Computer Vision
Fall 2018
Problem Set #4

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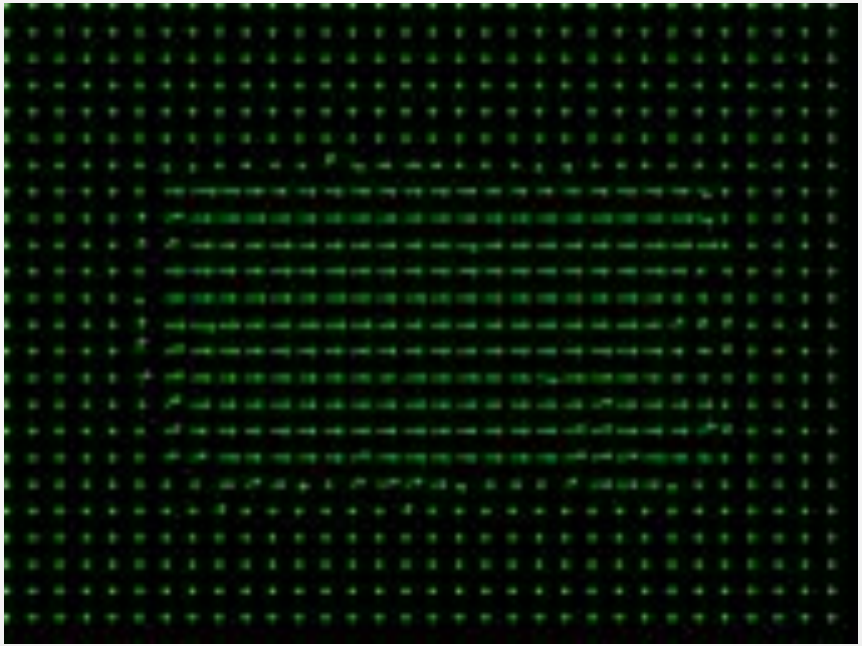
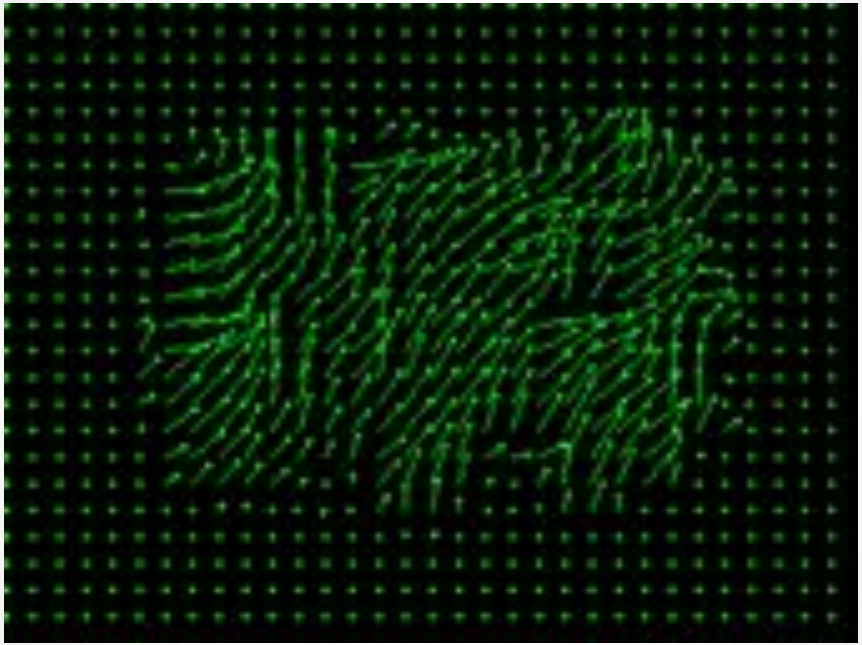
1a: Base Shift0 and ShiftR2



