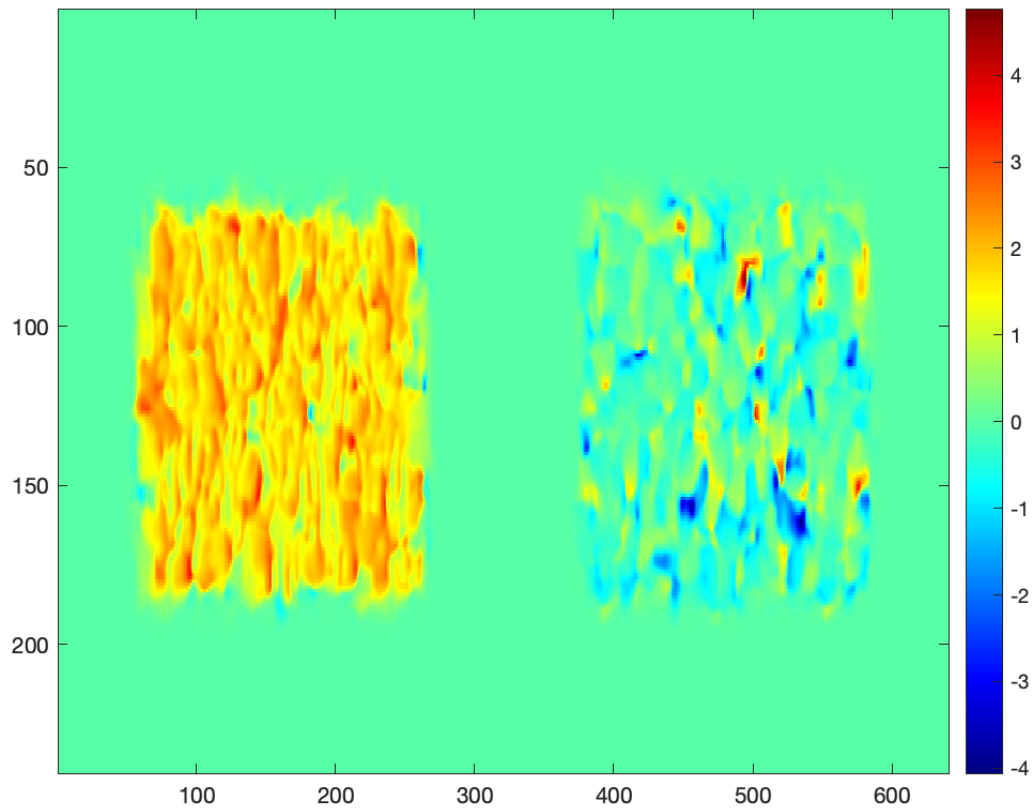
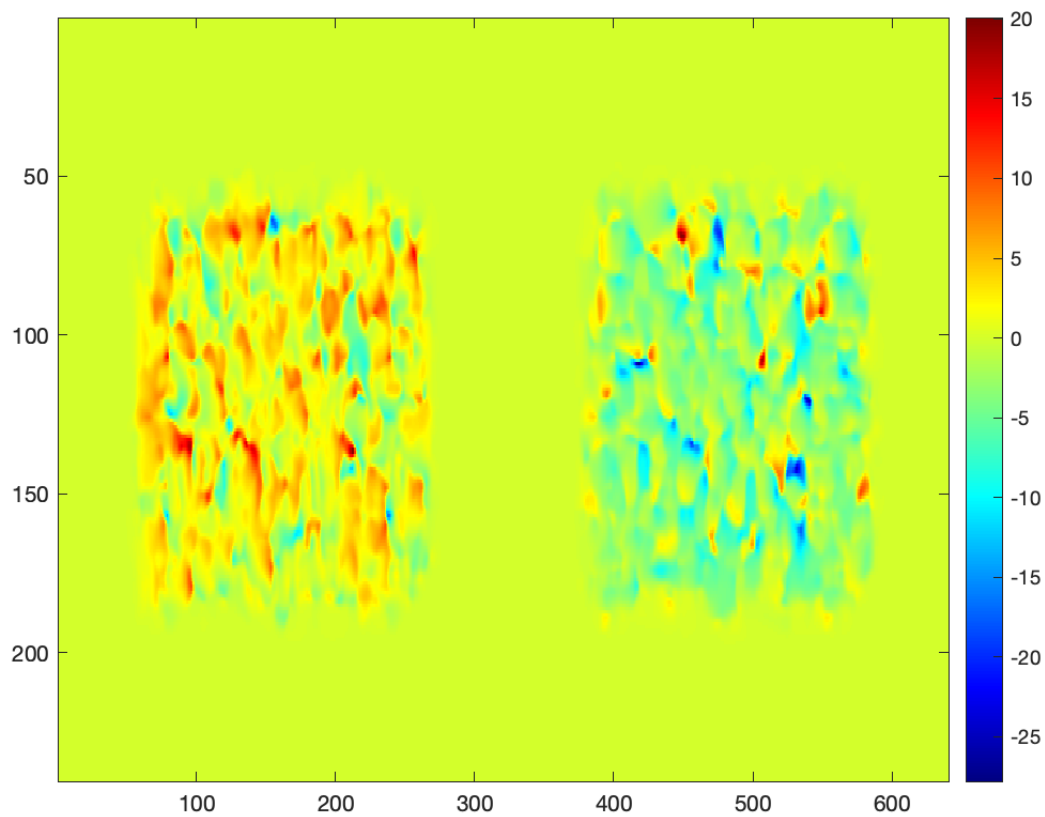


