Computer Vision
Fall-2019
Problem Set #4

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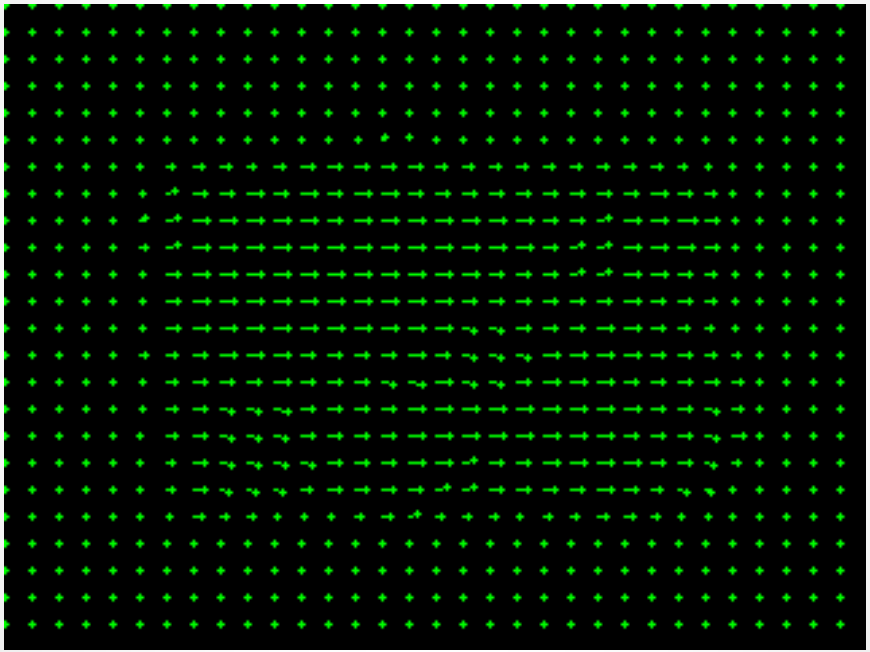
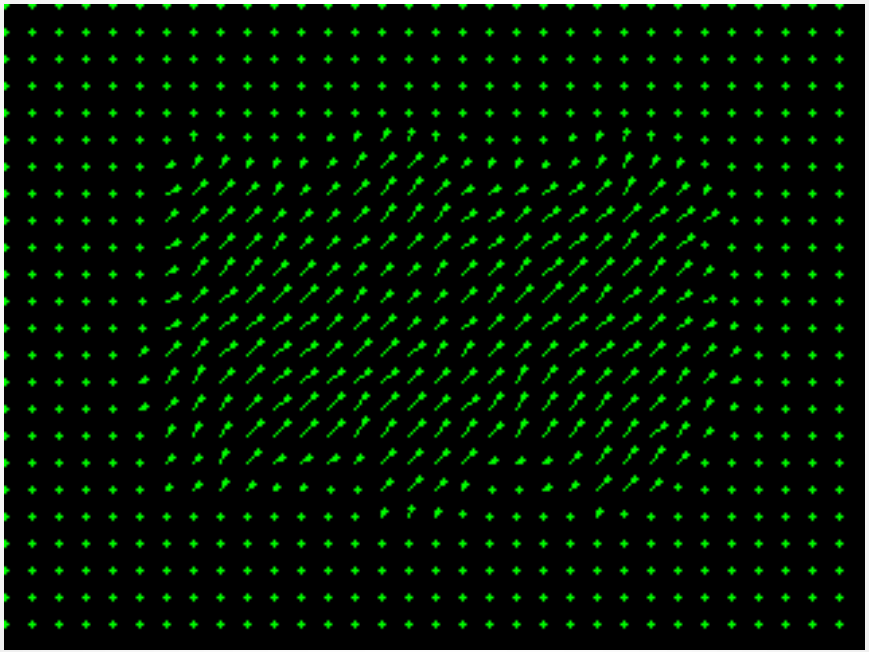
1a: Base Shift0 and ShiftR2