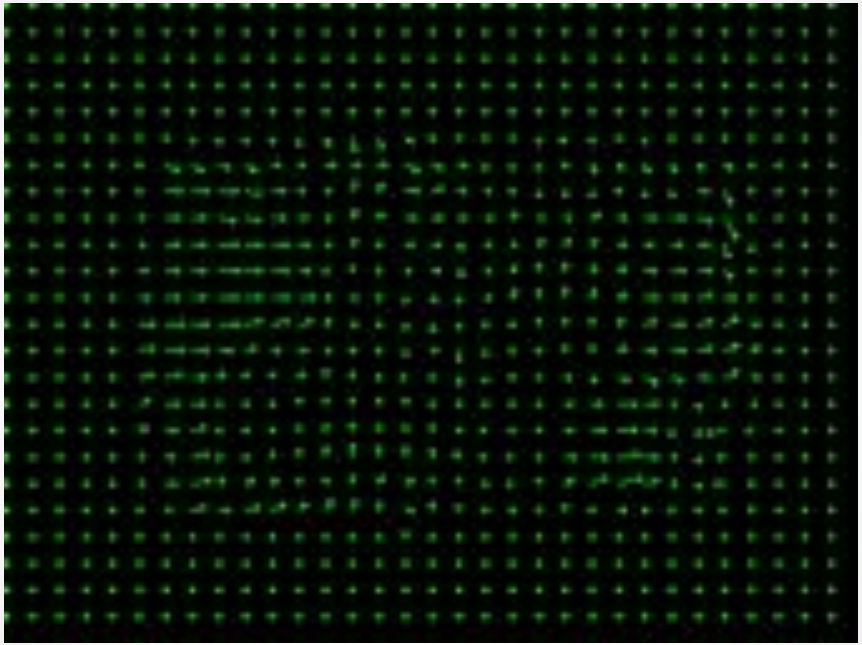
ps4-1-a-1.png

1a: Base Shift0 and ShiftR5U5



ps4-1-a-2.png

1b: Base Shift0 and ShiftR10

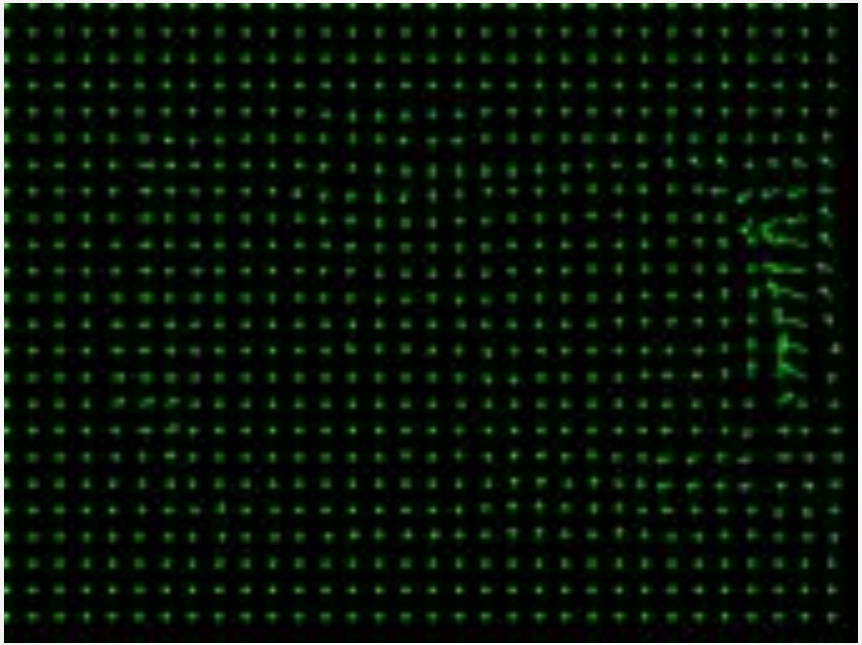


ps4-1-b-1.png

1b: Base Shift0 and ShiftR20

ps4-1-b-2.png

1b: Base Shift0 and ShiftR40