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Problem Set #6 - ECE1390



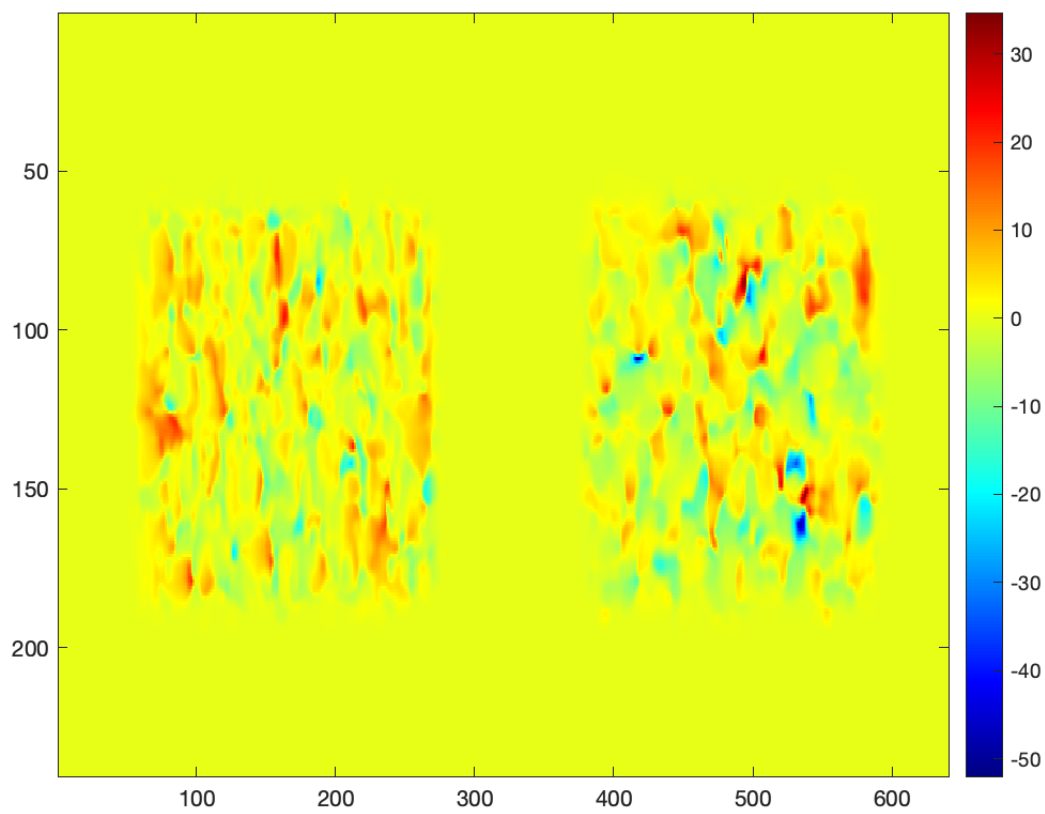
ps6-1-a-1.png



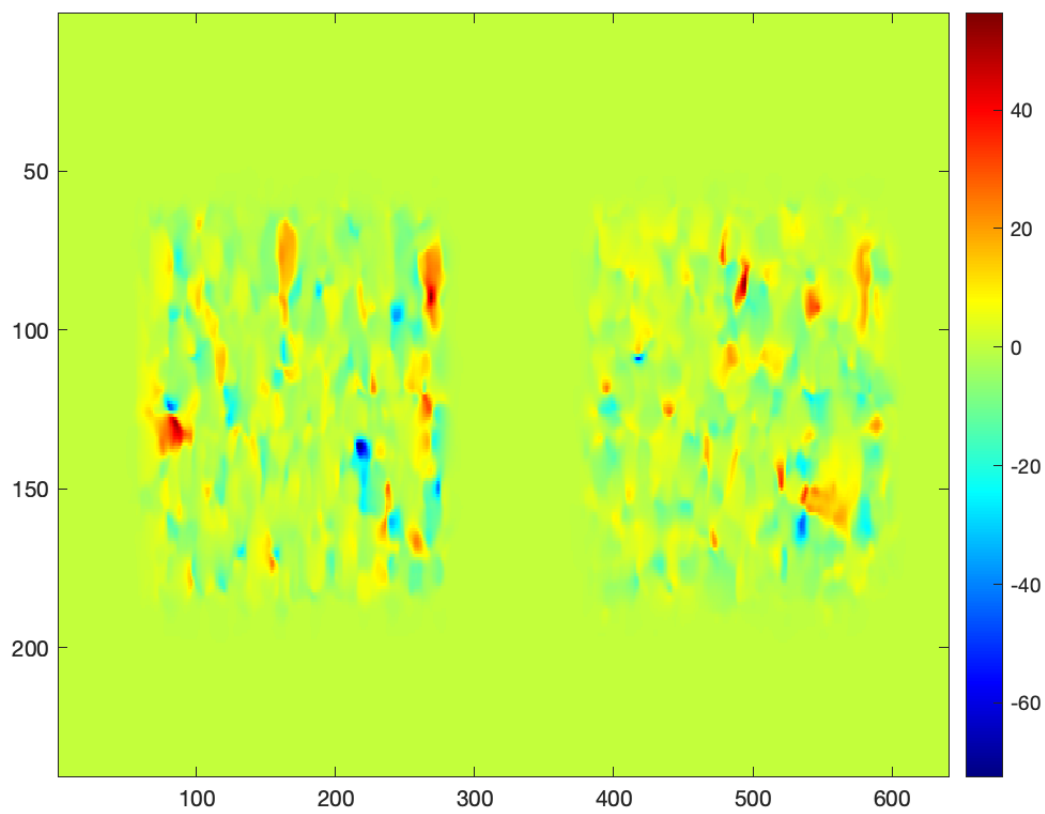
ps6-1-a-2.png

Gaussian Blur: $\sigma = 3$

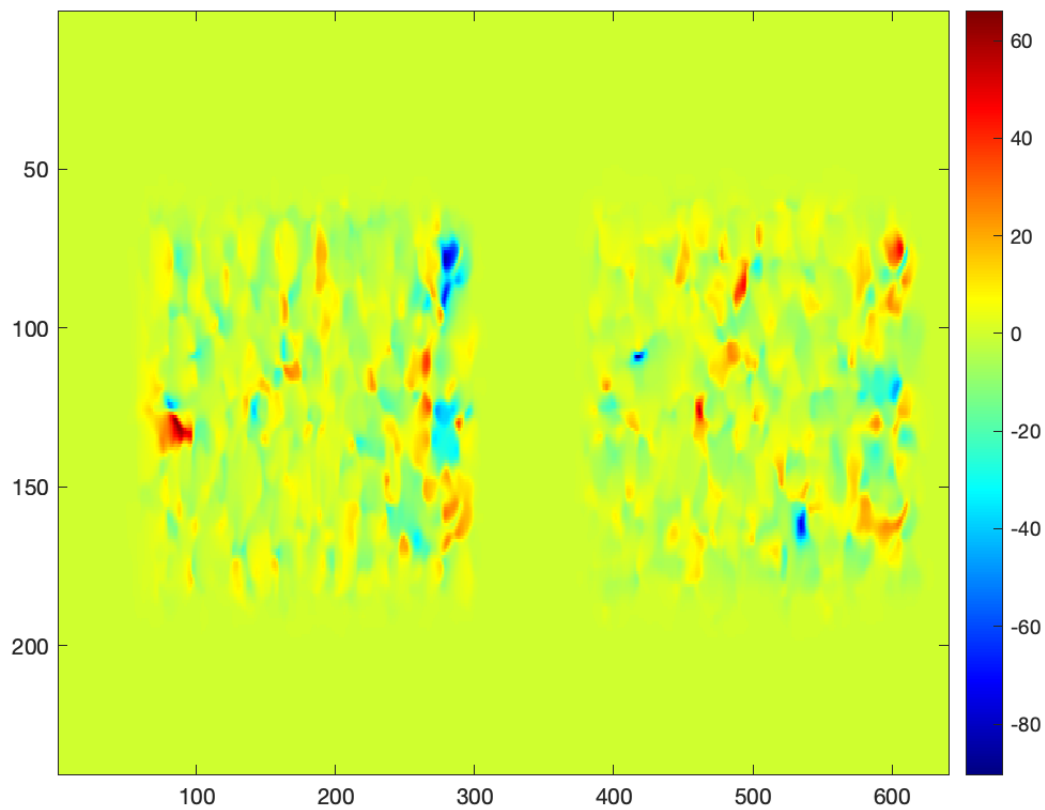
Based on my results, this begins to prove that large shifts do not work well with single-level Lucas-Kanade algorithms. For a 2-pixel