

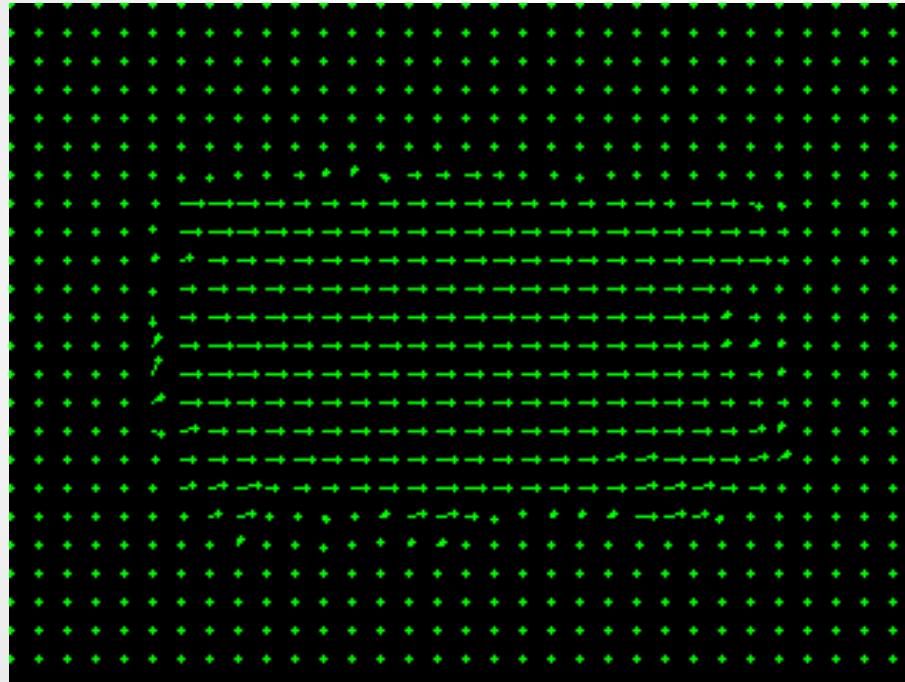
# **Computer Vision**

## **Fall 2018**

# **Problem Set #4**

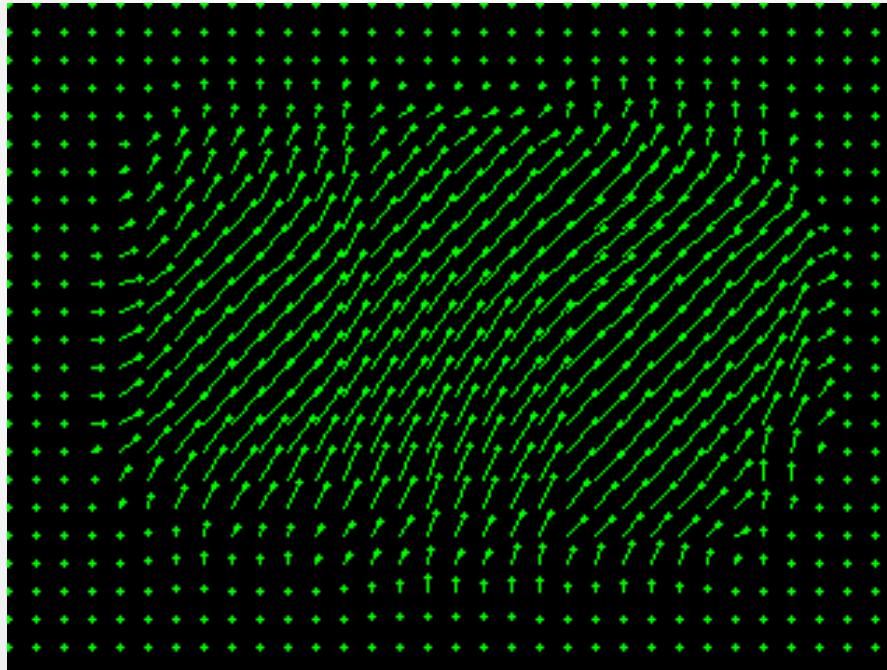
Junle Lu  
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# 1a: Base Shift0 and ShiftR2