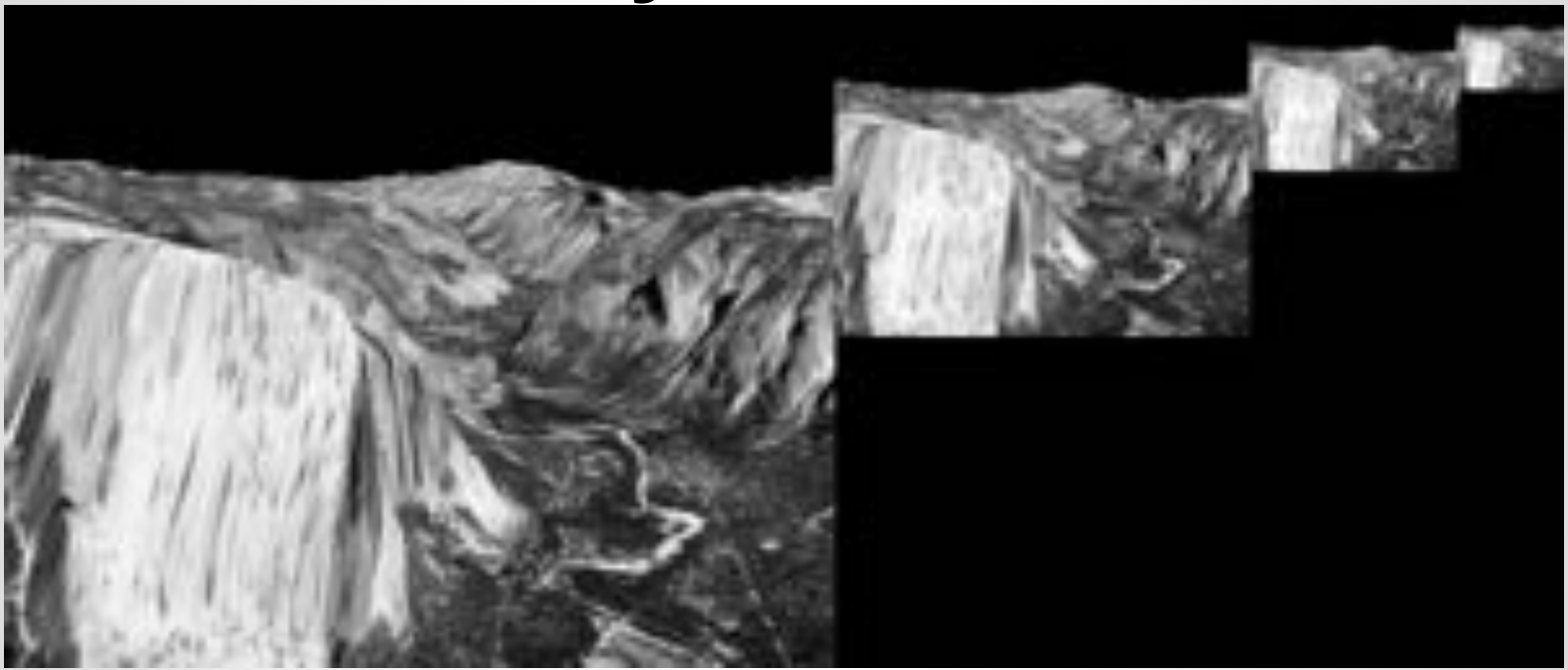
ps4-1-b-3.png

1b: Text Response

- Does LK still work? Does it fall apart on any of the pairs? Try using different parameters to get results closer to the ones above. Describe your results and what you tried.