shift, it was fairly accurate, about 85% by visual estimate. With a 5-pixel shift up and 5-pixel shift right, there is approximately 60% accuracy because the shift is much larger. This serves as a decent proof of concept for the Lucas-Kanade algorithm.



ps6-1-b-1.png

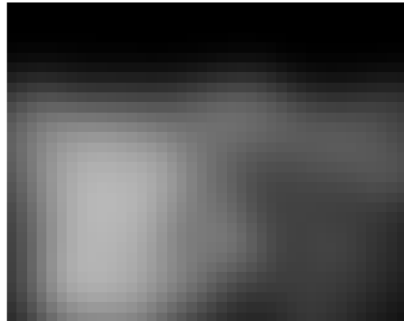
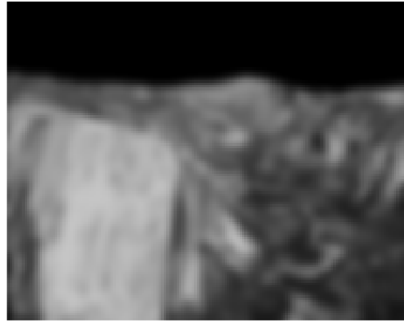
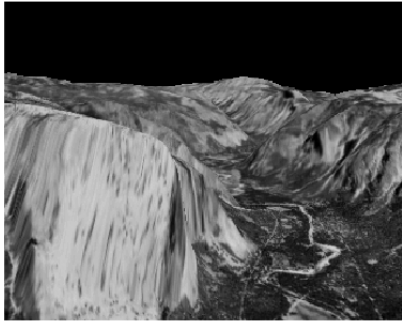


