Lab7: Project Progress Report

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Five Tasks:

(Priority)

1. Using the optical flow matrix, we obtain the angle matrix (Done)

   Method implement :convert_to_angles (flow_matrix)

   Convert_to_angles function uses optical flow matrix as the input. By using the arctan function in numpy, we can calculate the optical flow angle matrix. The optical flow angle matrix is represented by degree values.

```
[[ 173.26808167  172.53279114  171.58895874 ...,  166.16700745
   166.10671997  165.86473083]
 [ 172.69717407  172.1703949   171.38729858 ...,  166.04914856
   166.03222656  165.92625427]
 [ 172.06915283  171.89498901  171.44714355 ...,  166.03648376
   166.09439087  166.09538269]
 ...,
 [ 244.09277344  251.28942871  241.93035889 ...,  167.78581238
   167.78637695  167.72834778]
 [ 135.45077515  170.53224182  218.70838928 ...,  167.76242065
   167.77812195  167.70808411]
 [ 108.09145355  106.12174988  163.84791565 ...,  167.79496765
   167.77282715  167.66906738]]
```

2. Get coarse binary mask(Done)

   Method implement :easy_thresholding(img, angle_matrix, thresholding)
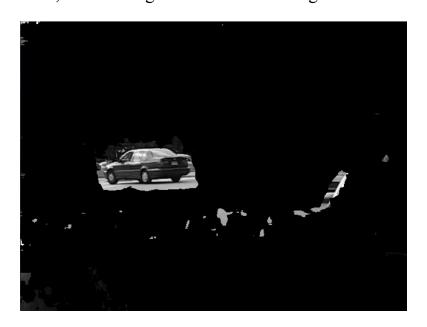
   Easy_thresholding function takes grayscale image, angle matrix and thresholding as parameters. This function sets a thresholding value and filter the angle_matrix. By comparing the angle value with thresholding, we can get a coarse binary mask.

3. Get coarse foreground(Done)

    Method implement :easy_thresholding(img, angle_matrix, thresholding)

    Easy_thresholding function take grayscale image, angle matrix and thresholding as parameters. This function set a thresholding value and filter the angle_matrix. By comparing the angle value with thresholding, we can get foreground matrix, which can generate a coarse foreground.

(Optional)
4. Extend the implement methods to the video. (In progress)
   For this task, we will implement the methods mentioned above for the frames in video, not only for the first two frames.

5. Implement Robust PCA. (In progress)
   For this task, we will implement Robust PCA based on the results we get from above methods.

Github:
https://github.com/guanfangdong/Background_Subtraction_with_a_Freely_Moving_Camera