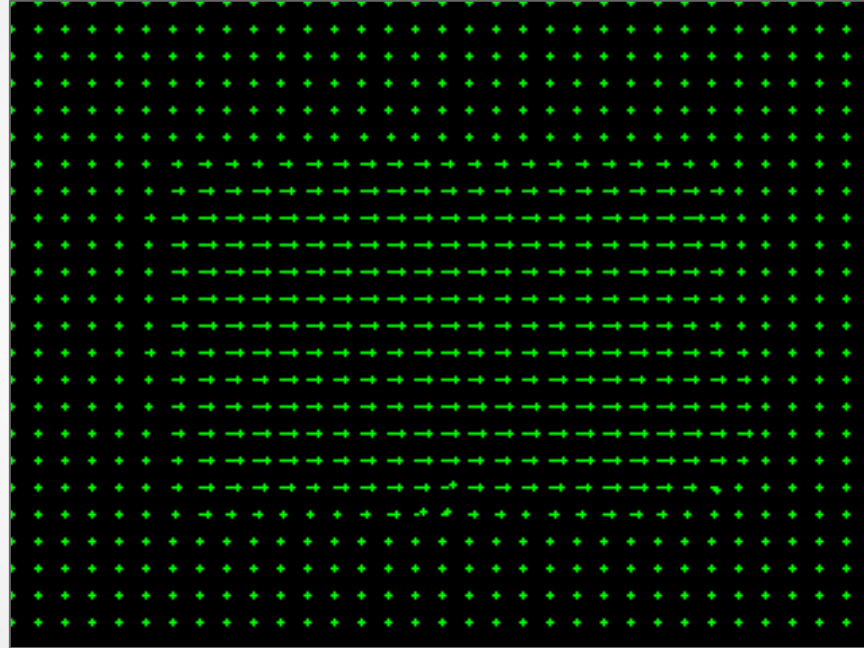


# **Computer Vision (Spring 2019) Problem Set #4**

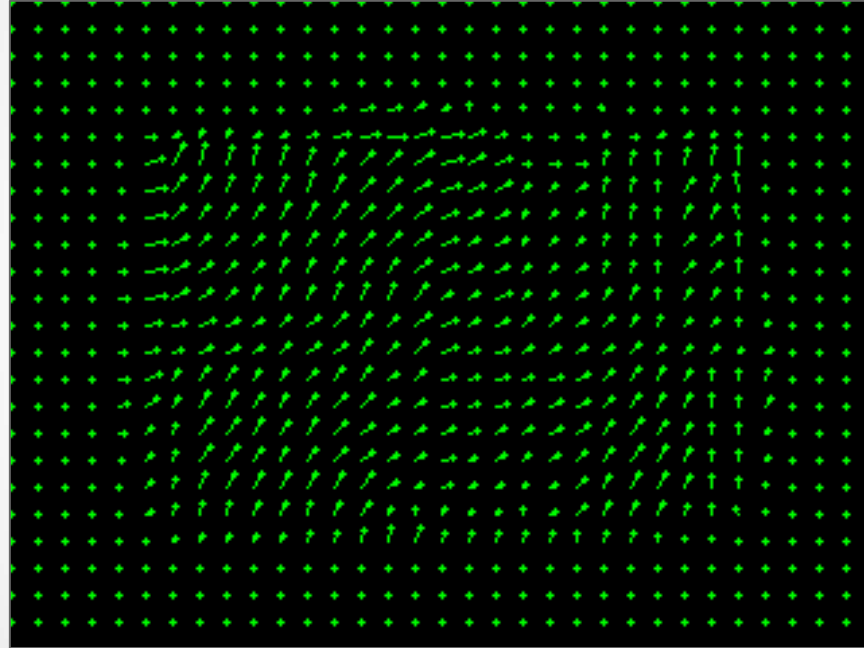
Chuqiao Dong  
chdong@gatech.edu

# 1a: Base Shift0 and ShiftR2



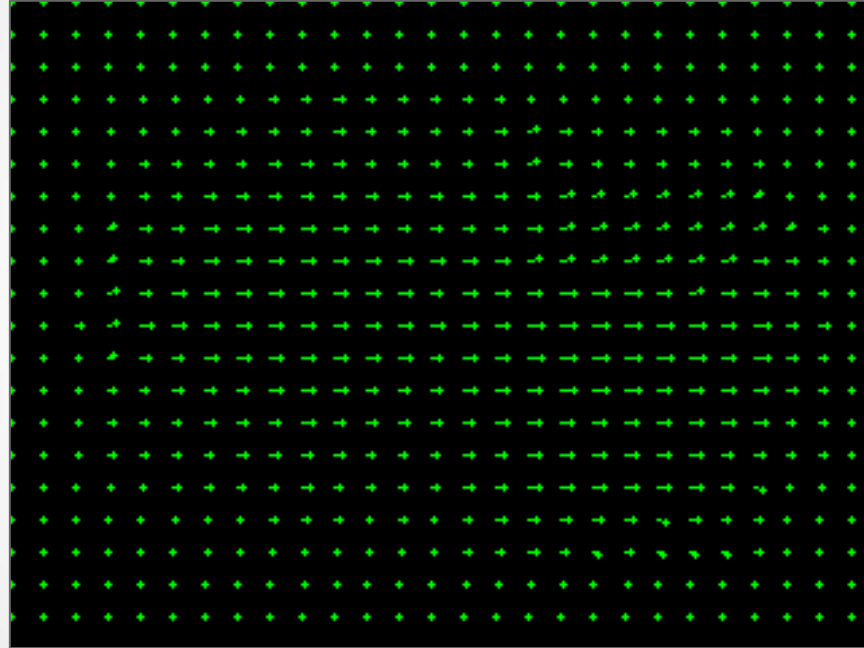
ps4-1-a-1

# 1a: Base Shift0 and ShiftR5U5



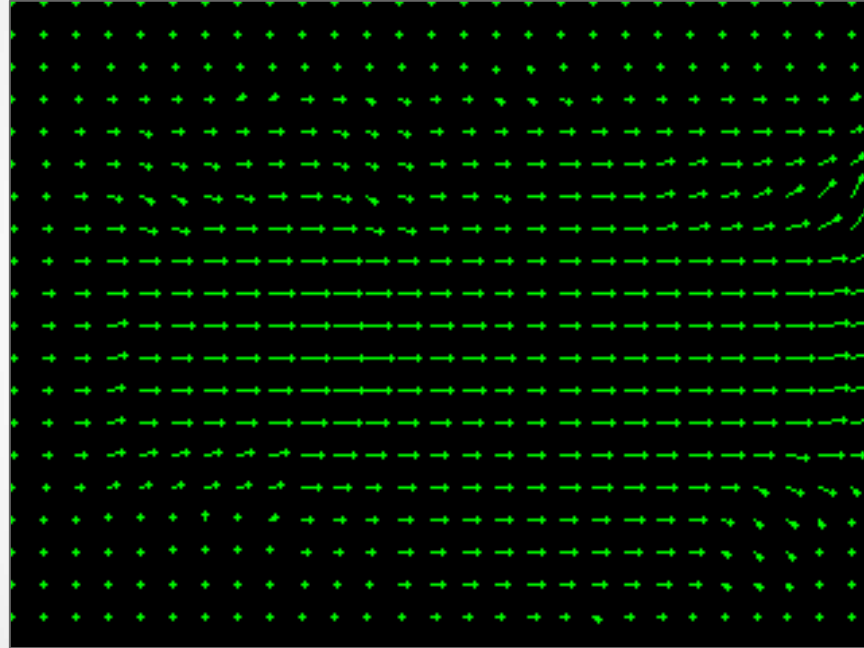
