

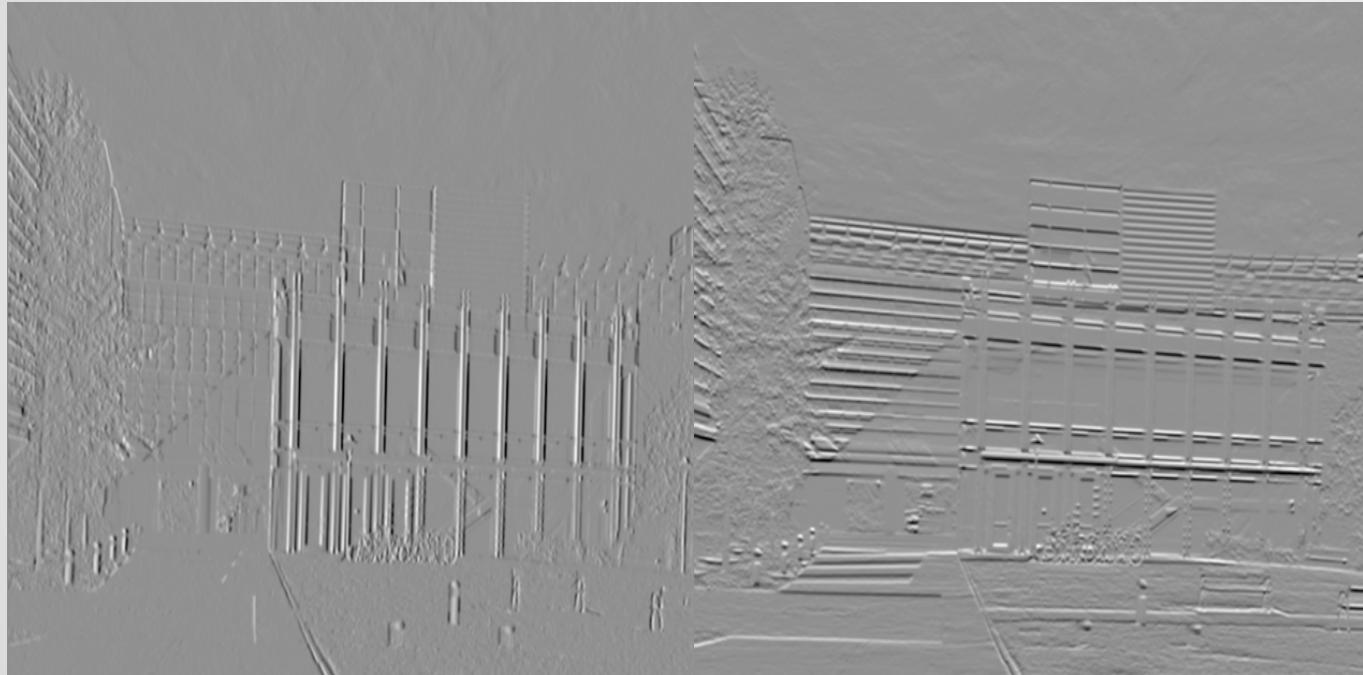
Computer Vision

Fall 2016

Problem Set #5

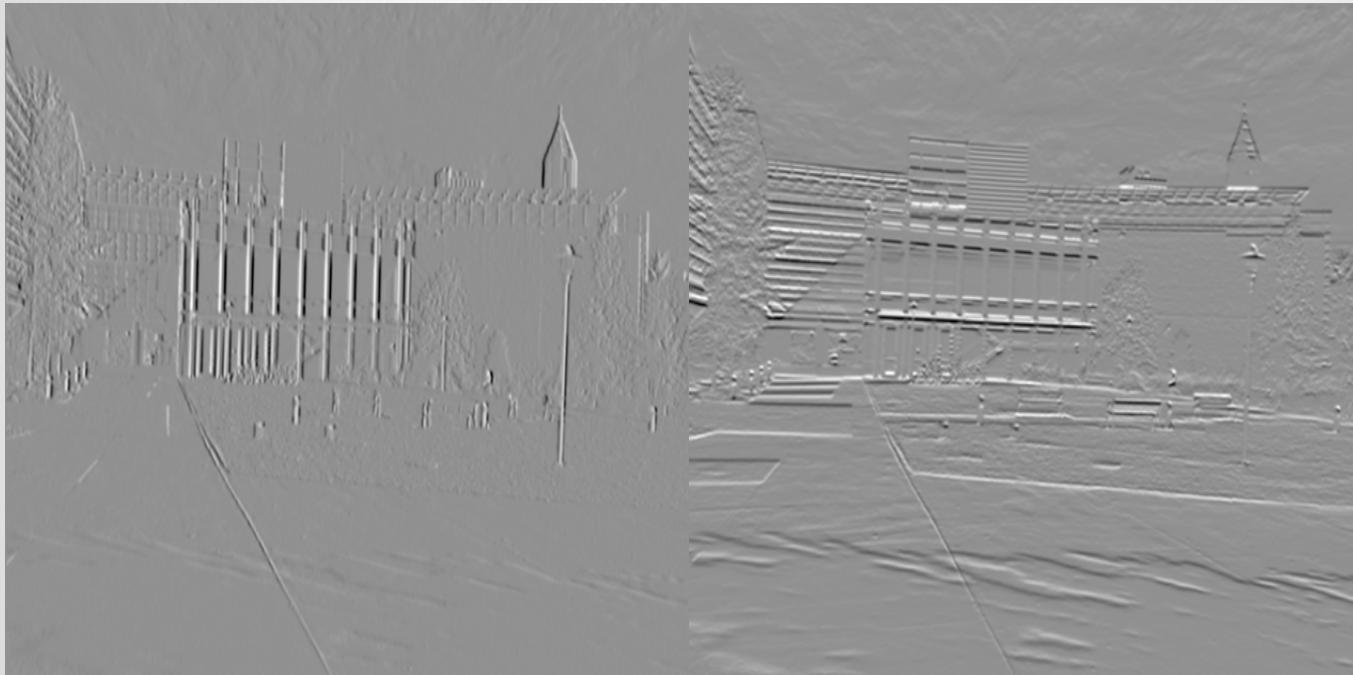