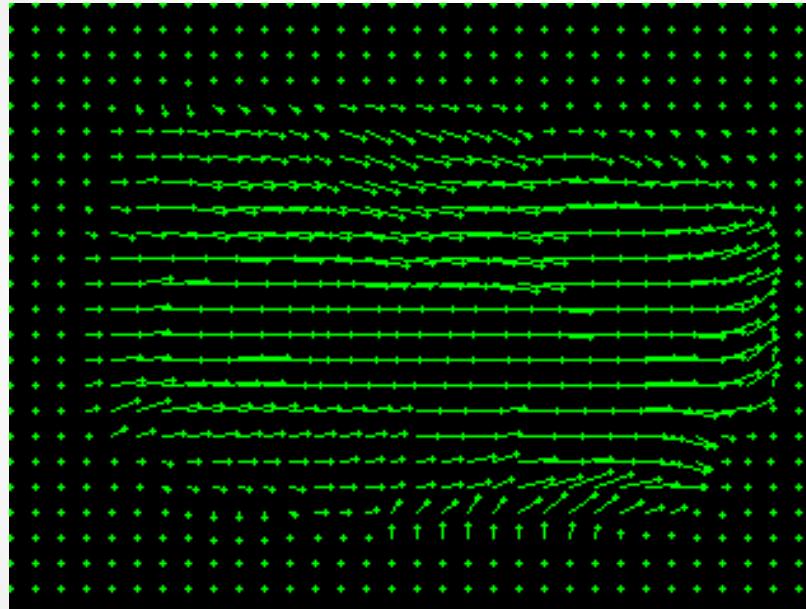
ps4-1-a-1.png

# 1a: Base Shift0 and ShiftR5U5



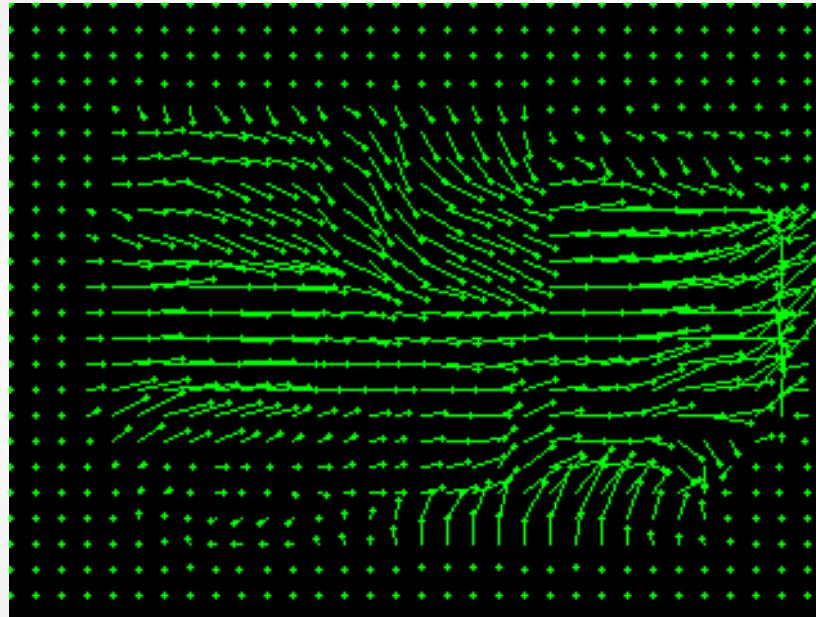
ps4-1-a-2.png

# 1b: Base Shift0 and ShiftR10



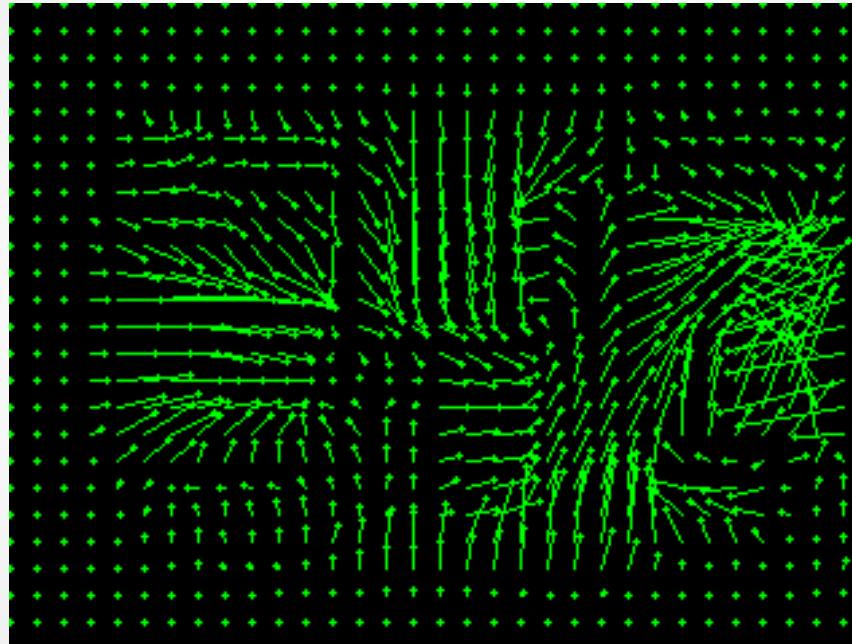
ps4-1-b-1.png