ps4-1-a-2

# 1b: Base Shift0 and ShiftR10



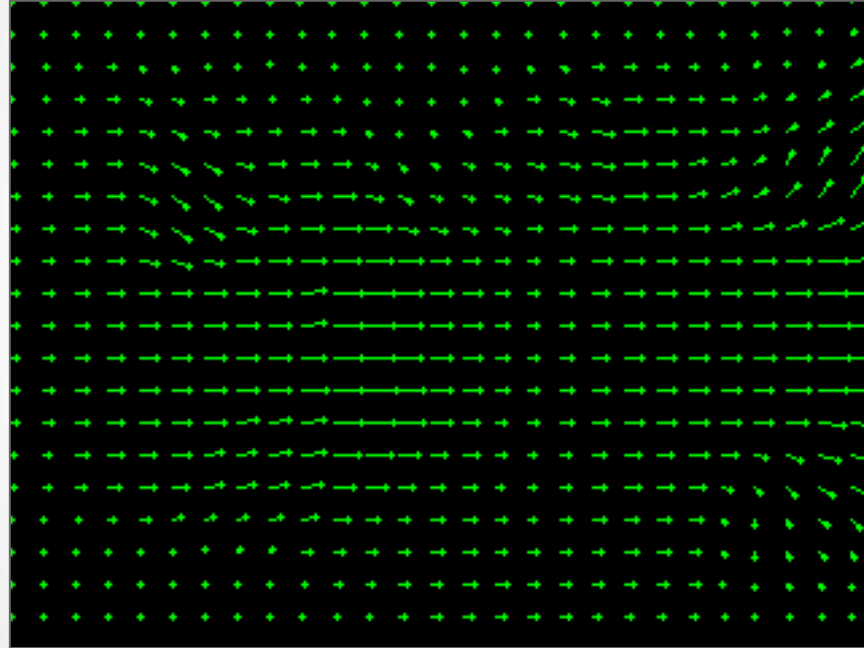
ps4-1-b-1

# 1b: Base Shift0 and ShiftR20



ps4-1-b-2

# 1b: Base Shift0 and ShiftR40



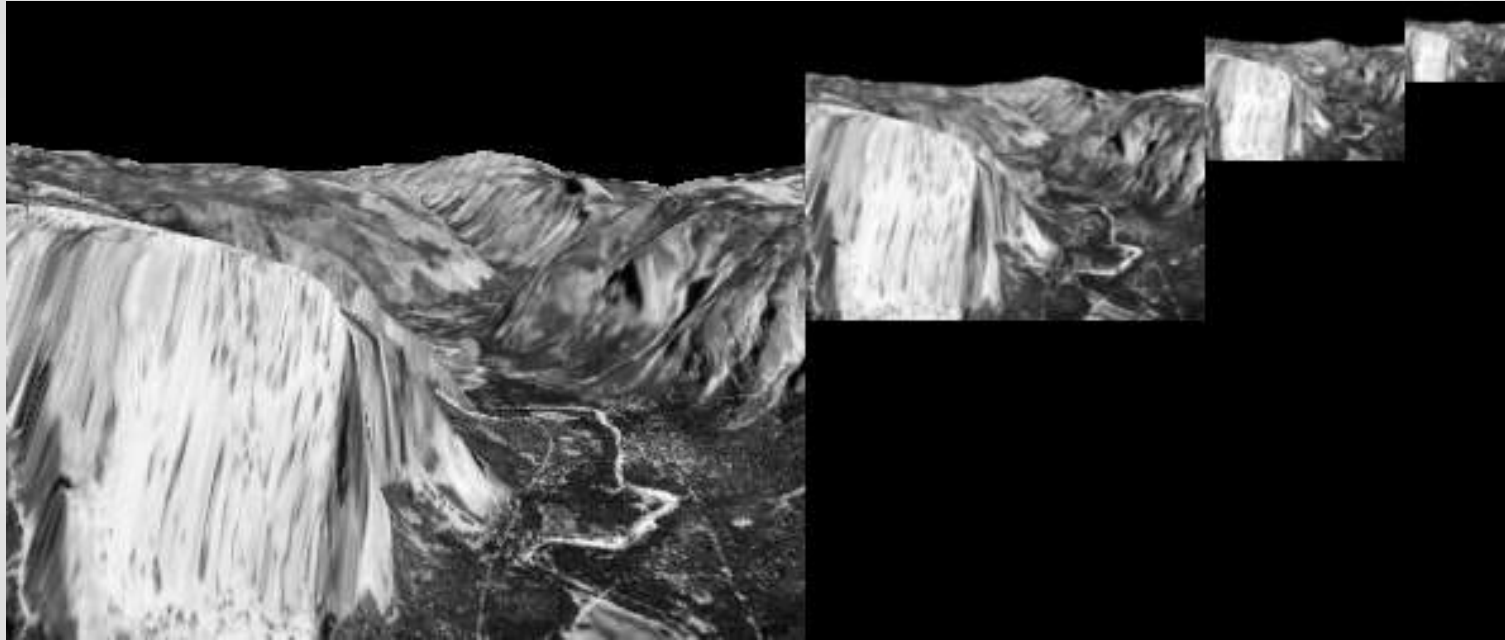
ps4-1-b-3

# 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 LK no longer work for large movements. It fall apart when applying to the images with movement larger than 10. I tried to use 'gaussian' kernel and tried large k\_size. It worked a little bit better but still fall apart. And I tuned a lot values for the sigma parameters of gaussian kernel, still not good enough.

