print maxflow
10. classify each pixel as either foreground(same as image) or background(red).
11. Save the output image.
12. To count - Find the connected components of the saved image and find the number of labels.
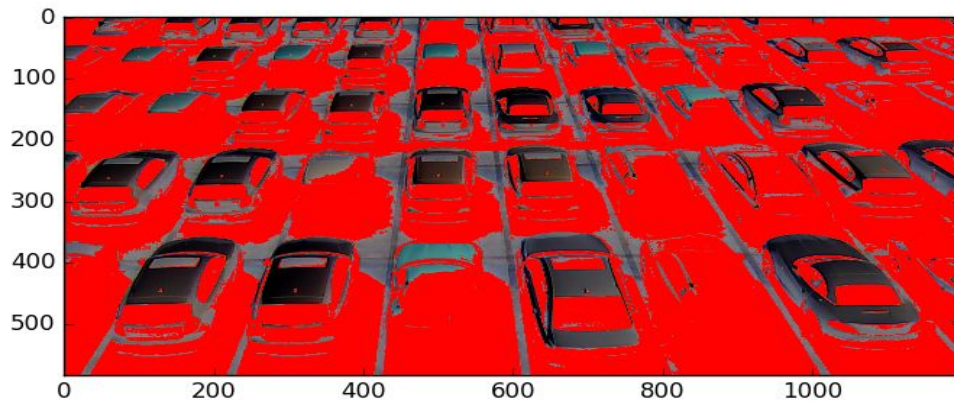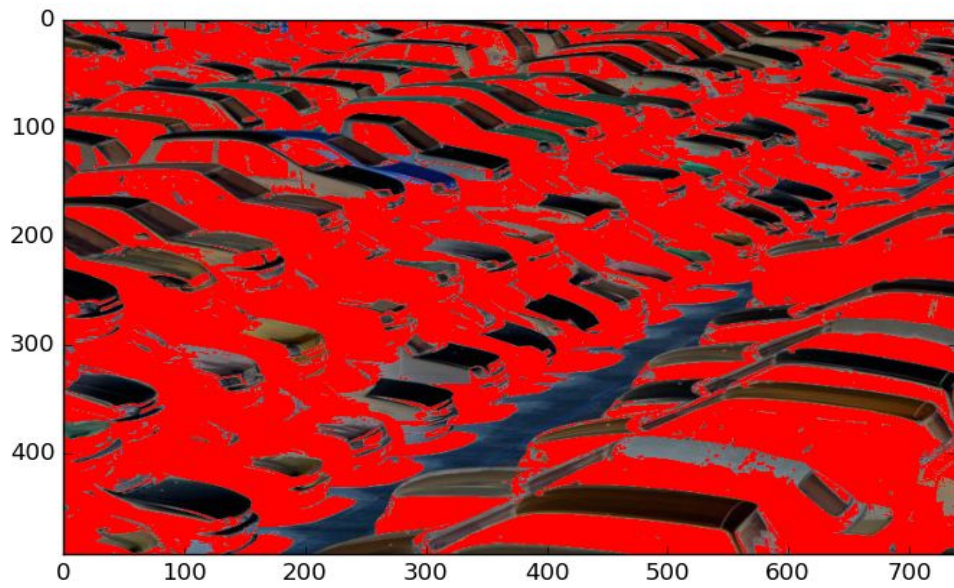
Input:

1.)

2.)

Output:

1.)

2.)

```
>>>
=== RESTART: C:\Users\amit\Pictures\Assignment 4 - 14CO102\Assignment 4.py ===

Warning (from warnings module):
  File "C:\Users\amit\Pictures\Assignment 4 - 14CO102\Assignment 4.py", line 51
    Im[i] = Im[i] / linalg.norm(Im[i]) # normalizing the input image vector
RuntimeWarning: invalid value encountered in divide
The maximum flow for input1.jpg is 52279113
The number of cars is: 30

The maximum flow for input2.jpg is 21432811
The number of cars is: 29
```