ps6-1-b-2.png

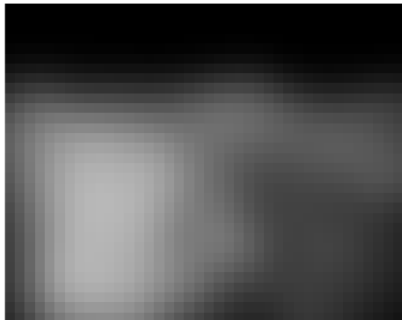


ps6-1-b-3.png

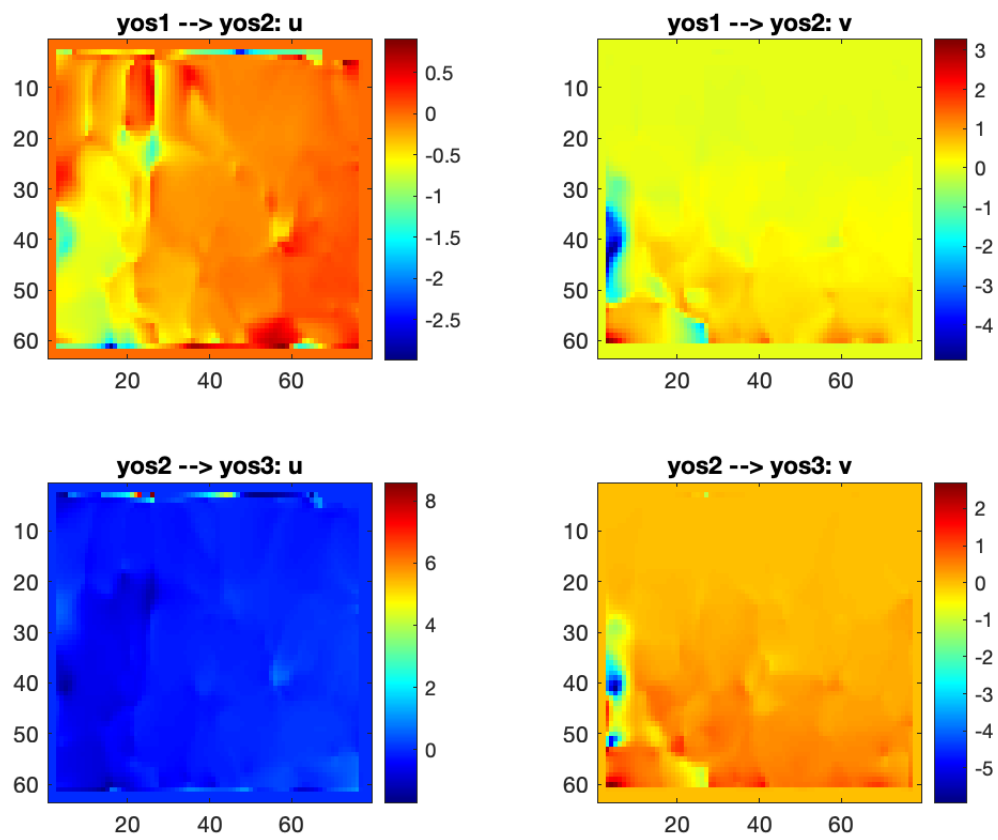
My results become less and less accurate as the shift gets larger. For the shift of 10-pixels, some parts of the displacement image are correct. A shift of 20 has many more inaccuracies, including some displacements estimated to be in the wrong direction. A shift of 40 has almost no accurate displacements, and many are estimated to be nearly 0. This proves the need for a hierarchical algorithm.