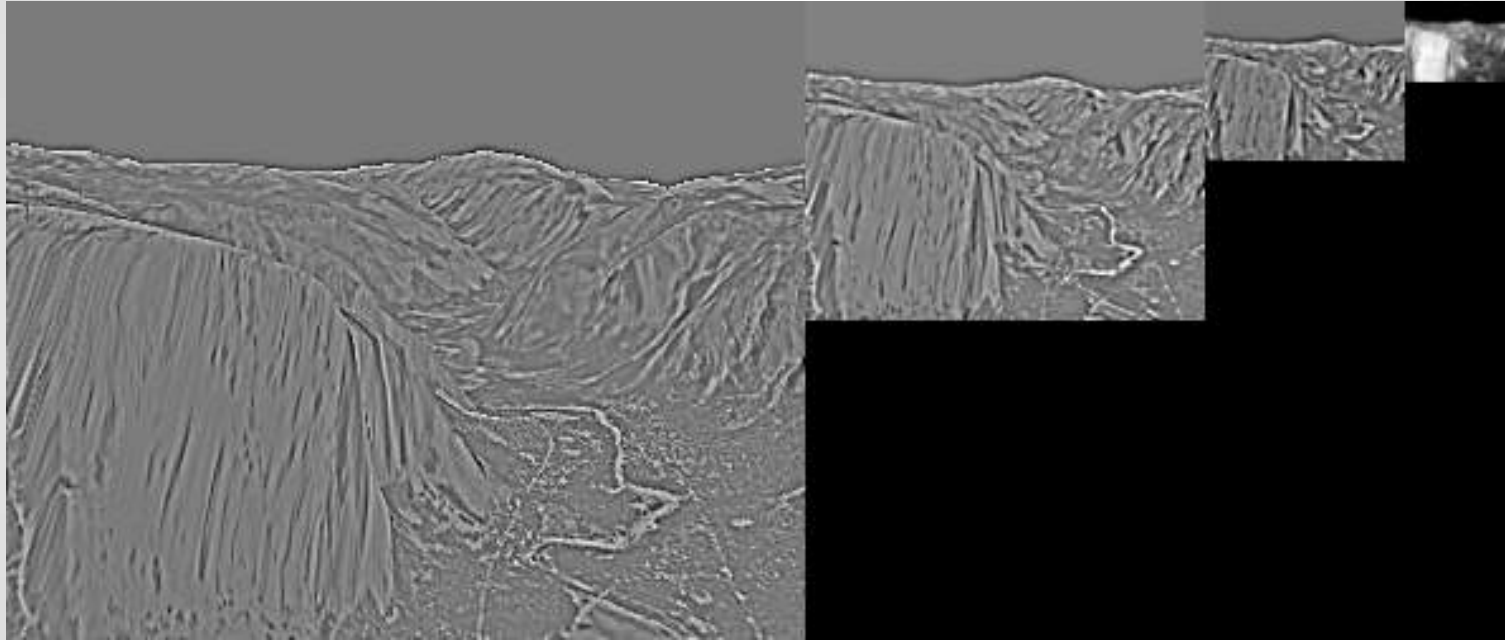
## 2a: Gaussian Pyramid



ps4-2-a-1

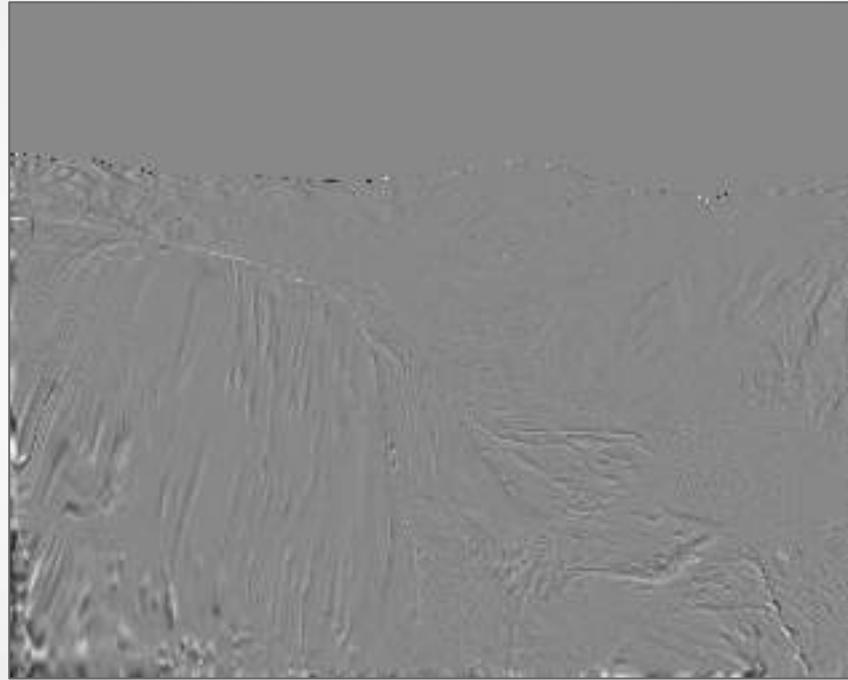


## 2b: Laplacian Pyramid



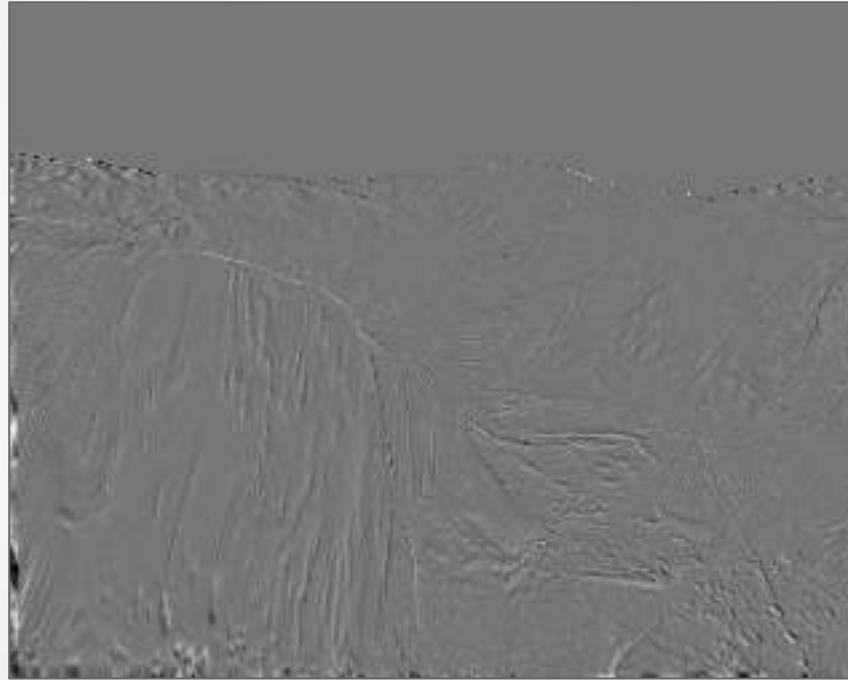
