Computer Vision
Fall 2016
Problem Set #6

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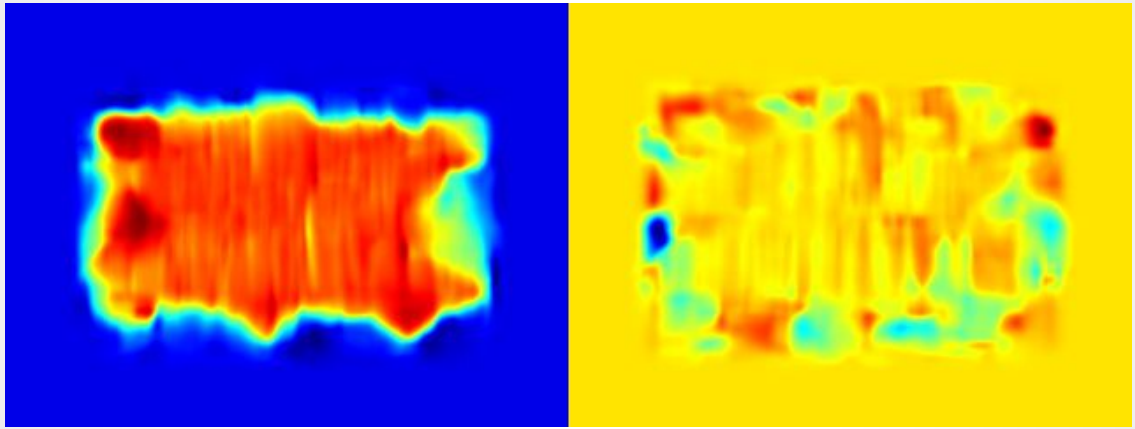
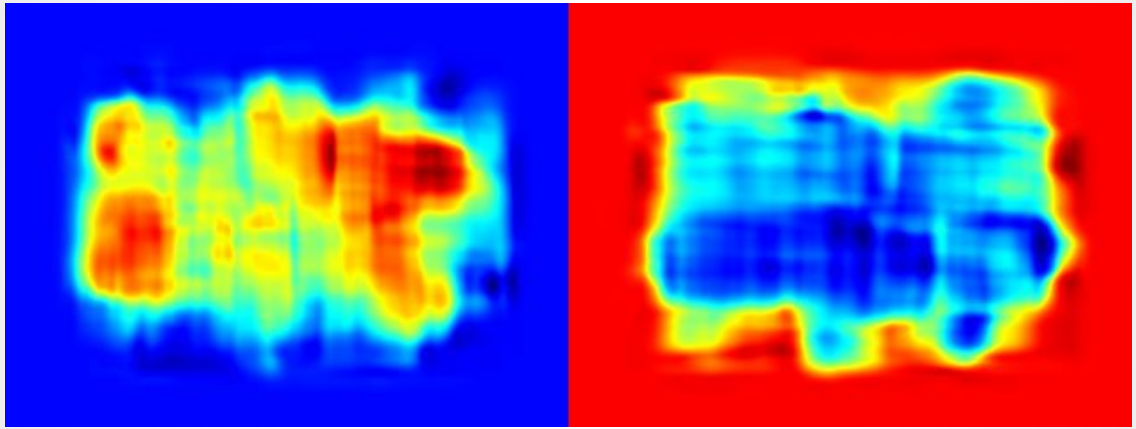
1a: Base Shift0 and ShiftR2



Base Shift0 and ShiftR2 pair image - **ps6-1-a-1.png**

1a: Base Shift0 and ShiftR5U5 (cont.)