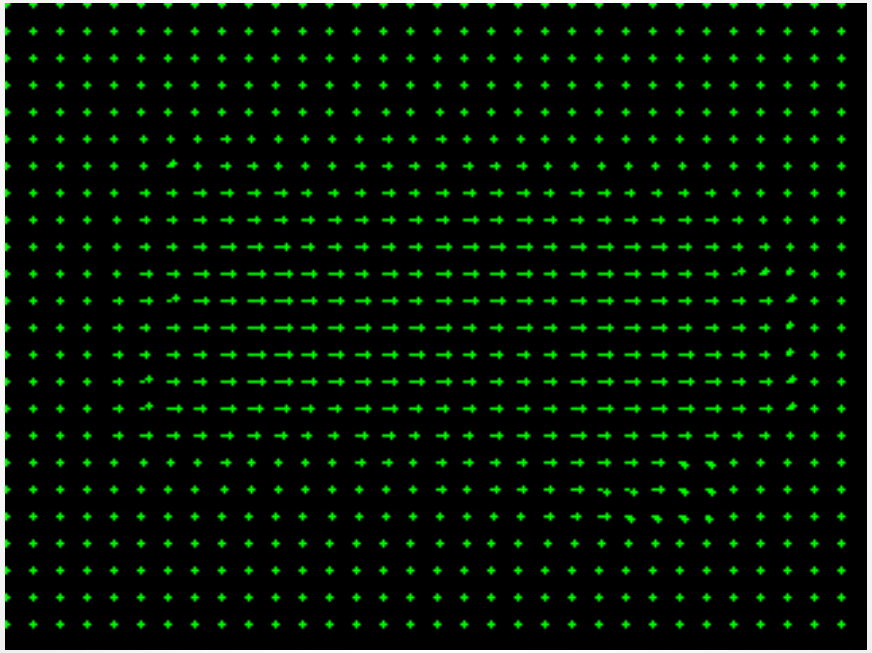
ps4-1-a-1

1a: Base Shift0 and ShiftR5U5



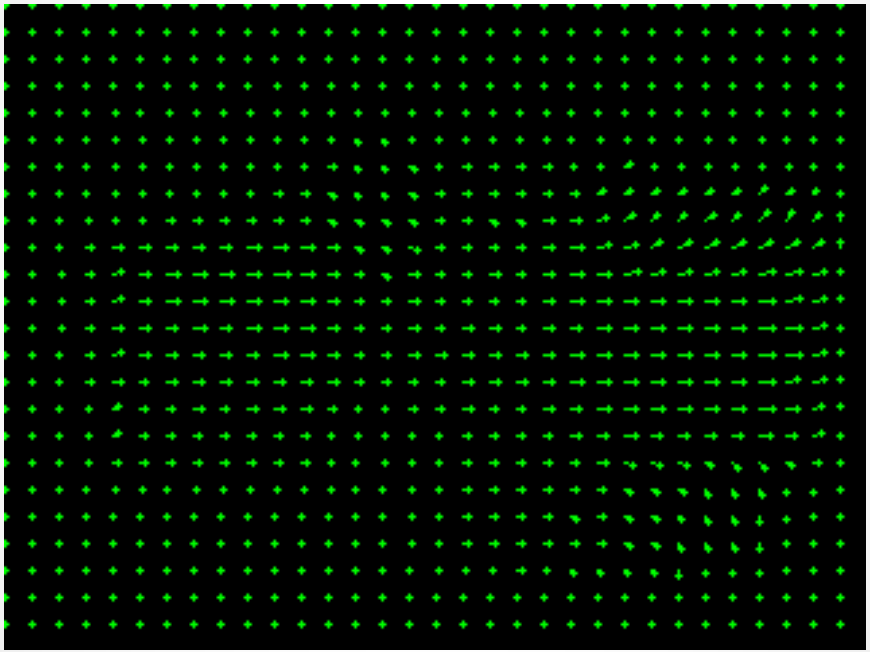
ps4-1-a-2

1b: Base Shift0 and ShiftR10



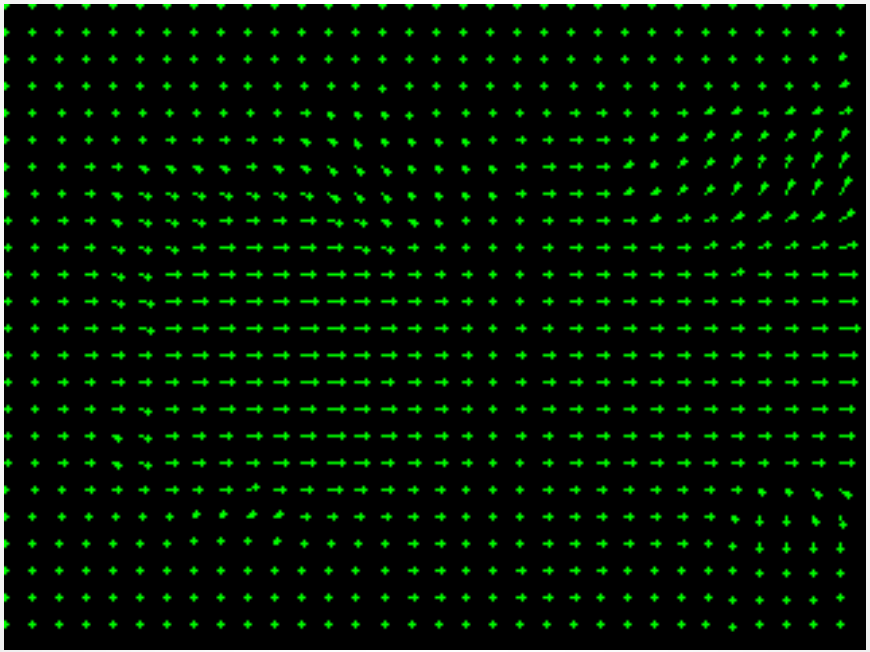