ps4-2-b-1

# 3a: Difference images



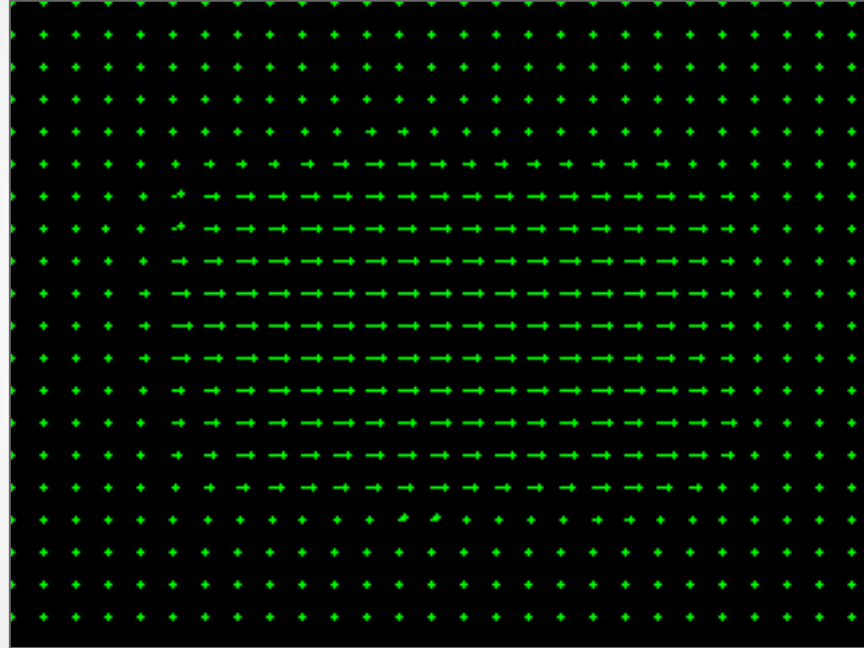
ps4-3-a-1

## 3a: Difference images (cont.)



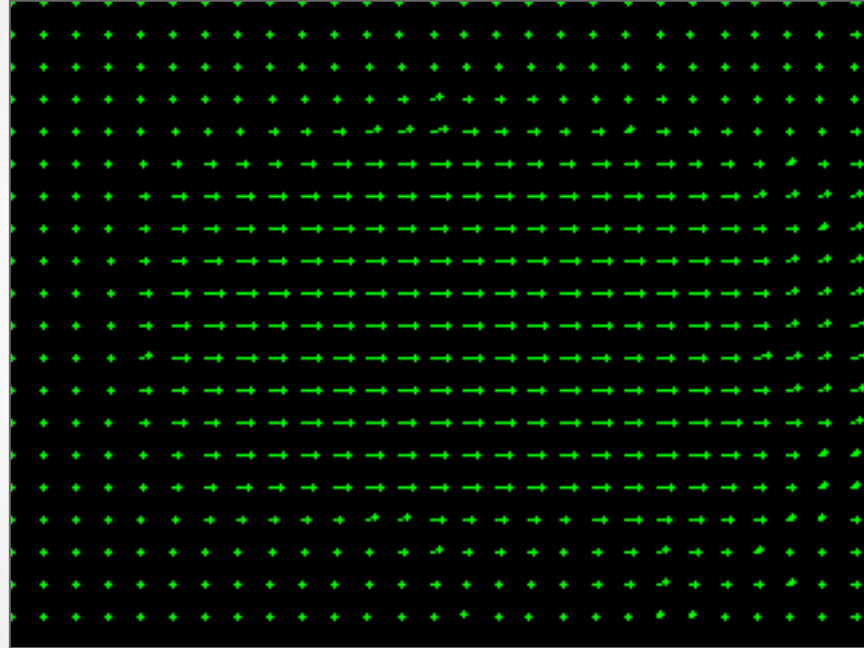
ps4-3-a-2