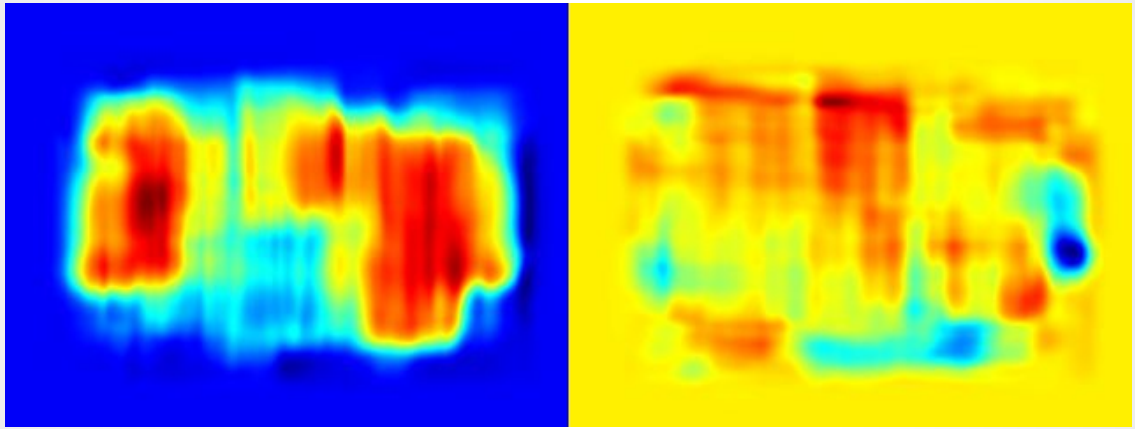


Base Shift0 and ShiftR5U5 pair image **- ps6-1-a-2.png**

1a: Text Response (cont.)

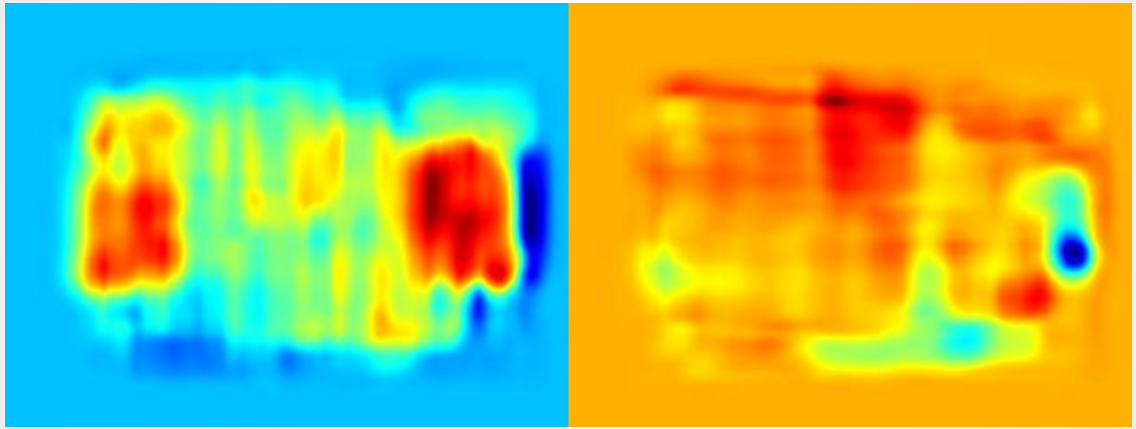
- Describe your results. Did you blur the images? If so, by how much?
  - Since the shift is relatively small, the method optic_flow_LK is able to detect the movement.
  - I blurred the Shift0, ShiftR2, and ShiftR5U5 with 25x25 uniform kernel

1b: Base Shift0 and ShiftR10



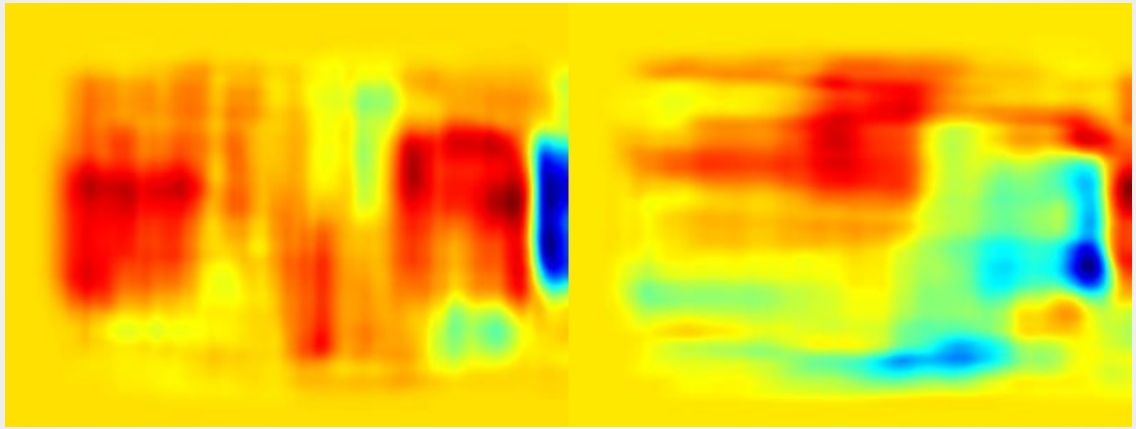
Base Shift0 and ShiftR10 pair image **- ps6-1-b-1.png**

1b: Base Shift0 and ShiftR20 (cont.)