# 1b: Base Shift0 and ShiftR20



ps4-1-b-2.png

# 1b: Base Shift0 and ShiftR40

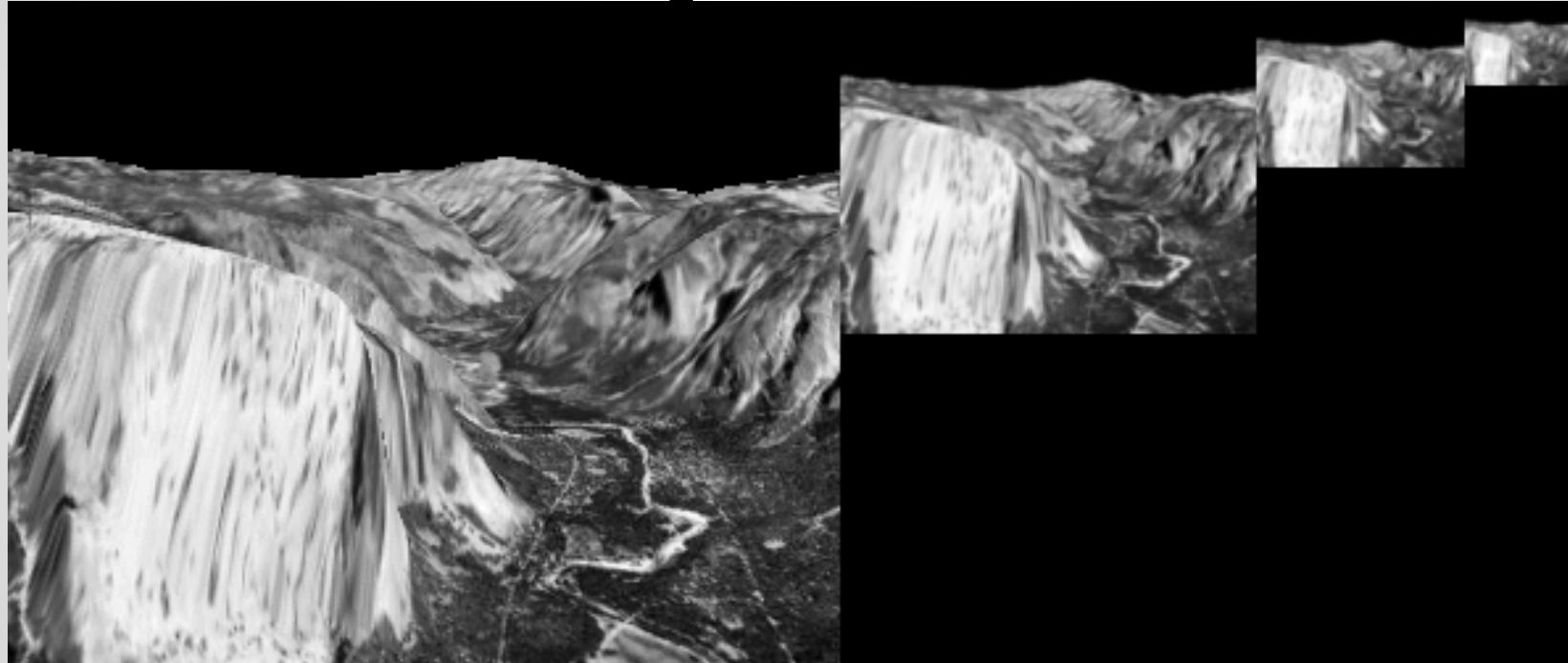


ps4-1-b-3.png

# 1b: Text Response

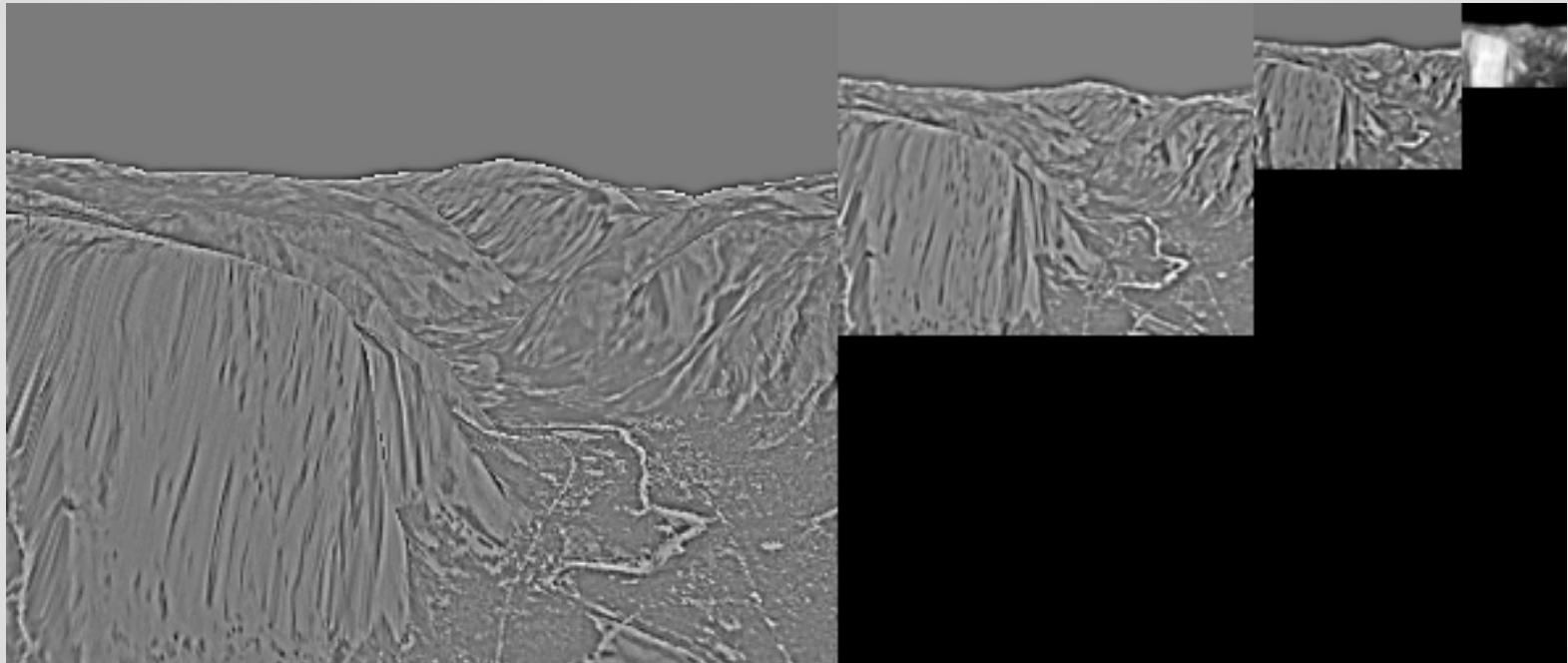
- Does LK still work? Does it fall apart on any of the pairs? Try using different parameters to get results closer to the ones above. Describe your results and what you tried.
- Ans: LK did not work well at first, especially on SHIFTR40. I tried many different ‘ksize’ value for the uniform filter (cv2.blur) to make them to work.