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1a: Gradient Pair of transA



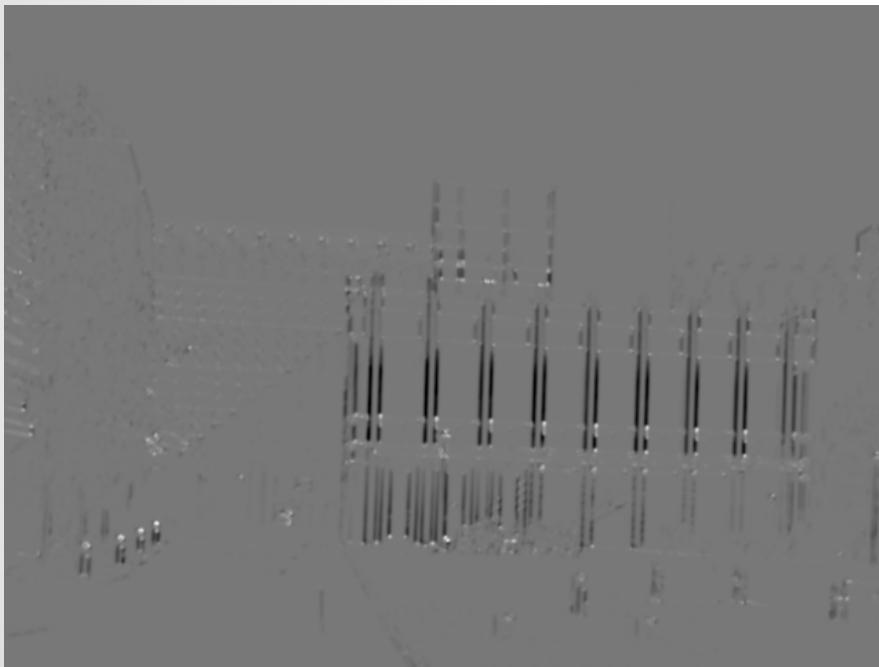
transA gradient-pair image - **ps5-1-a-1.png**