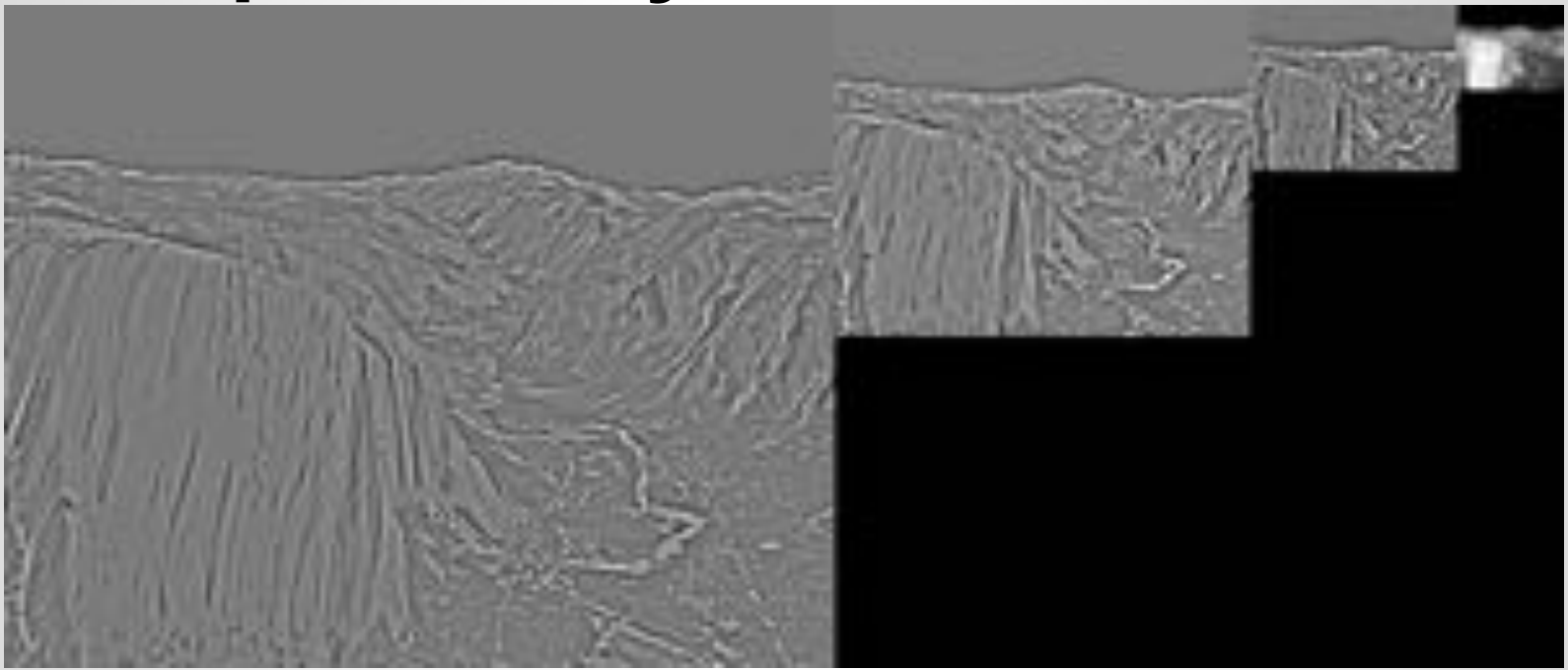
LK appears to fall apart when there is a large amount of change between frames. I noticed that when there was a large movement in the image, that the optic flow was difficult to capture since the kernel size had to increase to capture such movement. When increasing the kernel size, the area of motion increased, as well as the flow being skewed into improper directions at times. To assist with the tuning of the K value, code was written to help visualize which kernel size would lead to the best results.