ps6-2-a-1.png



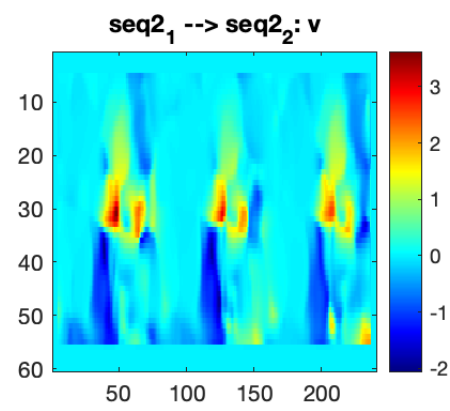
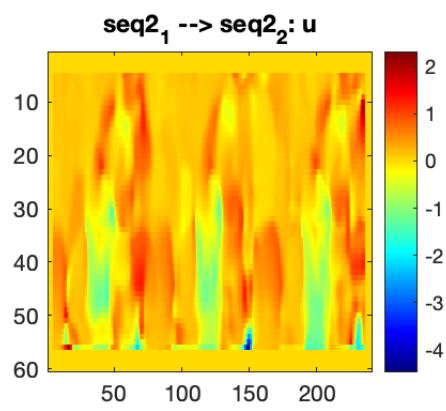
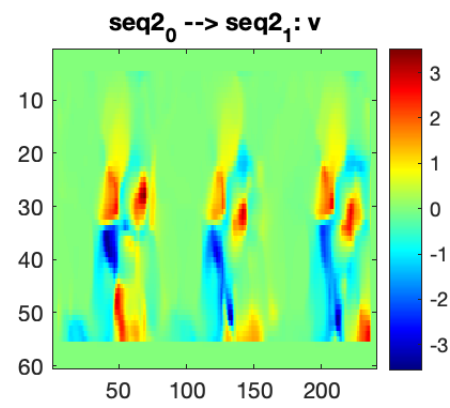
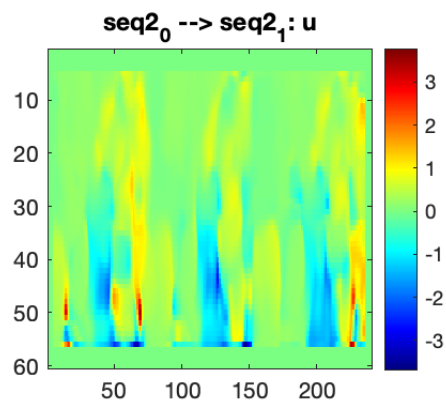
ps6-2-b-1.png