ps4-1-b-1

1b: Base Shift0 and ShiftR20



ps4-1-b-2

1b: Base Shift0 and ShiftR40



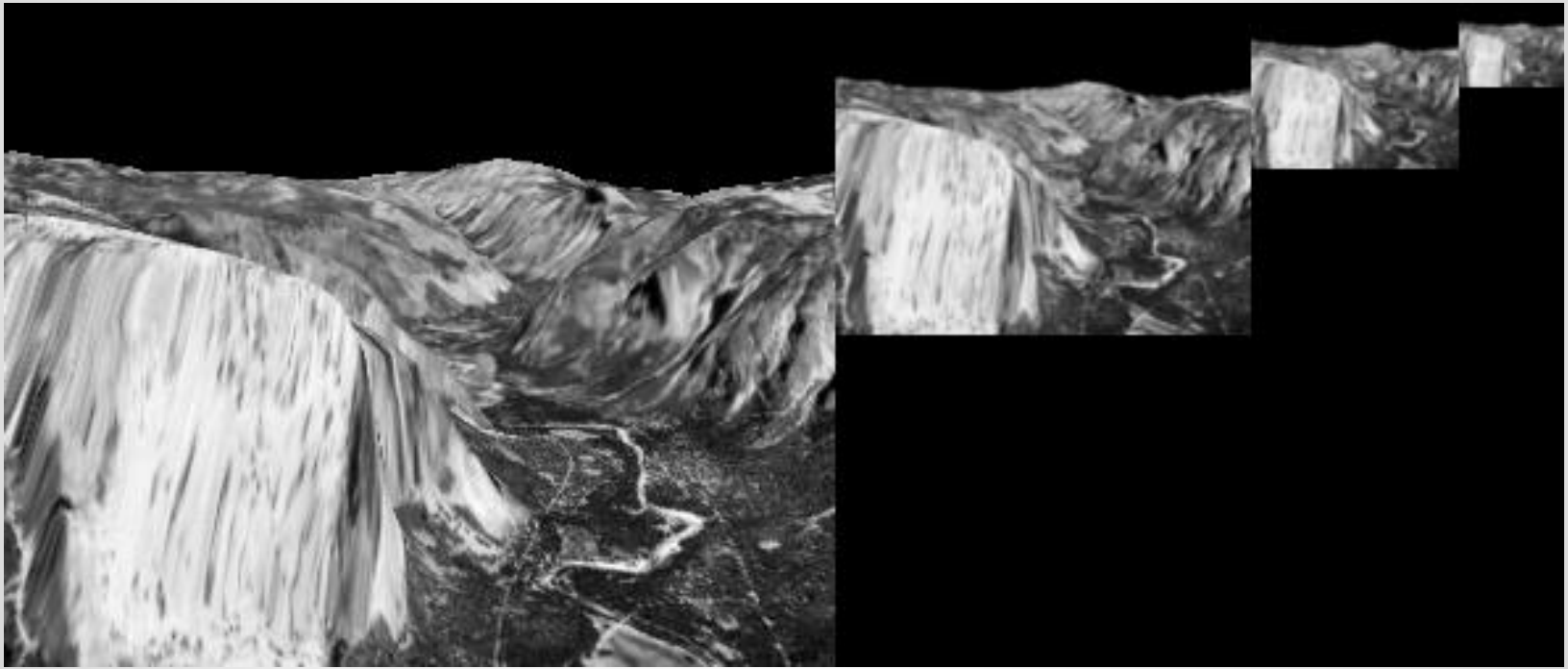
ps4-1-b-3

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.