Base Shift0 and ShiftR20 pair image - **ps6-1-b-2.png**

1b: Base Shift0 and ShiftR40 (cont.)

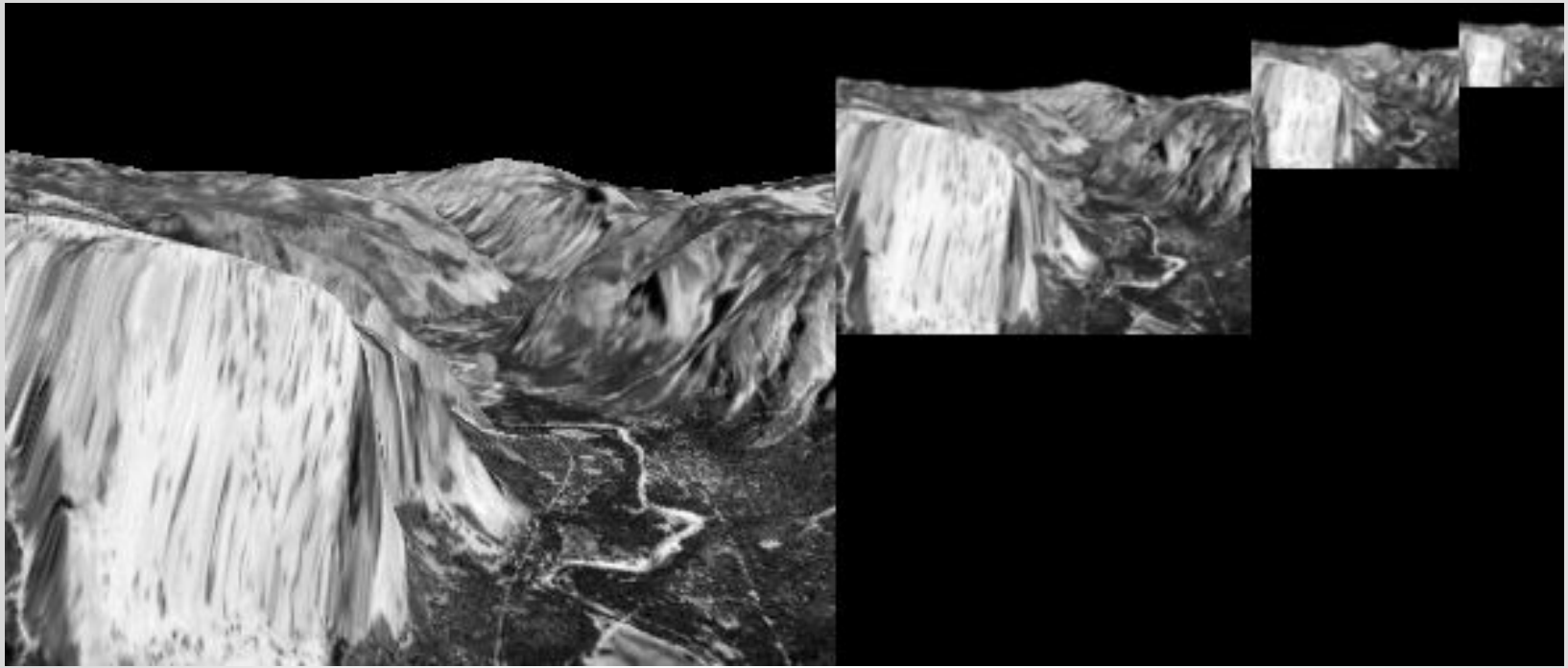


Base Shift0 and ShiftR40 pair image **- ps6-1-b-3.png**

1b: Text Response (cont.)