# 4a: Hierarchical LK



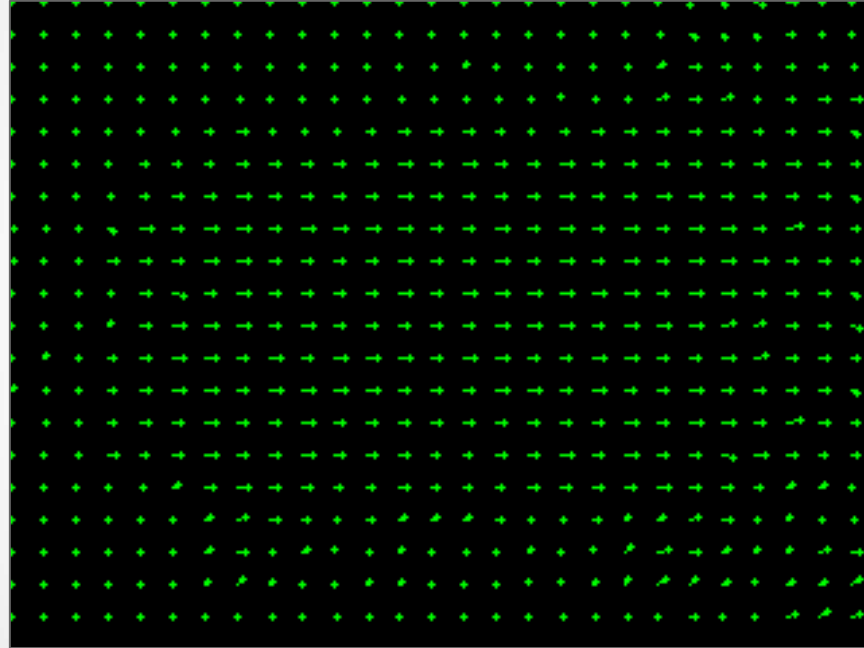
ps4-4-a-1

## 4a: Hierarchical LK (cont.)



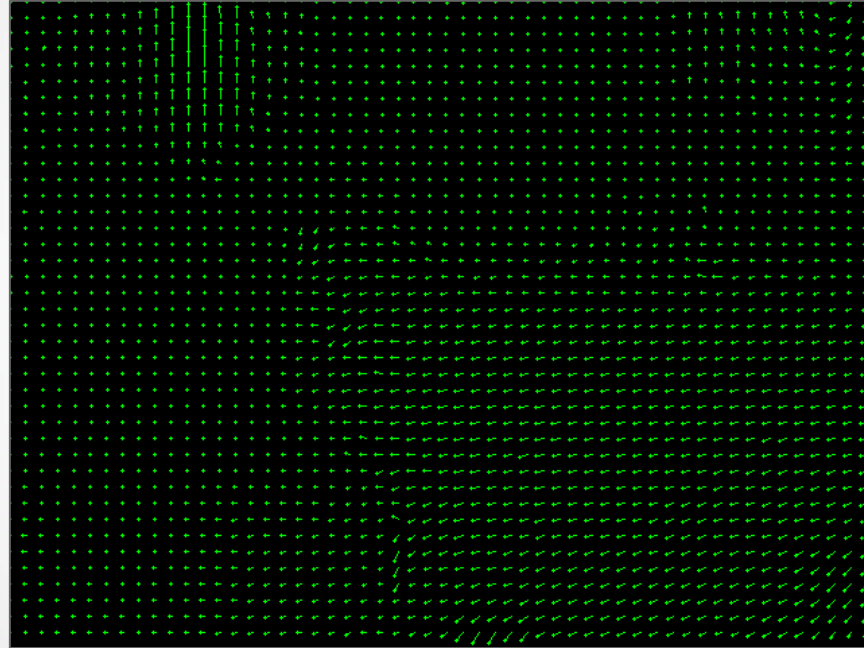
ps4-4-a-2