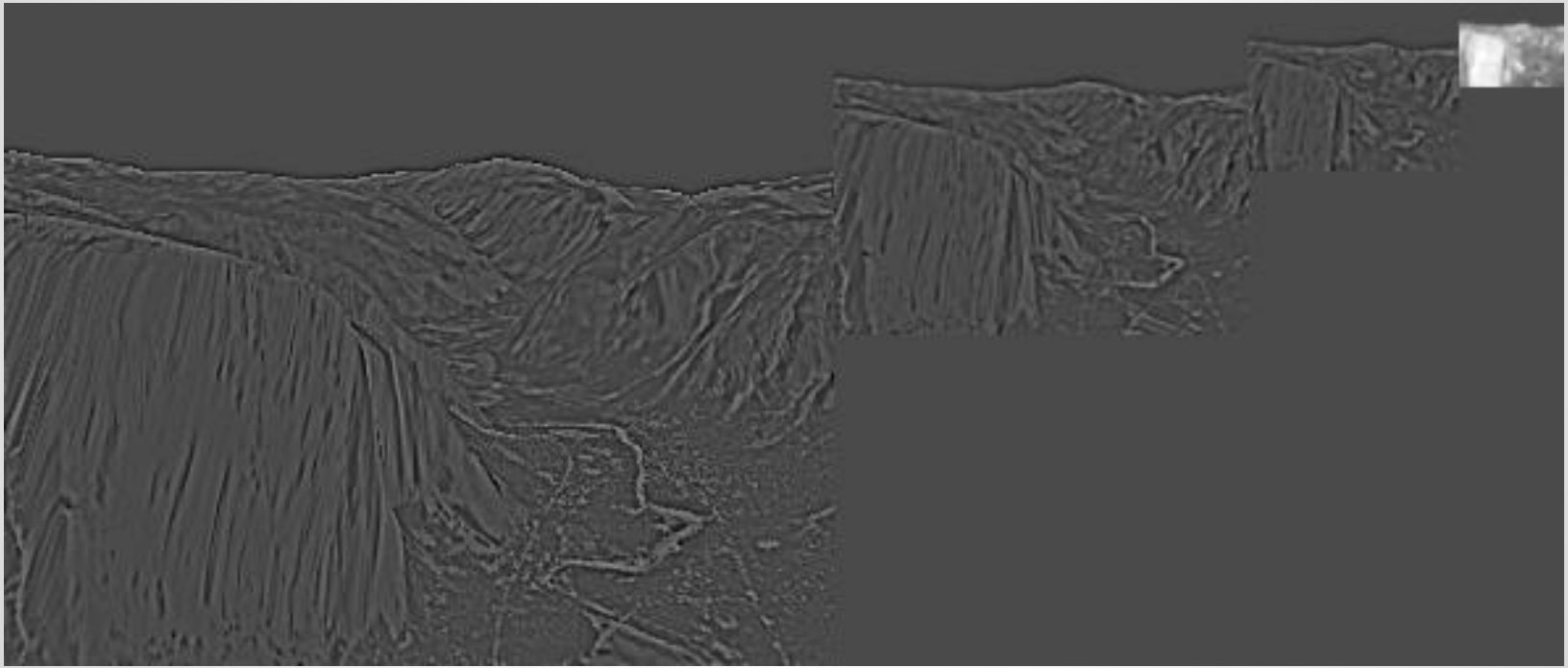
I think
my answer is … LK performs reasonably well with ShiftR10. However, the performance deteriorates on ShiftR20 and further worsens on ShiftR40. The results improve with smoothing the image, but still not accurate. For ShiftR40, in an intermediate region (vertical line at the center), only a small motion Is detected, while a higher degree of motion is detected to the left and right of it, which however is unequal at different distances from the center.