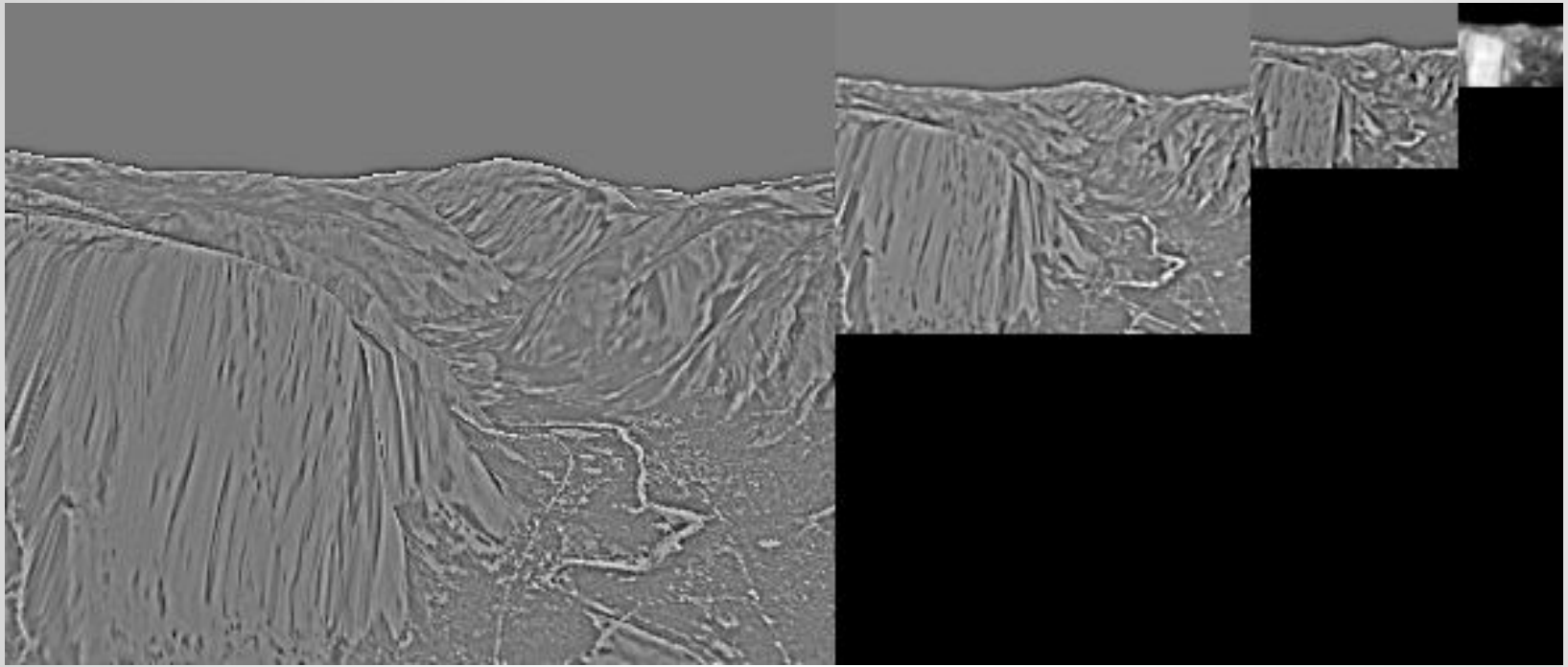
- Describe your results. Using the same amount of blurring in 1a, did this still work? Do your results fall apart on any of the pairs?
  - Using the same amount of blurring in 1a did not work. I tried to use different blurring and it still didn’t work. I suspect this is because the distance is too far and the optic_flow_LK failed.

2a: Gaussian Pyramid



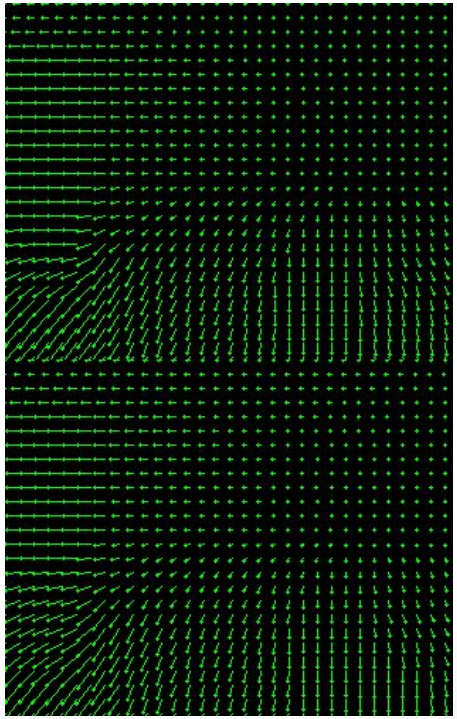
Gaussian Pyramid Image **- ps6-2-a-1.png**

