ECSE 6650 HW#6

Due date: 11/26, 11:59 pm.

In this assignment, you will be given 2 sequences of images. Each sequence has 5 consecutive frames. Your task is to compute the optical flow (OF) for the central frame and determine the moving direction of the object in the scene for each sequence. You can choose either of the two methods we introduce in the class to compute OF.

1. Compute the optical flow for the central frame for each sequence
2. display the optical flow in an image
3. determine the 3D moving directions of the object in each sequence

Prepare a report that includes the followings:

- introduction
- discuss the theory of motion analysis using optical flow and the procedure you used to compute the flow
- discuss the experiment and its results
- summary and conclusion

Submit to the TA and me a link to your report and experimental results.

For this assignment, pay attention to the following

- First, when performing facet fitting, look at the residual fitting error. if it is large, then it means the fitting is not good. As a result, the derivatives from the poor fitting will also poor. If this happens, just set the optical flow for that point to zero. The quality of fitting can also be measured by the condition of matrix D.
- Second, when solving the optical flow using matrix A, if its condition is large, then set the optical flow to zero.
- Third, if the computed magnitude of the optical vector is small, then set the OF to zero.
- Fourth, instead of using 5x5x5, you can vary the window size for estimating the OFs. Note given 5 images, the temporal window size is fixed at 5, but the spatial window size can be any size.