2a: Gaussian Pyramid



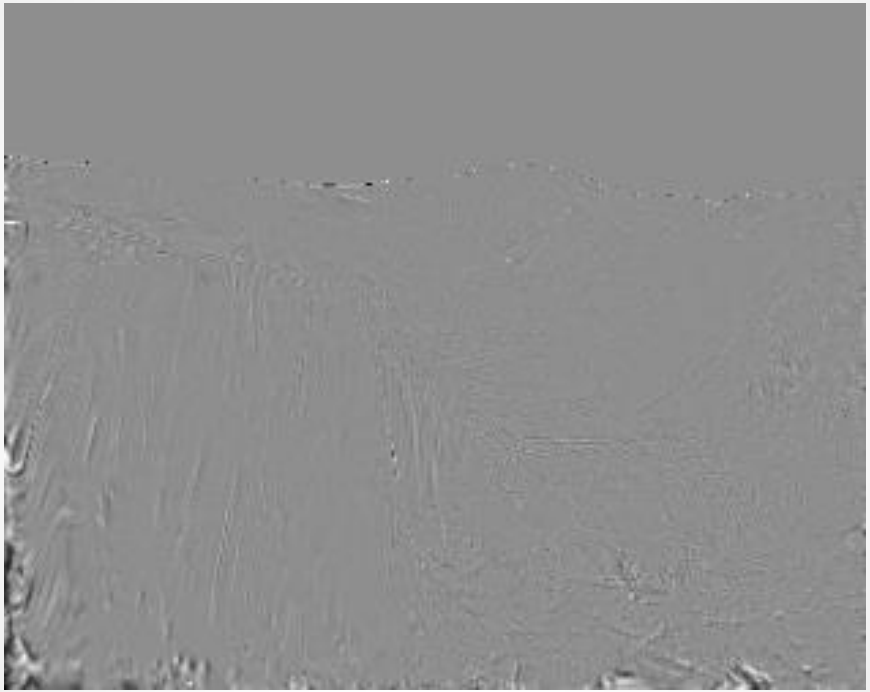
ps4-2-a-1

2b: Laplacian Pyramid



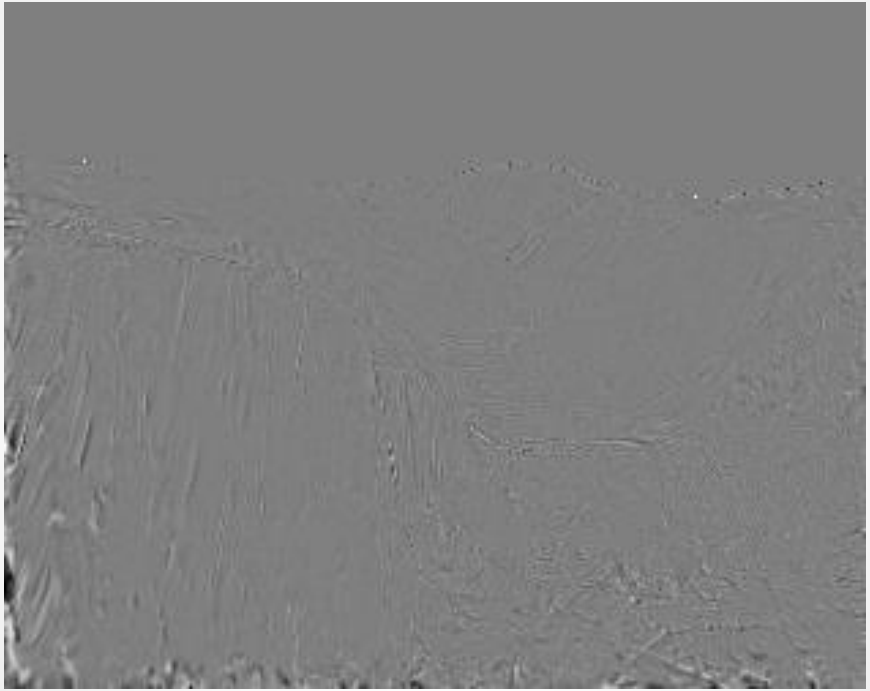
ps4-2-b-1

3a: Difference images



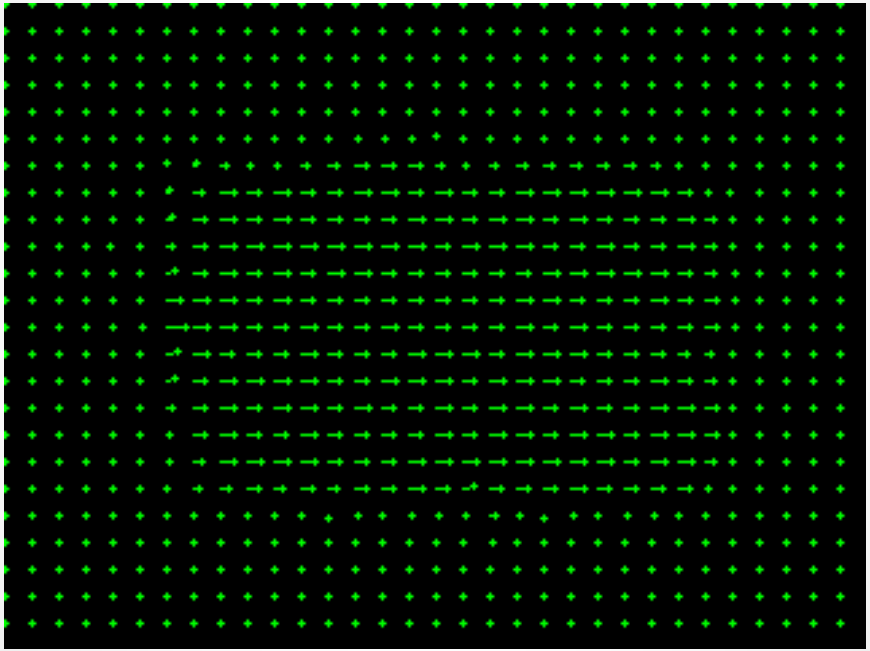
ps4-3-a-1

3a: Difference images (cont.)