2b: Laplacian Pyramid



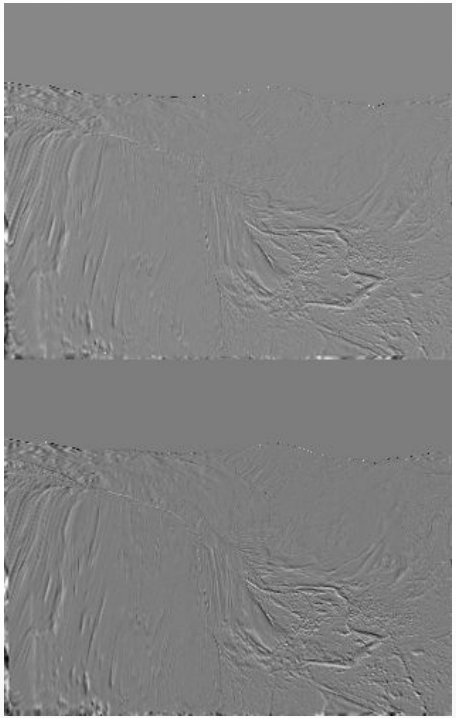
Laplacian Pyramid Image **- ps6-2-b-1.png**

3a: DataSeq1 displacements



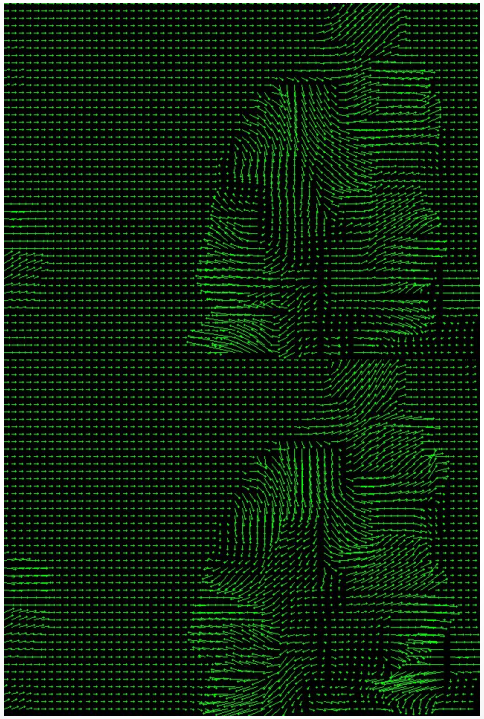
DataSeq1 displacement image **- ps6-3-a-1.png**

3a: DataSeq1 Difference (cont.)



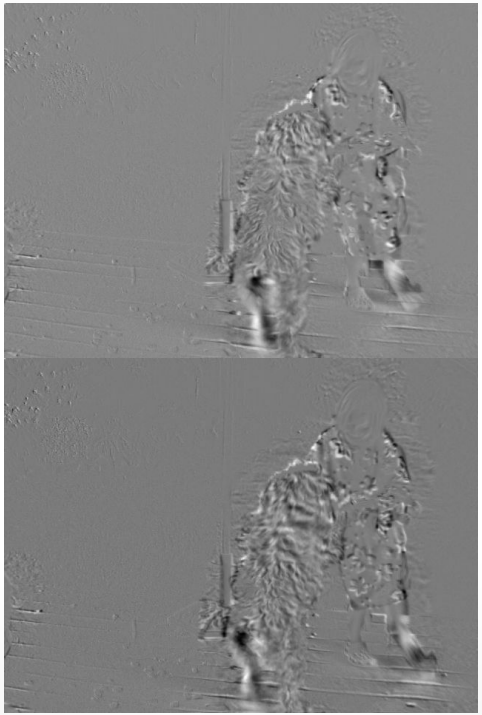
DataSeq1 difference image **- ps6-3-a-2.png**

3a: DataSeq2 displacements (cont.)