1a: Gradient Pair of simA



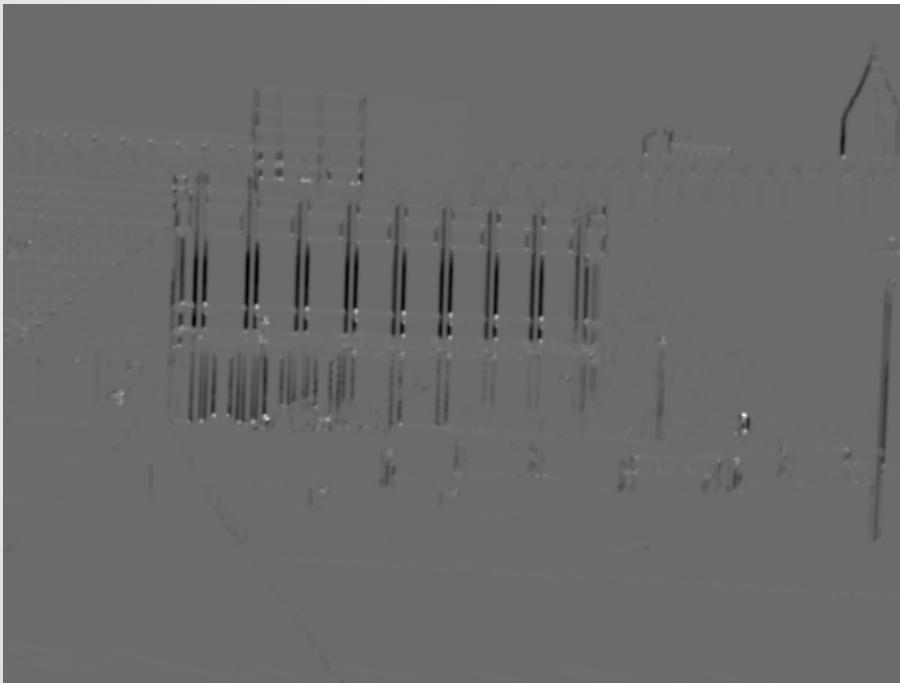
simA gradient-pair image - **ps5-1-a-2.png**

1b: Harris Response Image (transA)



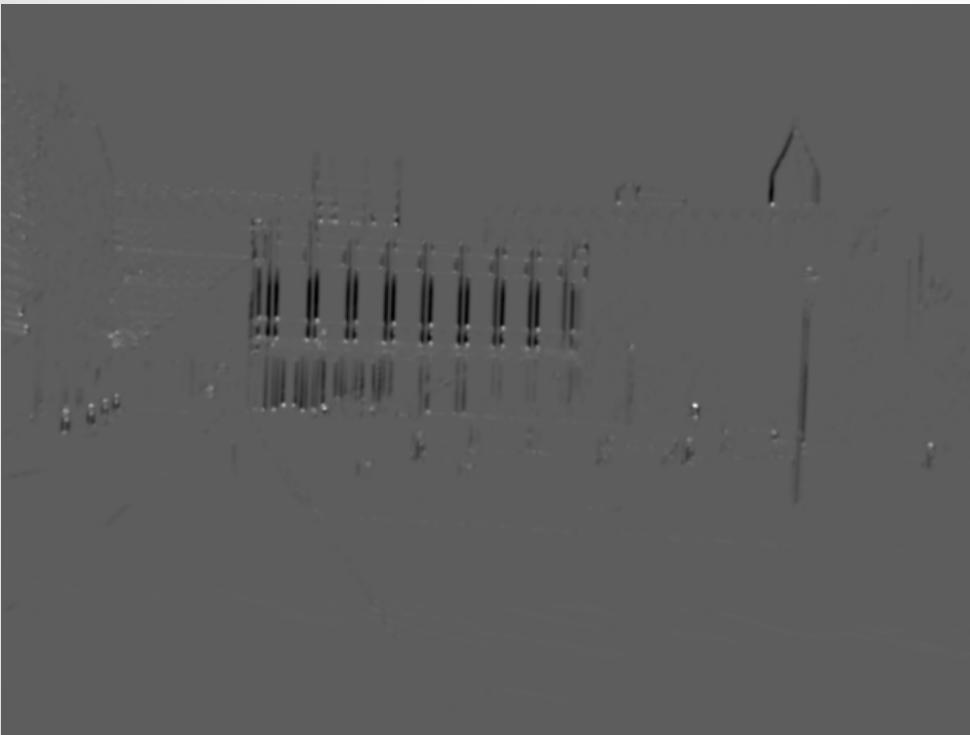
transA image - **ps5-1-b-1.png**

1b: Harris Response Image (transB)