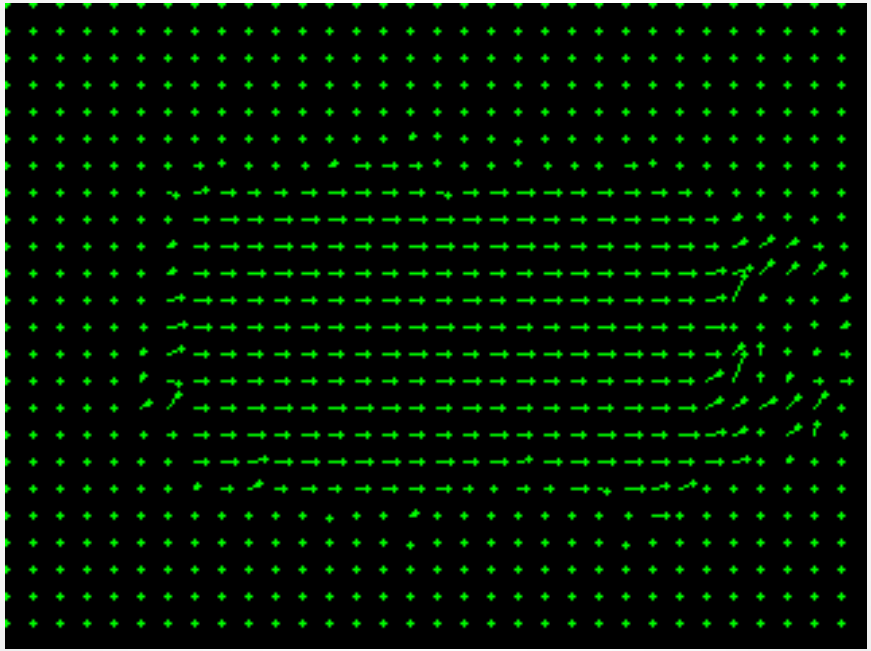
ps4-3-a-2

4a: Hierarchical LK



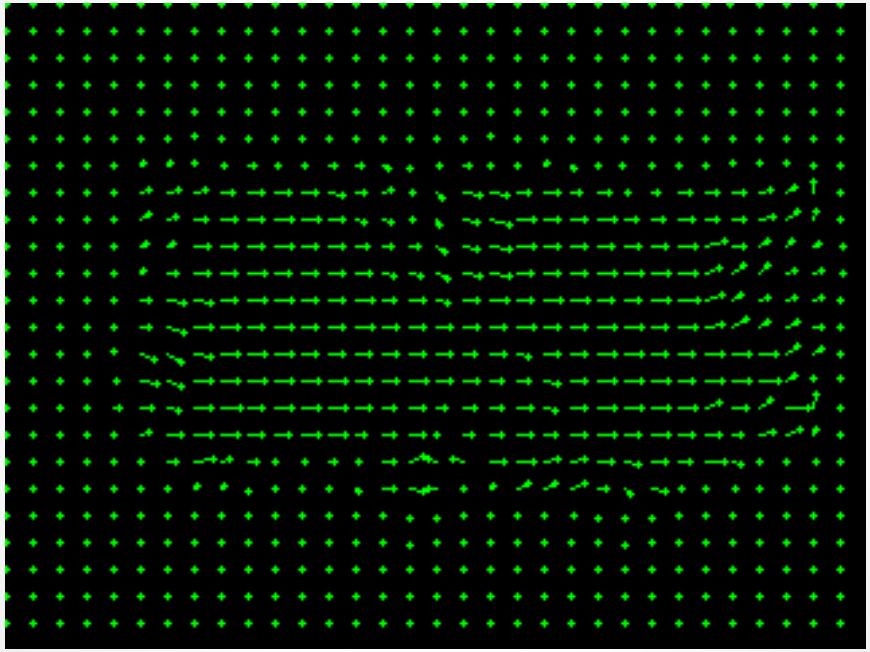
ps4-4-a-1

4a: Hierarchical LK (cont.)



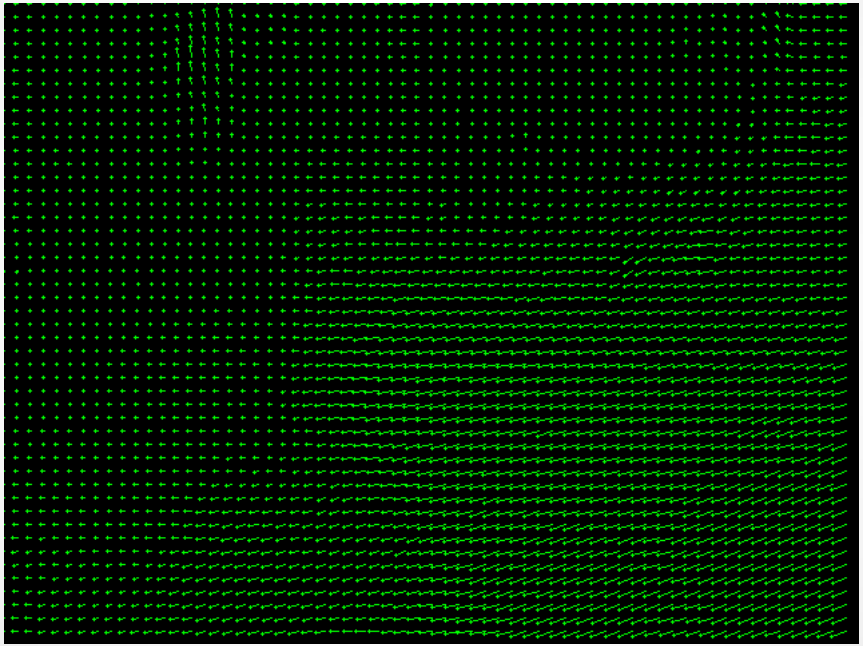
ps4-4-a-2

4a: Hierarchical LK (cont.)