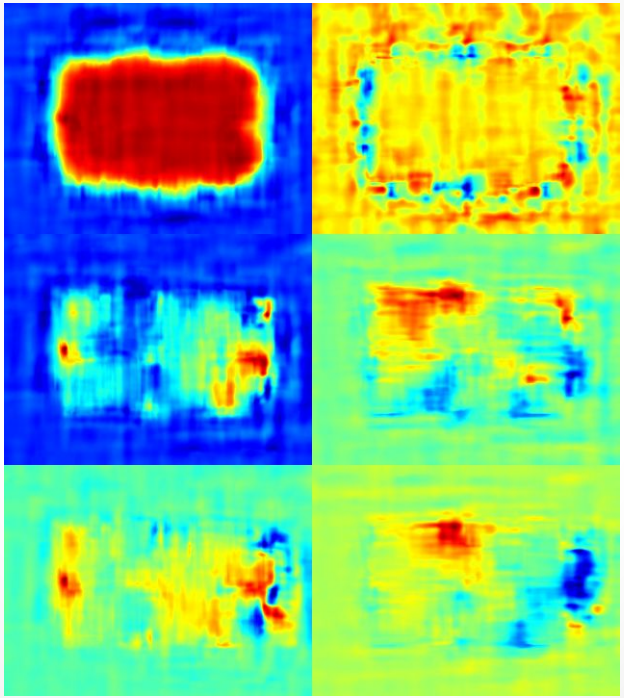
DataSeq2 displacement image **- ps6-3-a-3.png**

3a: DataSeq2 Difference (cont.)



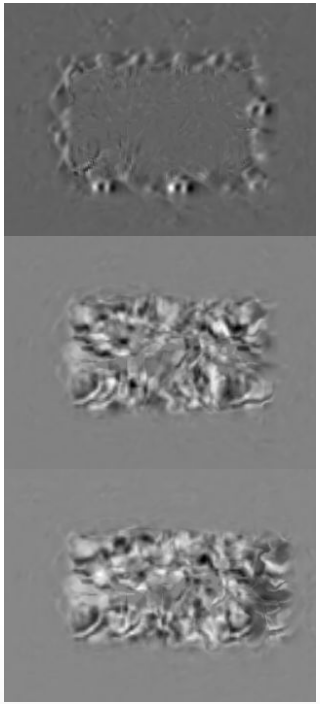
DataSeq2 difference image **- ps6-3-a-4.png**

4a: TestSeq displacements



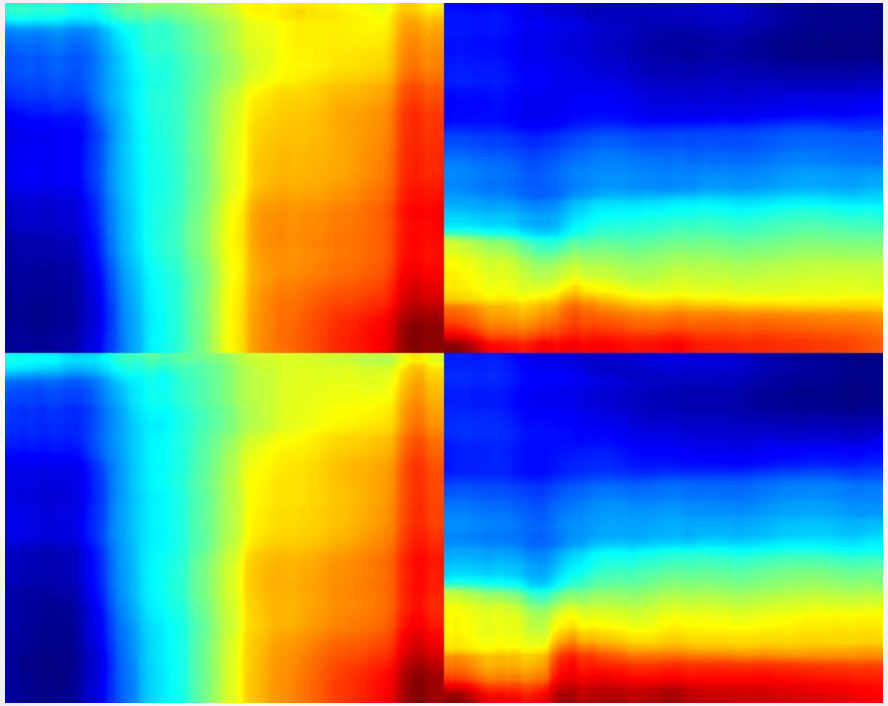
TestSeq displacement image **- ps6-4-a-1.png**

4a: TestSeq difference (cont.)