2a: Gaussian Pyramid



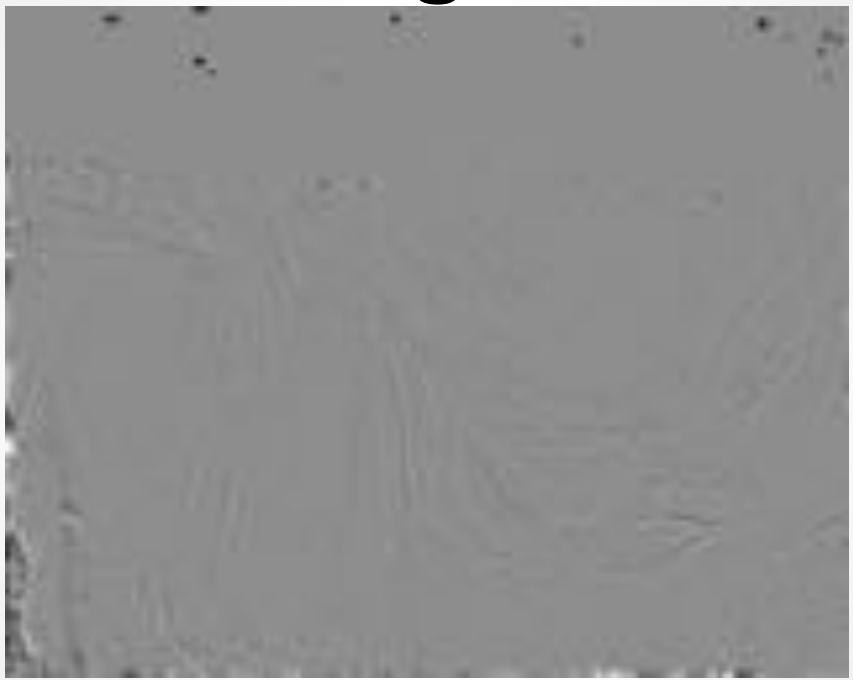
ps4-2-a-1.png

2b: Laplacian Pyramid



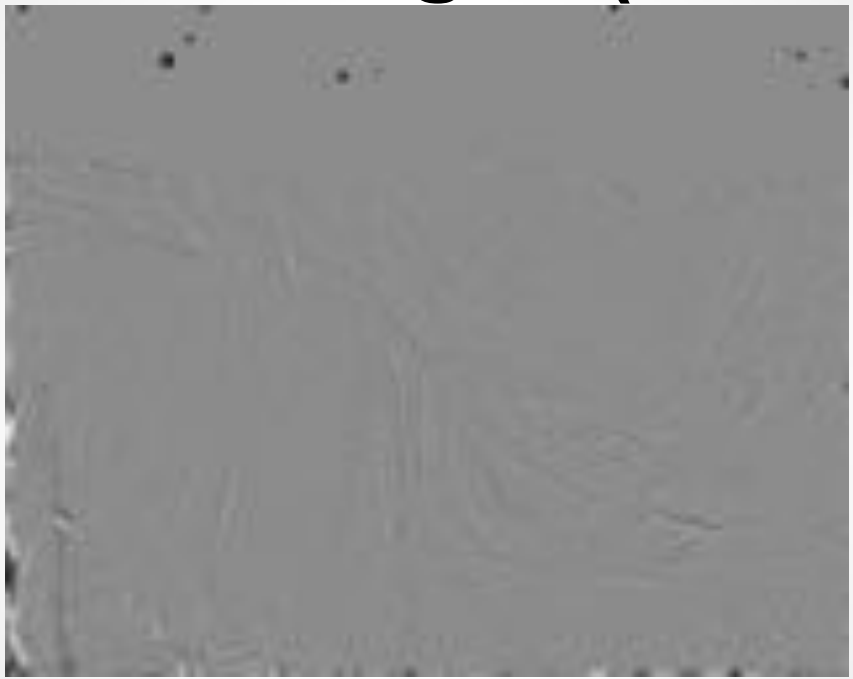
Laplacian Pyramid Image **- ps4-2-b-1.png**

3a: Difference images



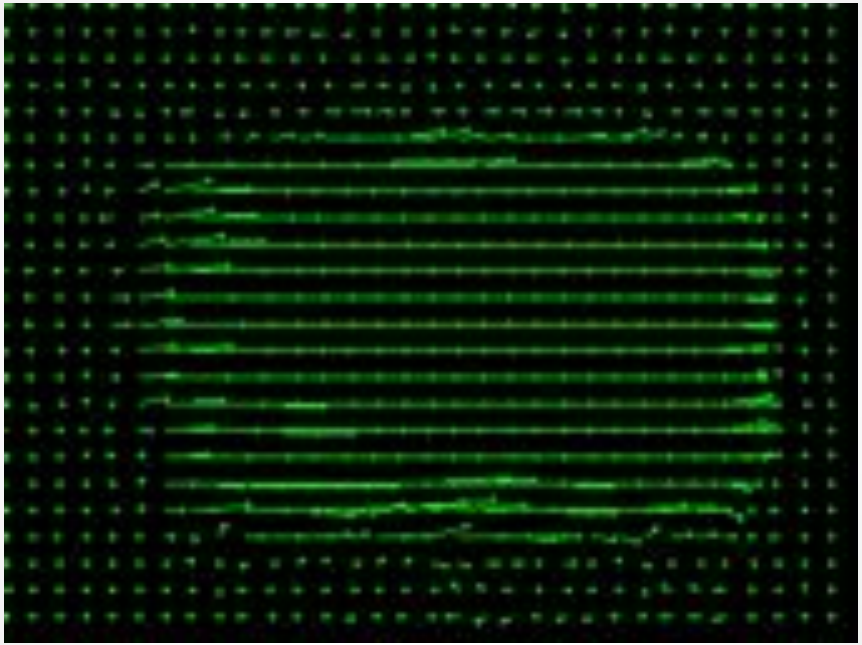
ps4-3-a-1.png

3a: Difference images (cont.)