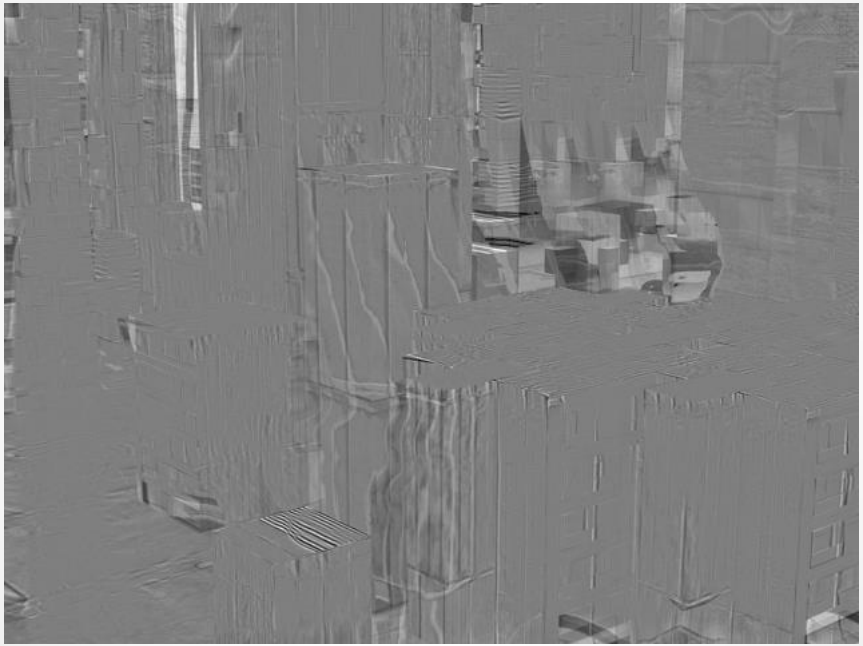
ps4-4-a-3

4b: Hierarchical LK (cont.)



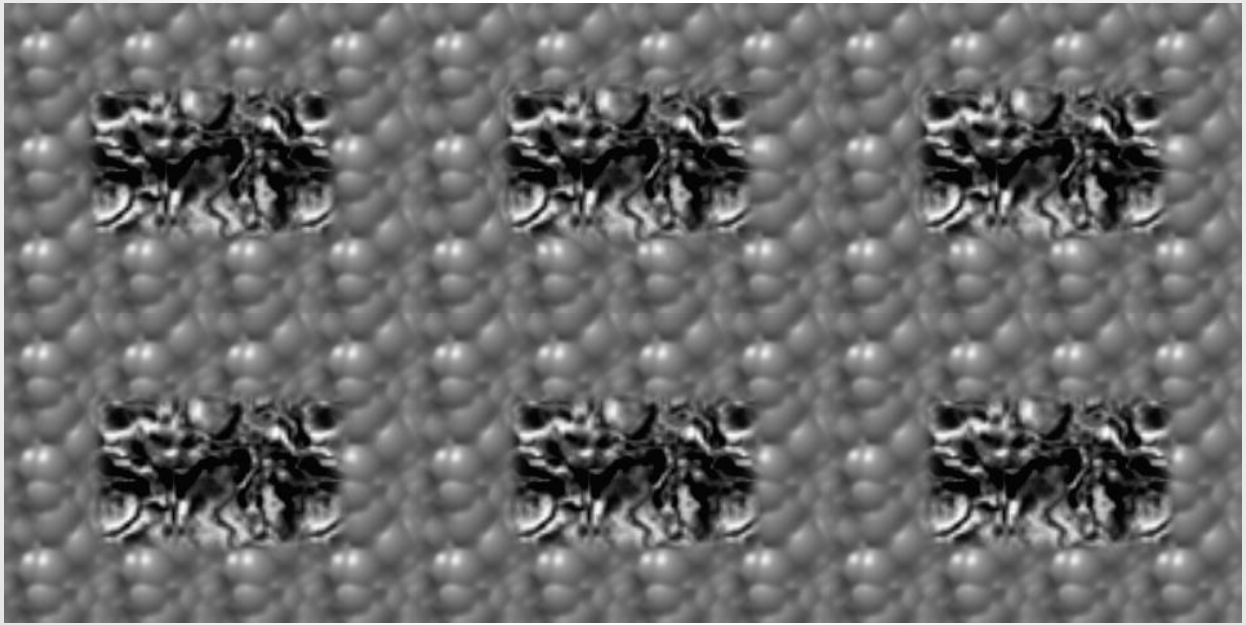
ps4-4-b-1

4b: Hierarchical LK (cont.)