## 4a: Hierarchical LK (cont.)



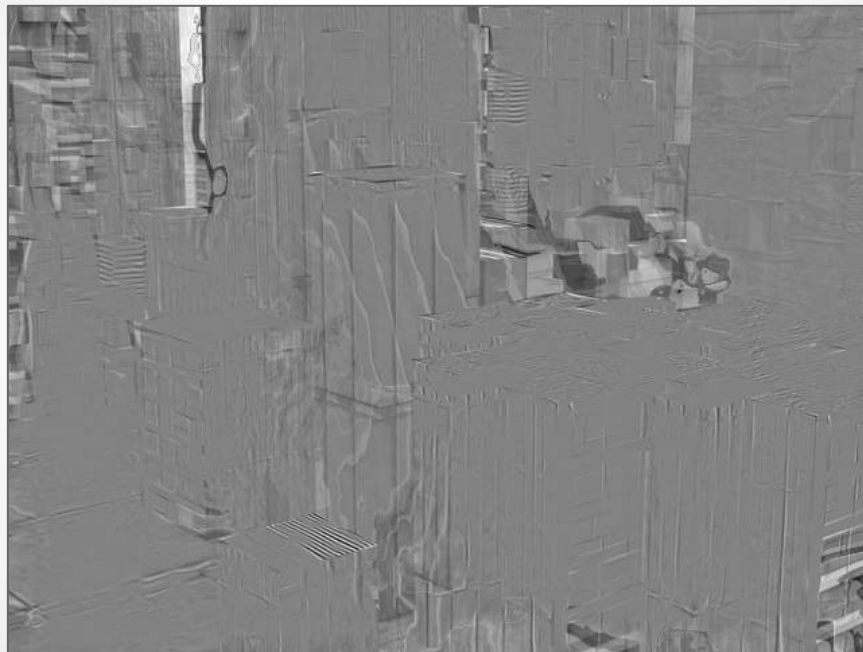
ps4-4-a-3

## 4b: Hierarchical LK (cont.)



ps4-4-b-1

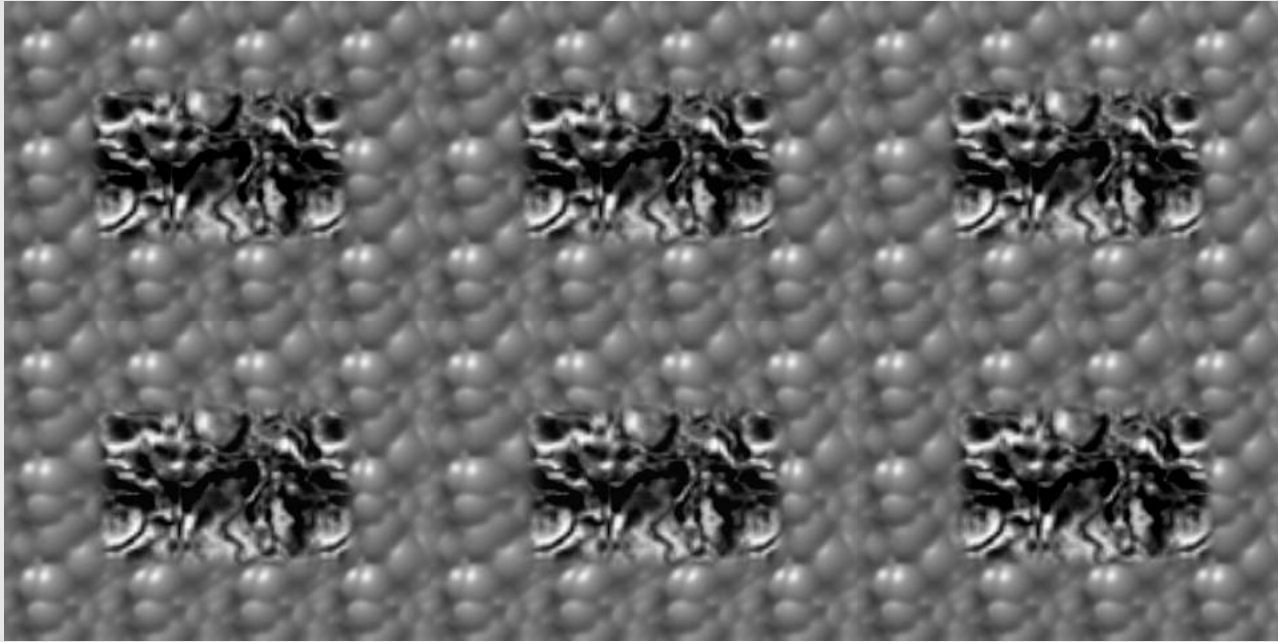
## 4b: Hierarchical LK (cont.)