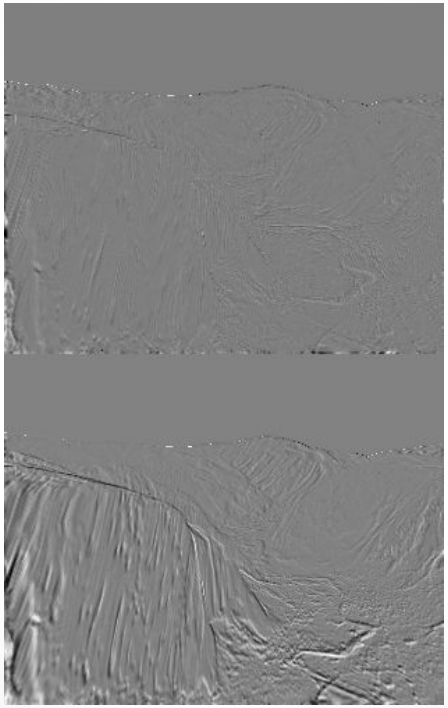
TestSeq1 difference image **- ps6-4-a-2.png**

4b: DataSeq1 displacements



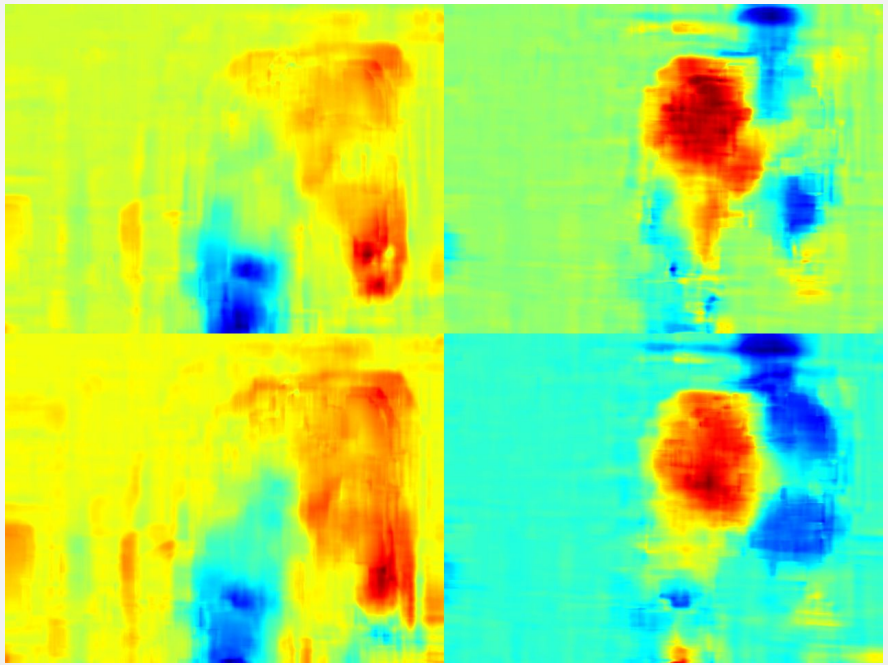
DataSeq1 displacement image **- ps6-4-b-1.png**

4b: DataSeq1 difference (cont.)



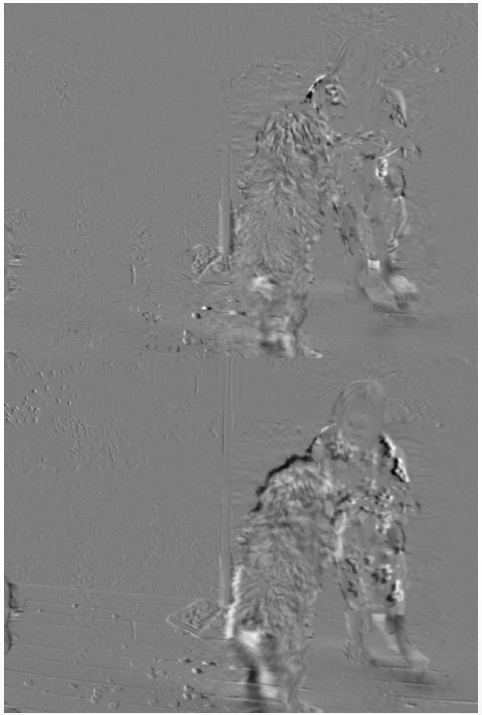
DataSeq1 difference image **- ps6-4-b-2.png**