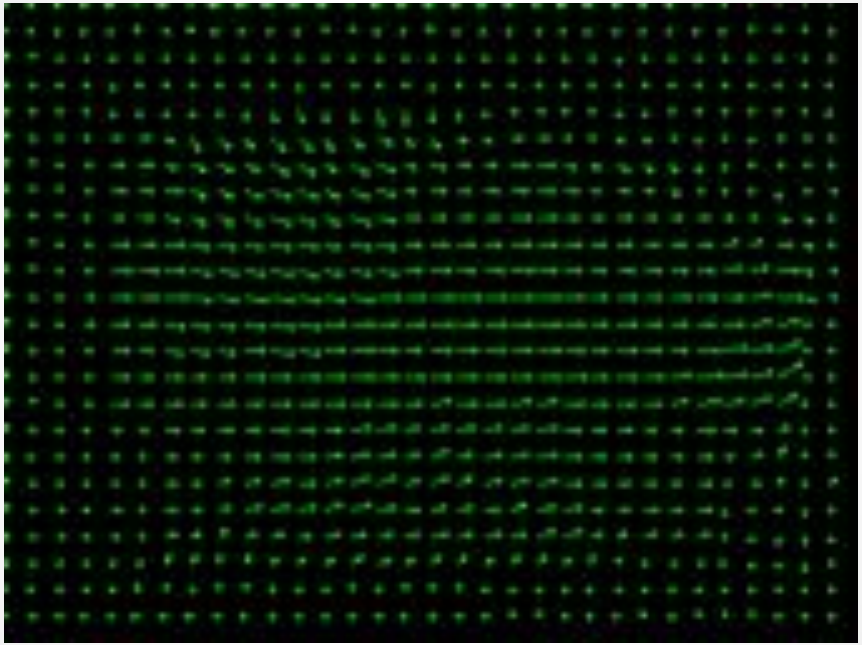
ps4-3-a-2.png

4a: Hierarchical LK



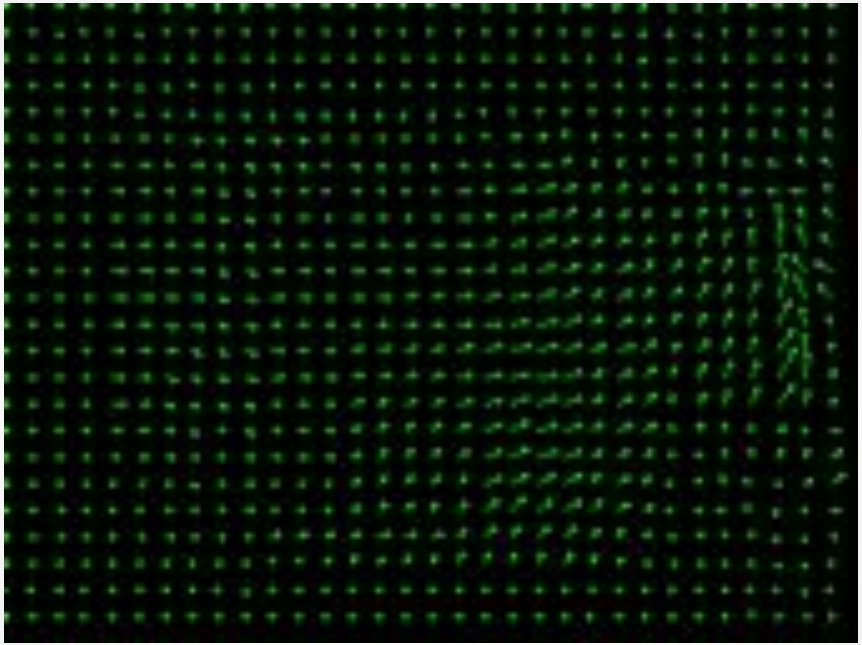
ps4-4-a-1.png

4a: Hierarchical LK (cont.)