ps4-4-b-2



# 5a: Frame Interpolation



ps4-5-a-1

## 5b: Frame Interpolation



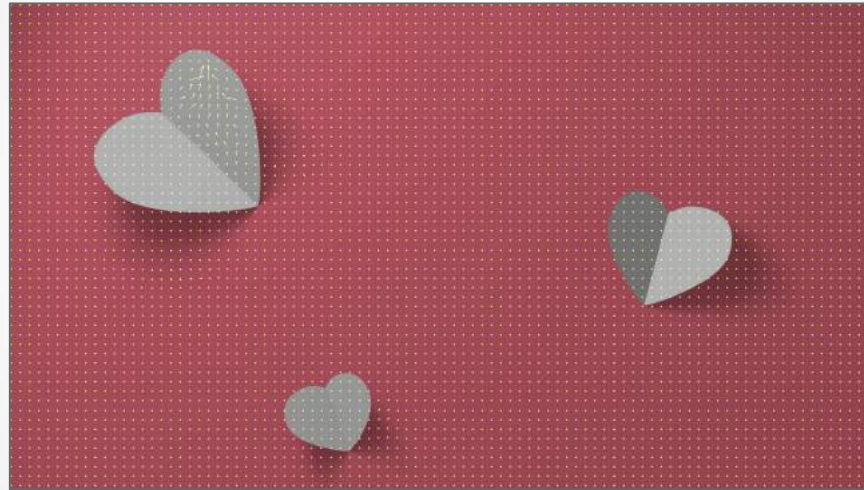
ps4-5-b-1

## 5b: Frame Interpolation



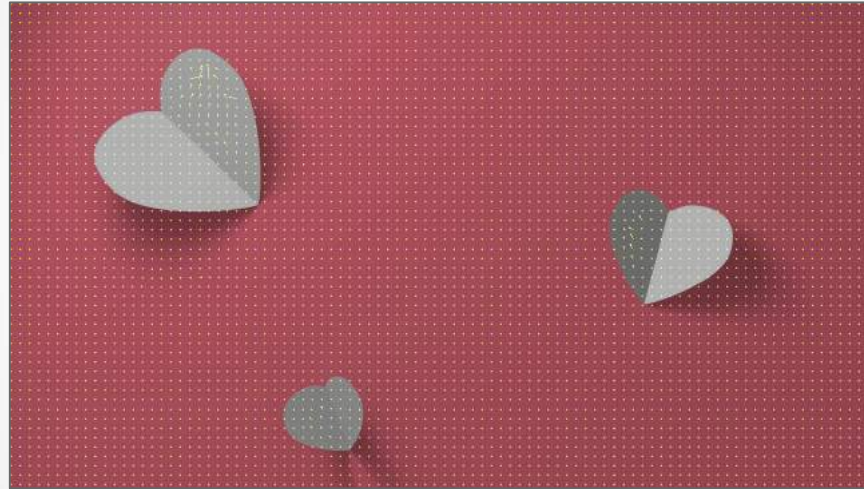
ps4-5-b-2

# 6: Challenge Problem



ps4-6-a-1

## 6: Challenge Problem (cont.)



ps4-6-a-2

# 6: Challenge Problem (cont.)

Video link:

[https://www.dropbox.com/s/w2qhfk7lfzcjmt/ar\\_6-a-ps4-my-video.mp4?dl=0](https://www.dropbox.com/s/w2qhfk7lfzcjmt/ar_6-a-ps4-my-video.mp4?dl=0)

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<https://smallpdf.com/compress-pdf>

Verify that all images are still visible for grading.