ps4-4-b-2

5a: Frame Interpolation



ps4-5-a-1

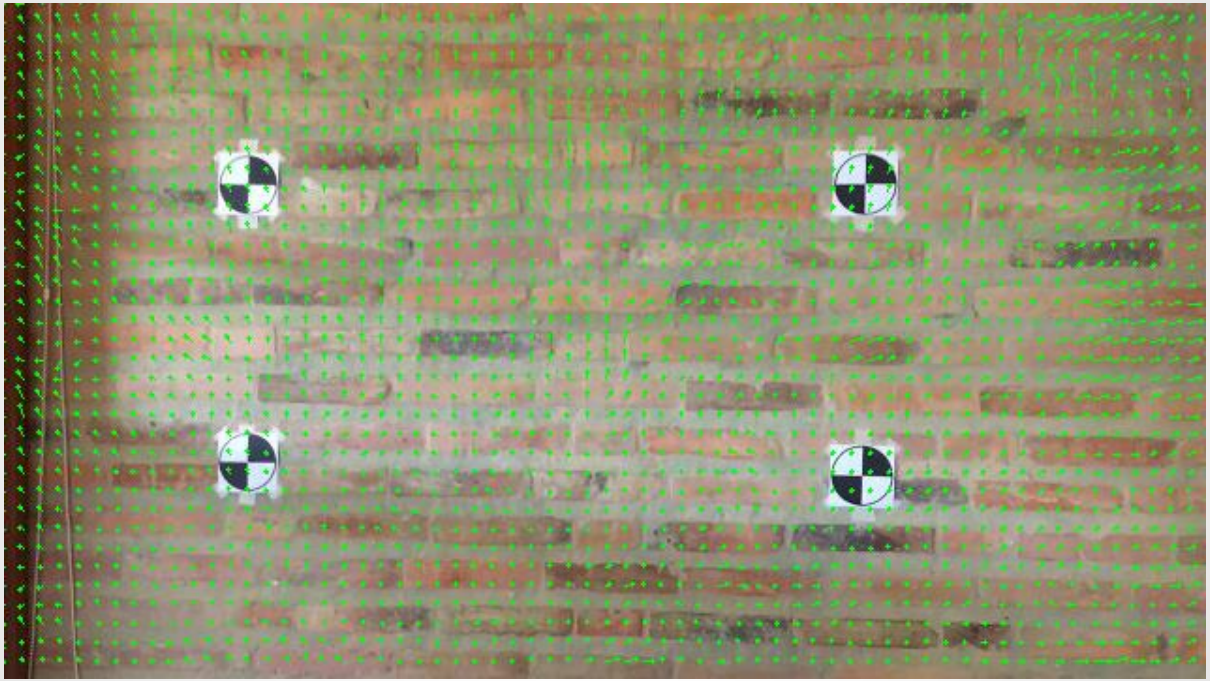
5b: Frame Interpolation

ps4-5-b-1

5b: Frame Interpolation

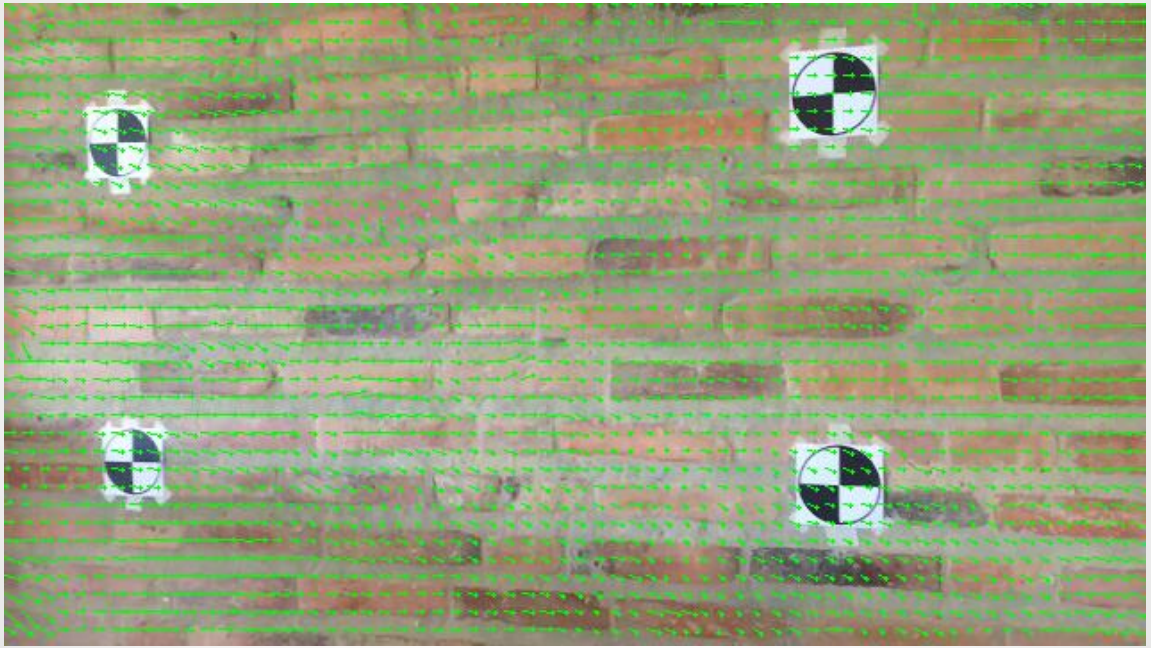
ps4-5-b-2

6: Challenge Problem



ps4-6-a-1

6: Challenge Problem (cont.)



ps4-6-a-2

6: Challenge Problem (cont.)

Video link:

PS4 Dropbox Link