4c: DataSeq2 displacements



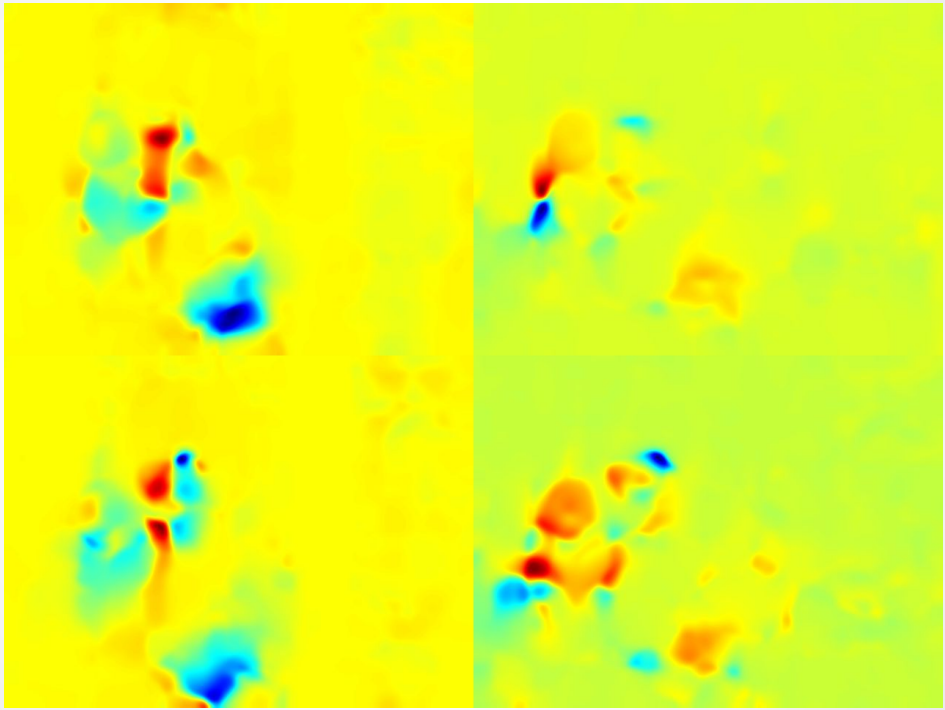
DataSeq2 displacement image **- ps6-4-c-1.png**

4c: DataSeq2 difference (cont.)



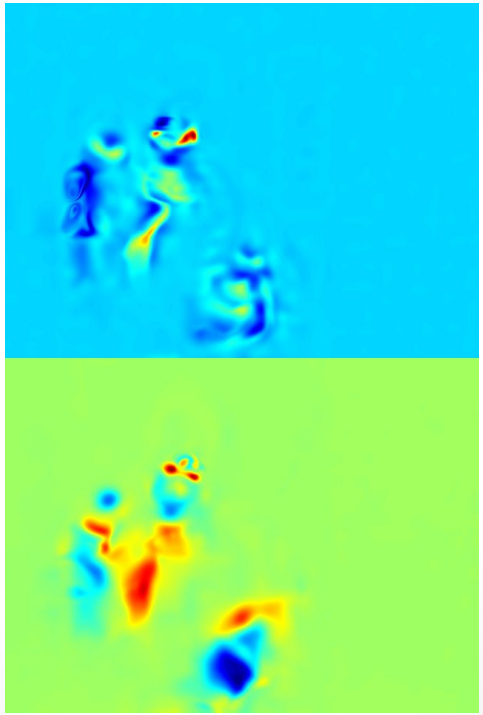
DataSeq2 difference image **- ps6-4-c-2.png**

5a: Juggle displacement CHALLENGE



Juggle displacement image - **ps6-5-a-1.png**

5a: Juggle Difference (cont.)



Juggle difference image **- ps6-5-a-2.png**

5a: Text response (cont.)

- Describe your results. What did you do to get these results?
  - The results showed that the balls and hands were moving farthest distance. Although the shirt did not move as much, there was a shadow reflection of the ball. I tried to execute hierarchical_LK on each of the RGB channel and then average them together but it did not help.
  - For this result, I blurred the original image by 25x25 gaussian kernel.