# 2a: Gaussian Pyramid



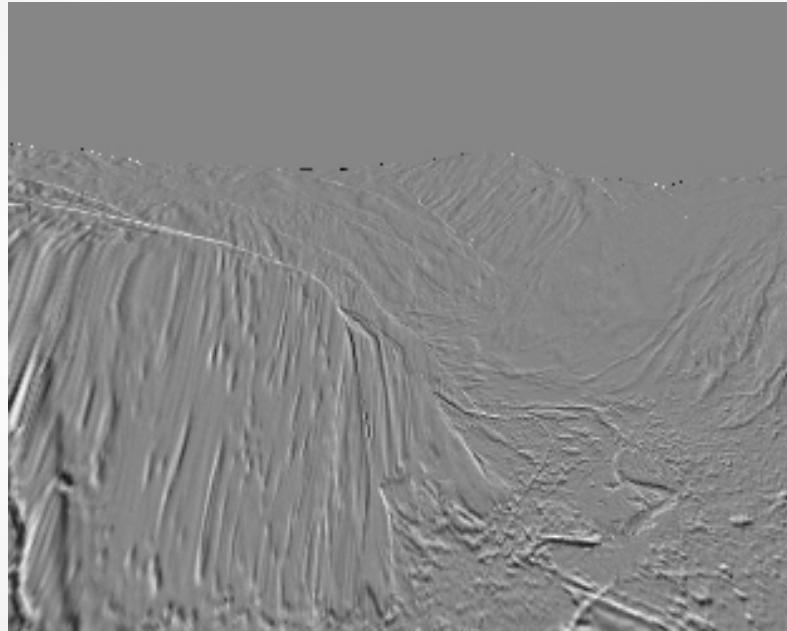
ps4-2-a-1.png

## 2b: Laplacian Pyramid



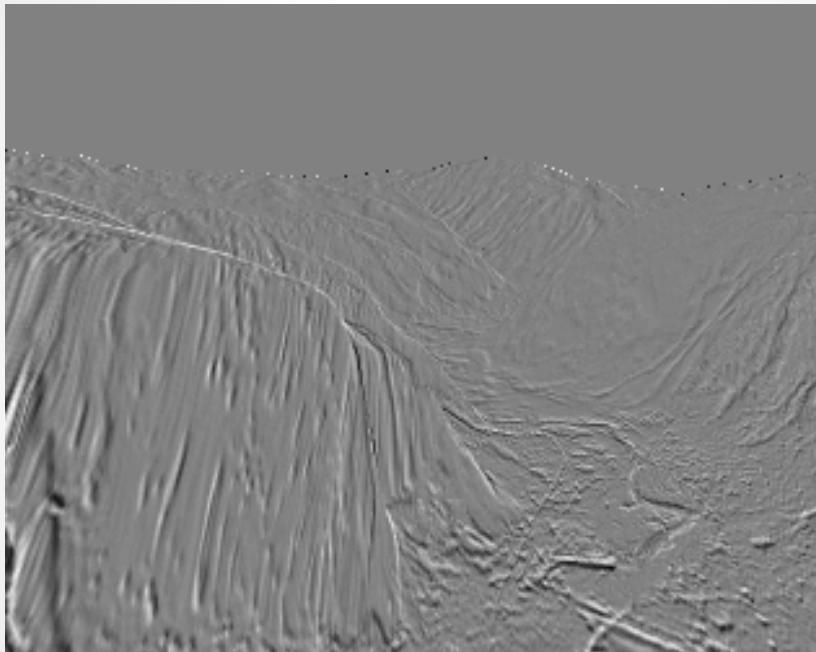
Laplacian Pyramid Image - ps4-2-b-1.png

# 3a: Difference images



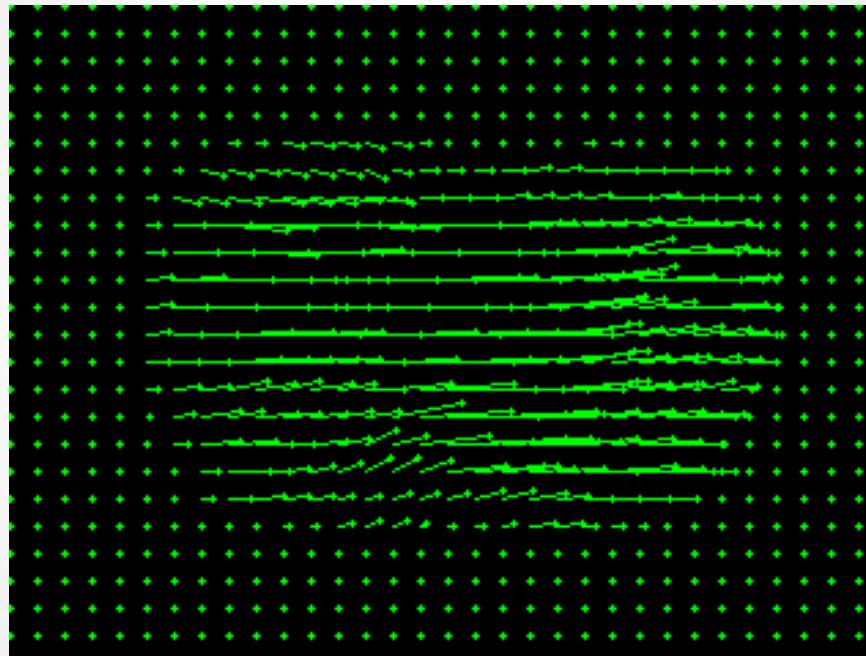