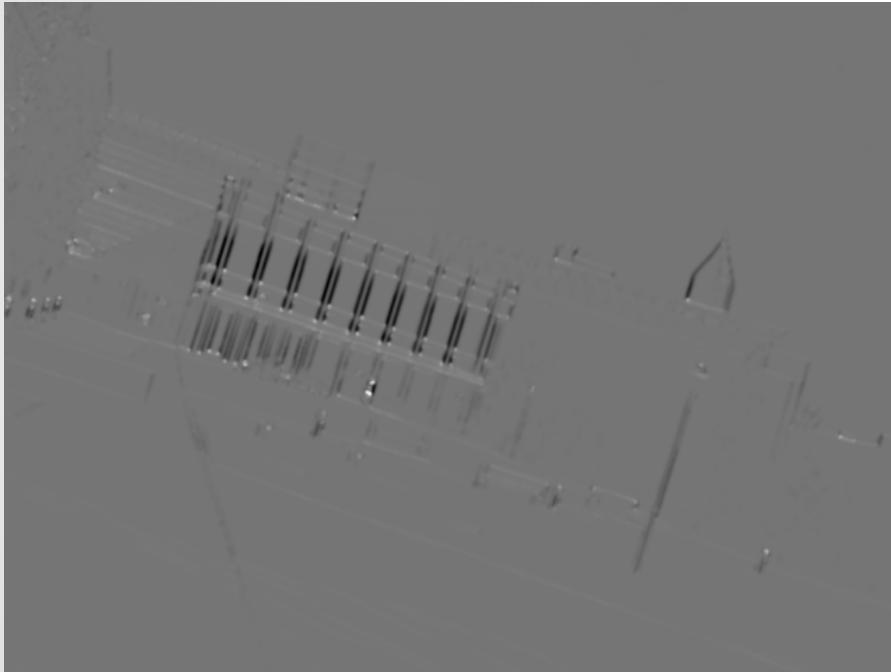
transB image - ps5-1-b-2.png

1b: Harris Response Image (simA)



simA image - ps5-1-b-3.png

1b: Harris Response Image (simB)



simB image - ps5-1-b-4.png

1c: Harris Corners Image (transA)



transA image - ps5-1-c-1.png

1c: Harris Corners Image (transB)



transB image - ps5-1-c-2.png

1c: Harris Corners Image (simA)