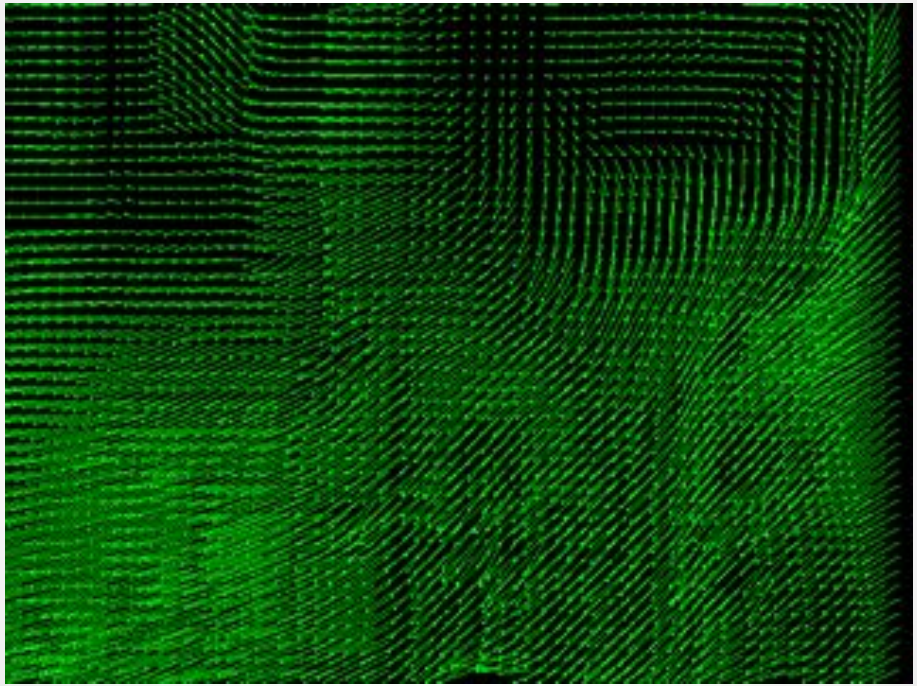
ps4-4-a-2.png

4a: Hierarchical LK (cont.)



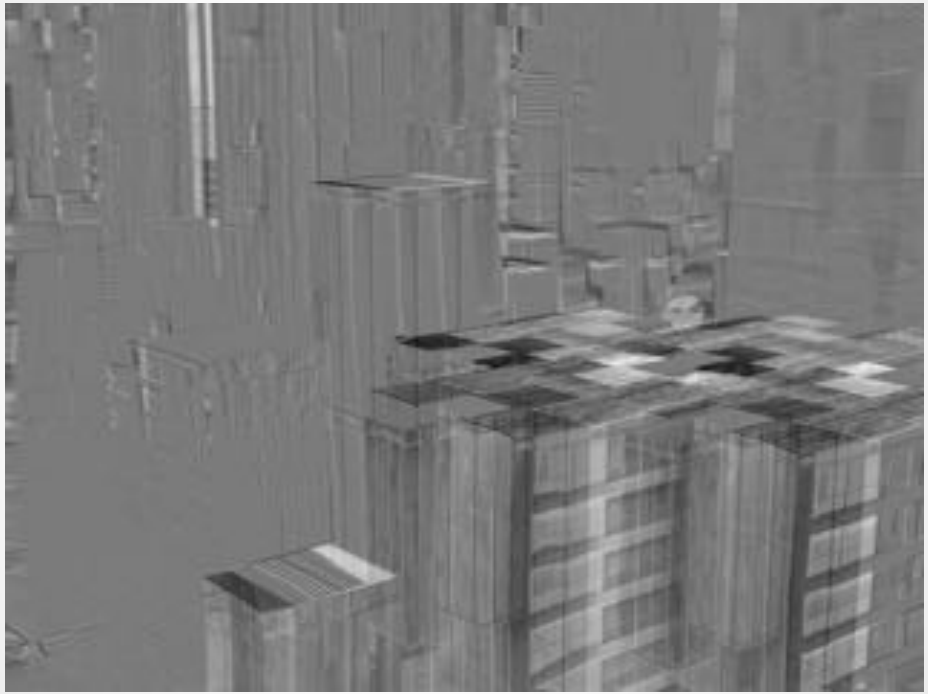
ps4-4-a-3.png

4b: Hierarchical LK (cont.)



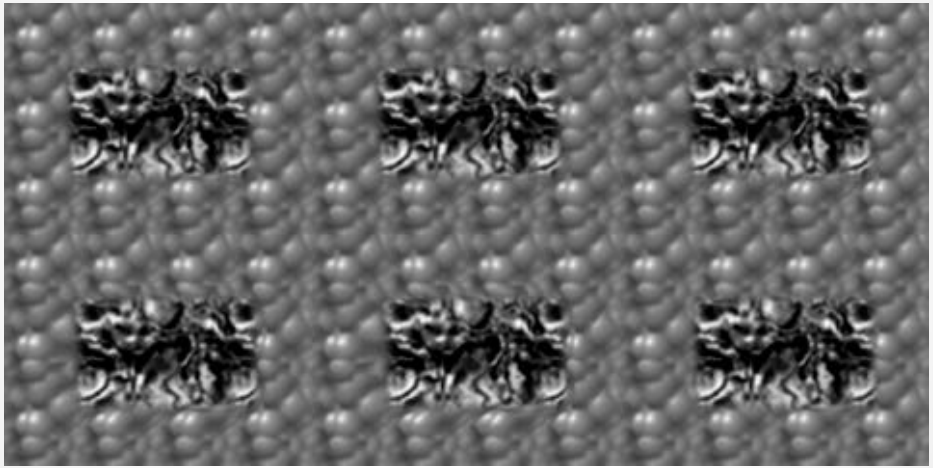
ps4-4-b-1.png

4b: Hierarchical LK (cont.)