**ps4-3-a-1.png**

# 3a: Difference images (cont.)



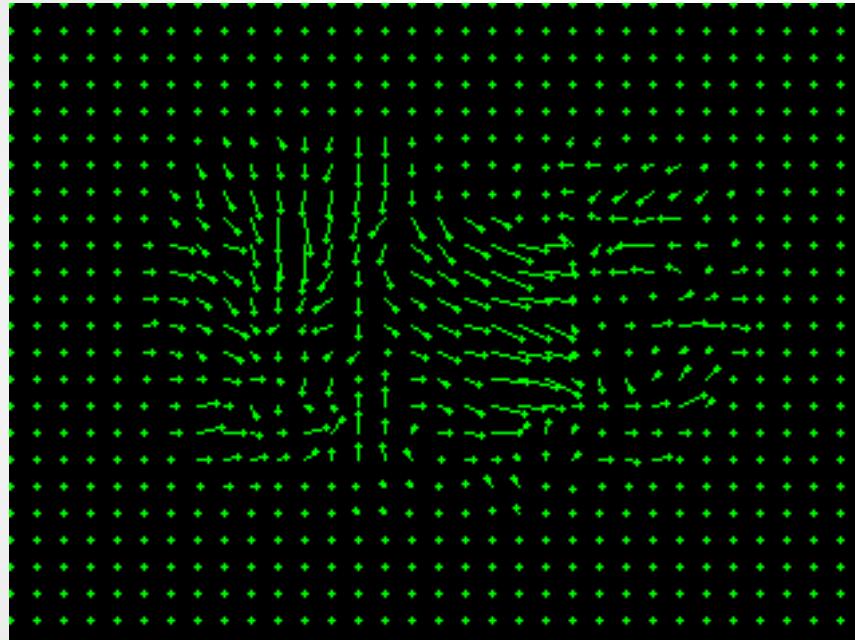
**ps4-3-a-2.png**

# 4a: Hierarchical LK



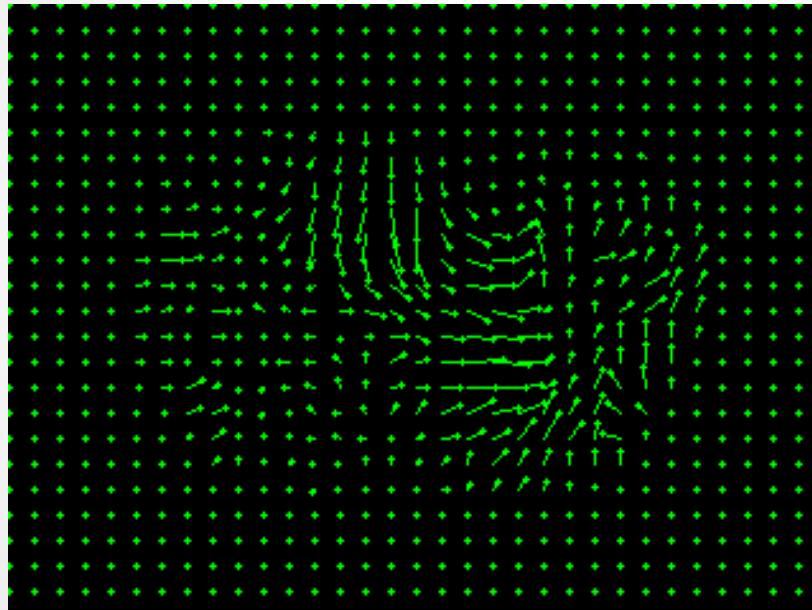
ps4-4-a-1.png

# 4a: Hierarchical LK (cont.)



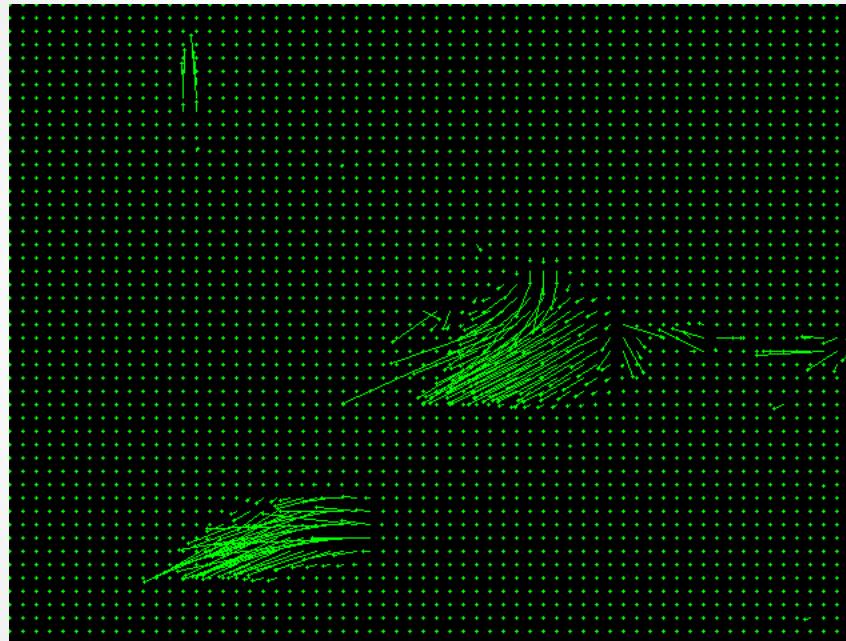