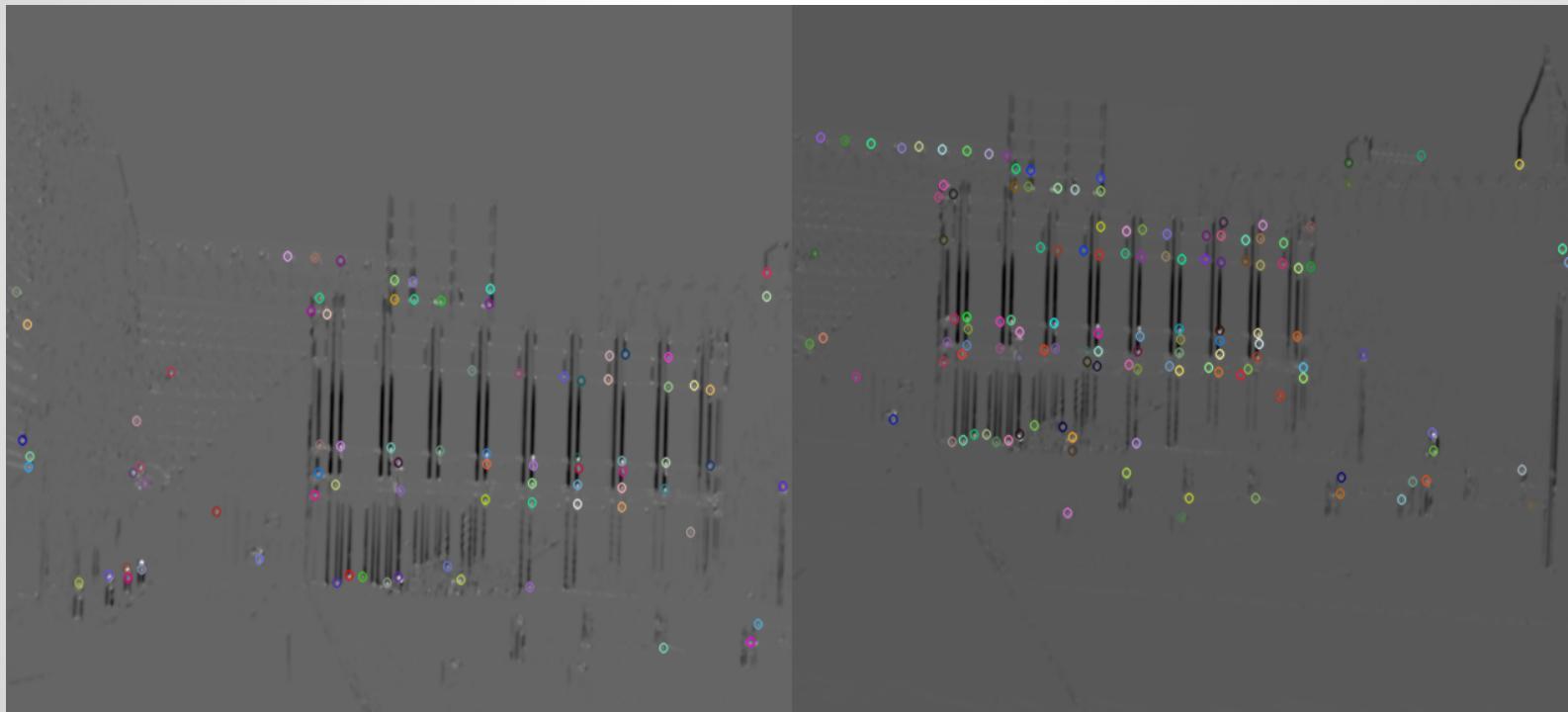
simA image - ps5-1-c-3.png

1c: Harris Corners Image (simB)