ps6-3-a-1.png



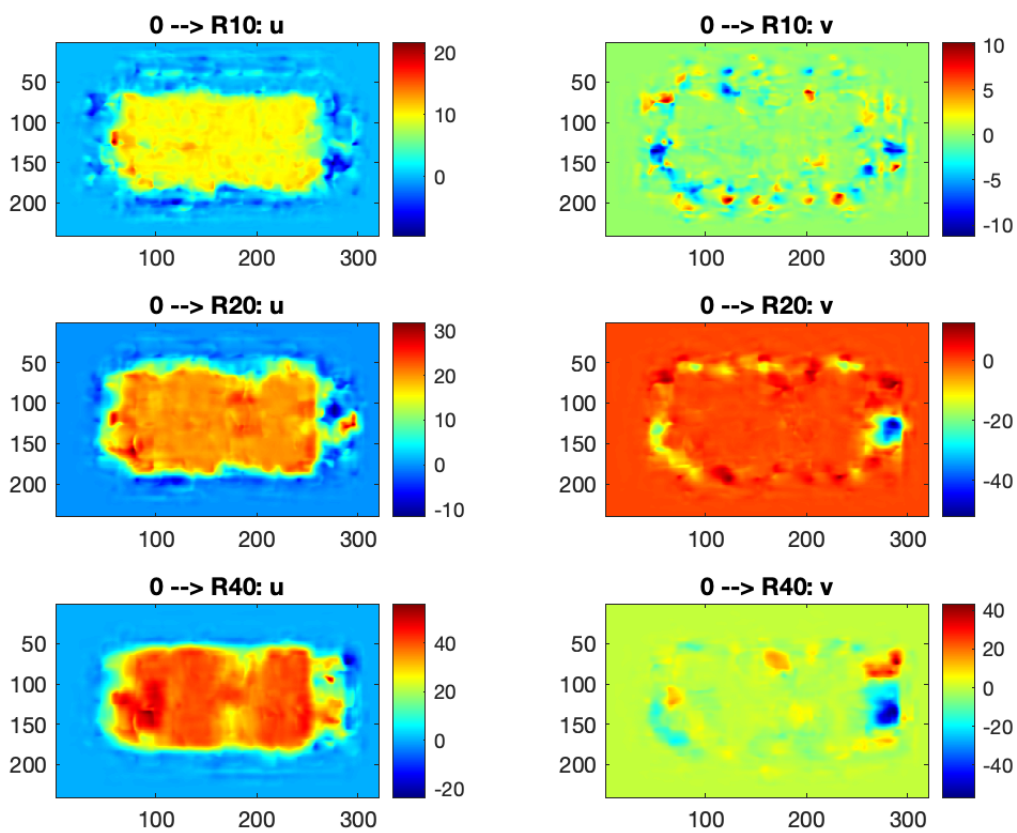
ps6-3-a-2.png



ps6-3-a-3.png



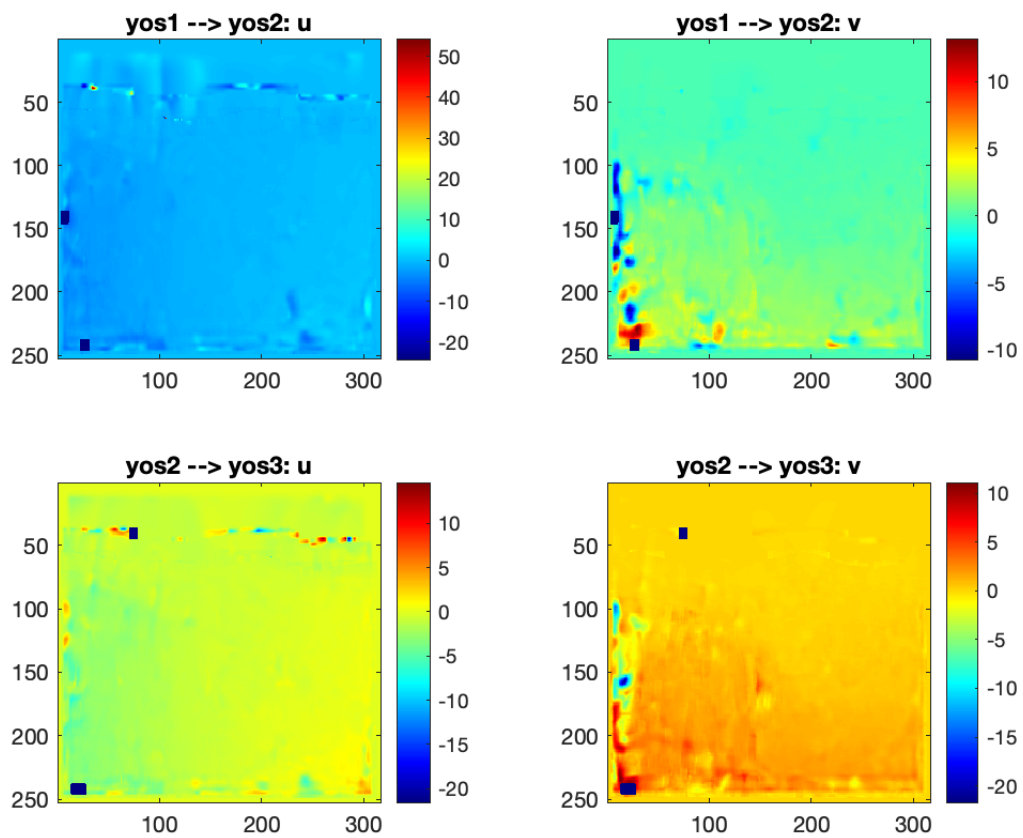