ps4-4-a-2.png

# 4a: Hierarchical LK (cont.)



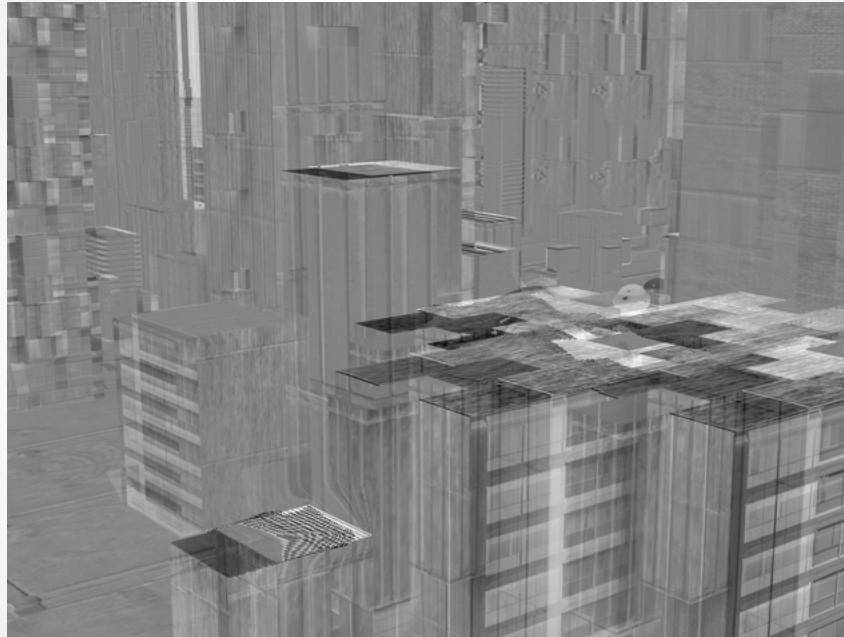
ps4-4-a-3.png

# 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.)

**Video Link**

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