ps4-4-b-2.png

5a: Frame Interpolation



ps4-5-a-1.png

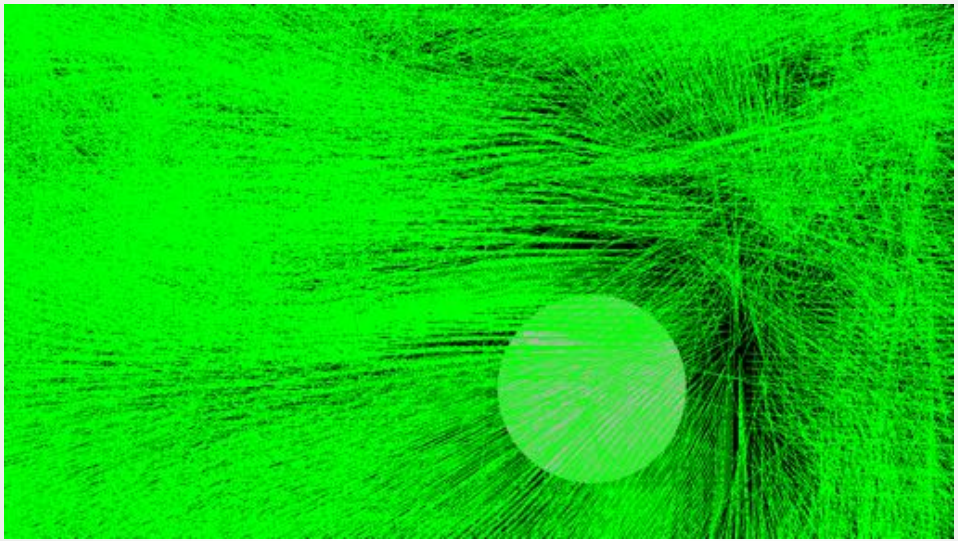
5b: Frame Interpolation

ps4-5-b-1.png

5b: Frame Interpolation

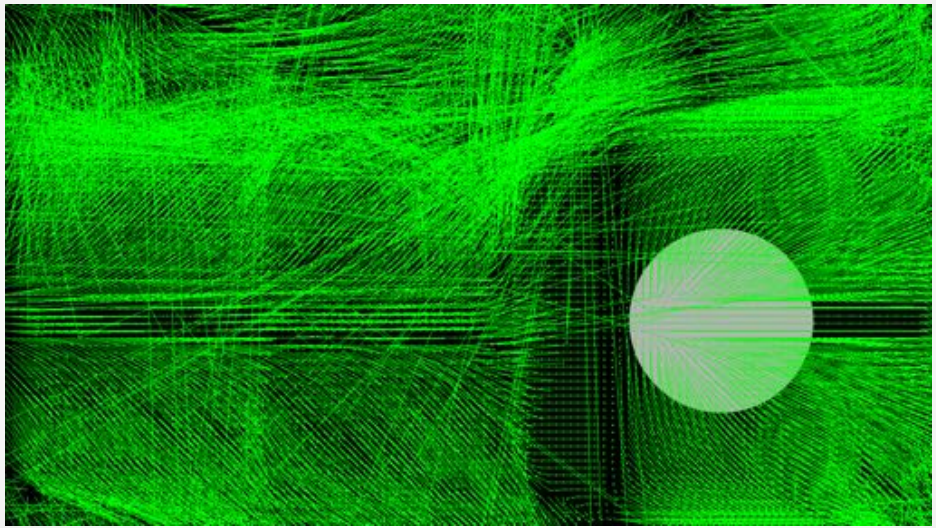
ps4-5-b-2.png

6: Challenge Problem



ps4-6-a-1.png

6: Challenge Problem (cont.)



ps4-6-a-2.png

6: Challenge Problem (cont.)

My output video wouldn’t run on computer. Much time was spent trying to understand why without reason.

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