ps6-3-a-4.png



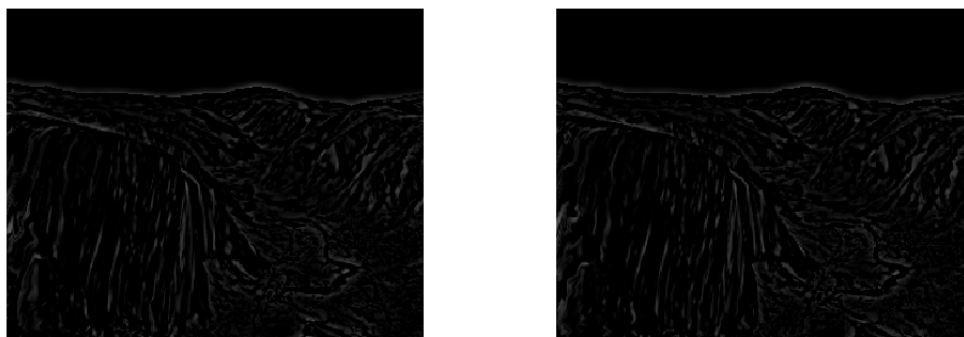
ps6-4-a-1.png



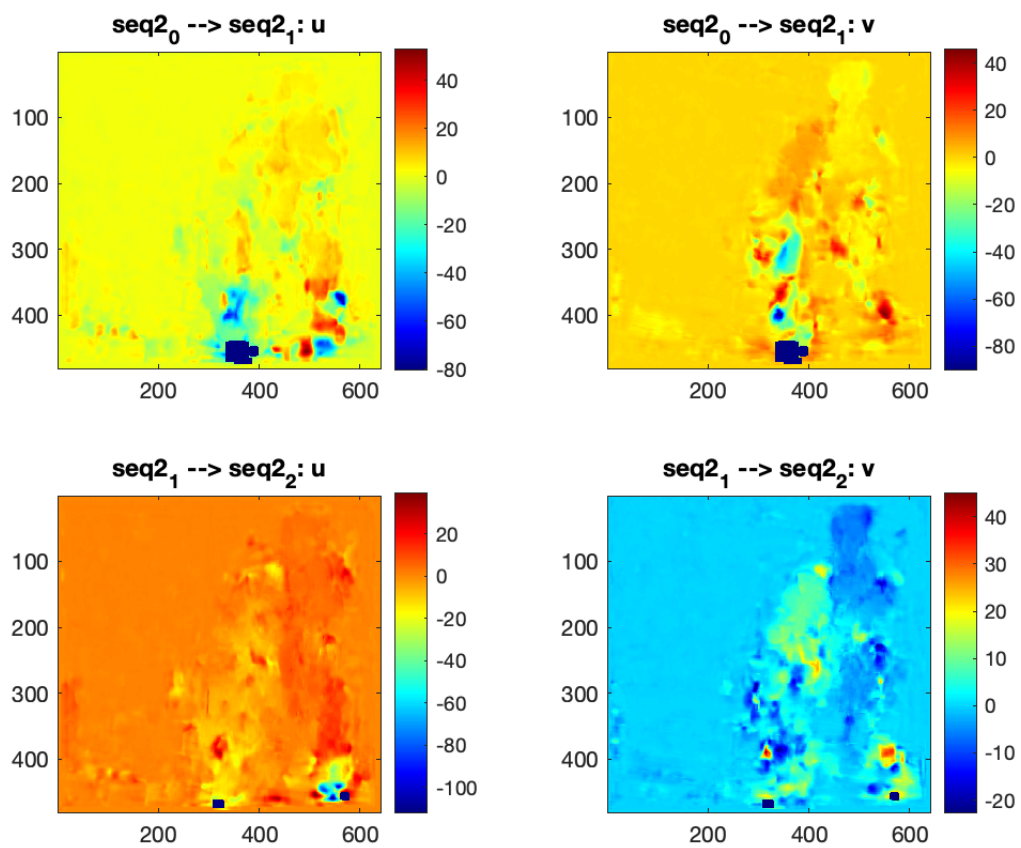
ps6-4-a-2.png



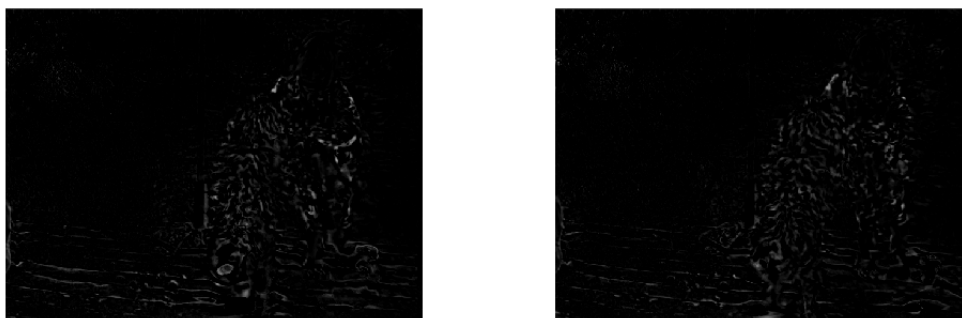
ps6-4-b-1.png



ps6-4-b-2.png



ps6-4-c-1.png



ps6-4-c-2.png