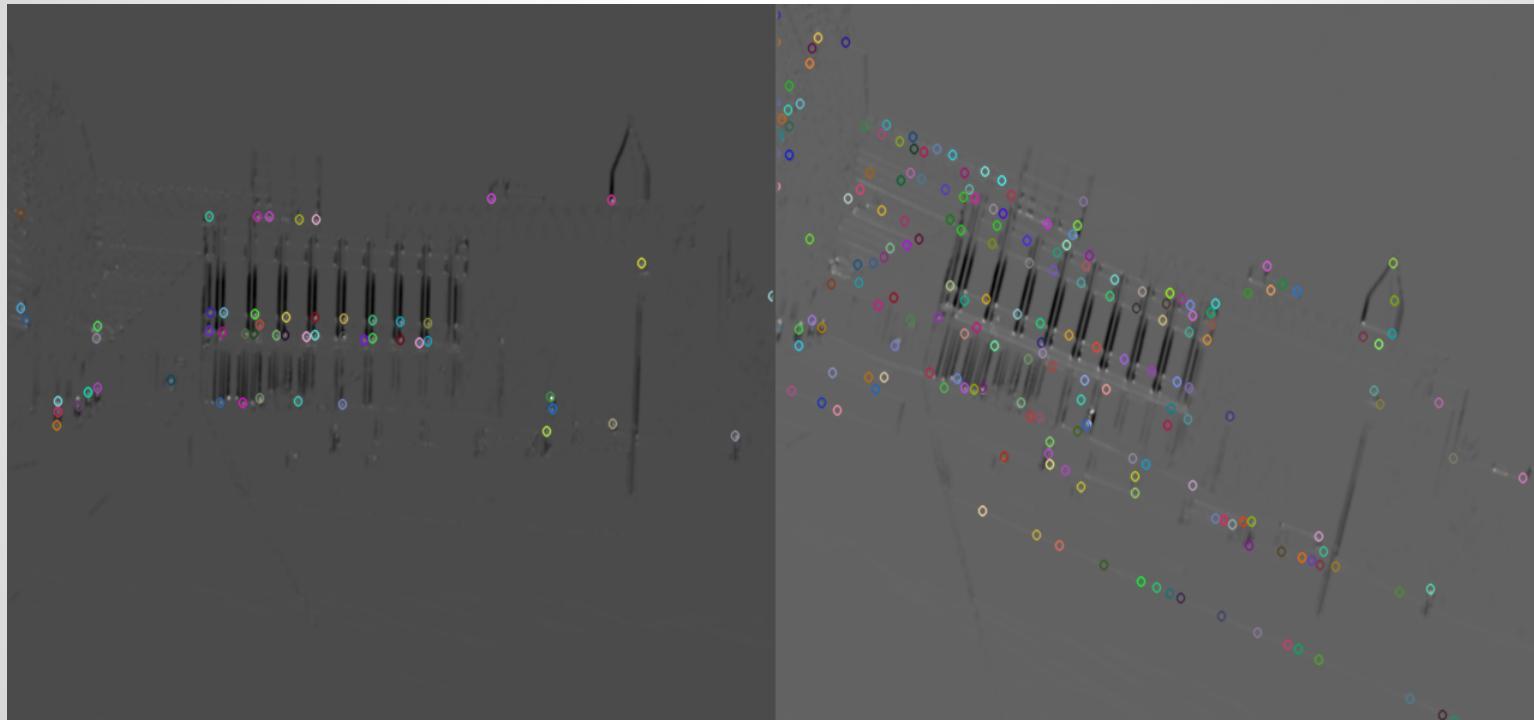
simB image - ps5-1-c-4.png

2a: Interest Points Pair (transA-B)



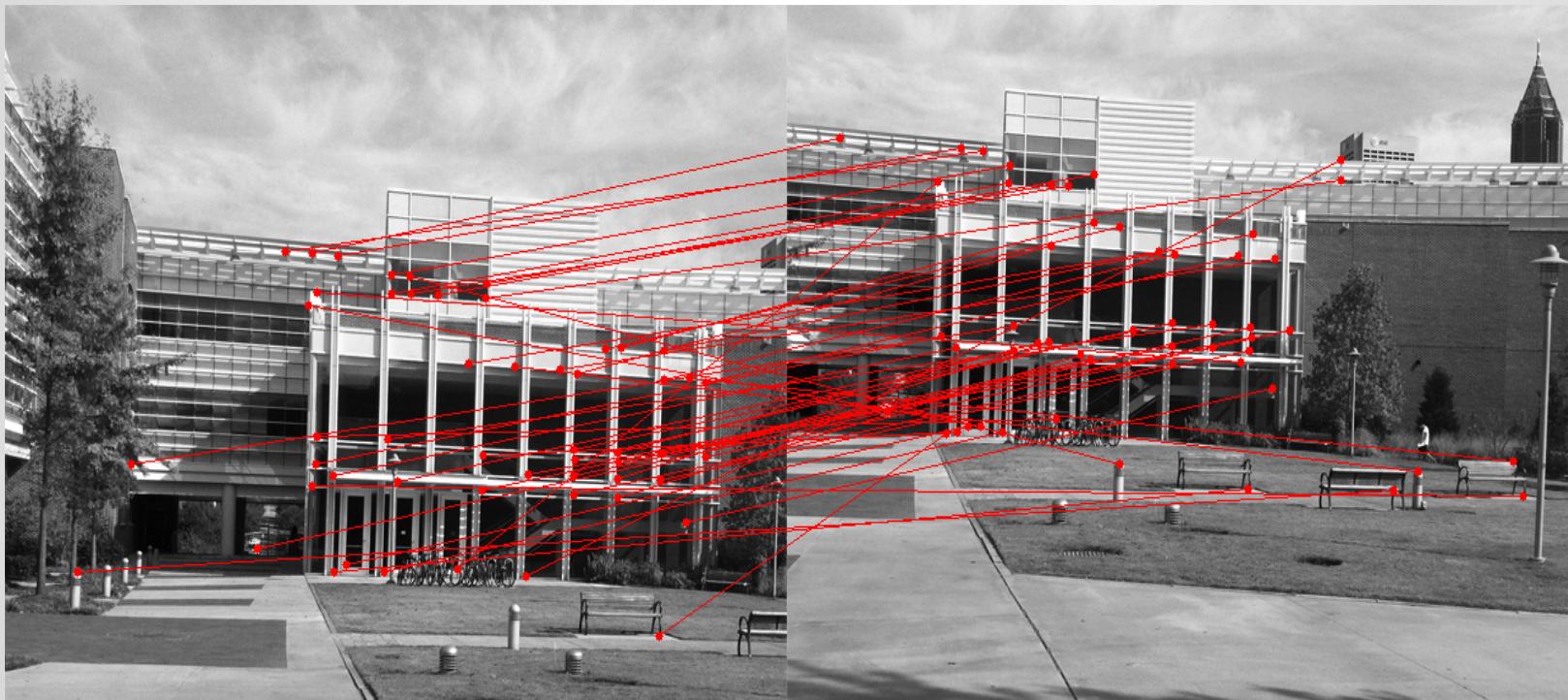
Interest points with angles show on transA/B-pair image - **ps5-2-a-1.png**

2a: Interest Points Pair (simA-B)



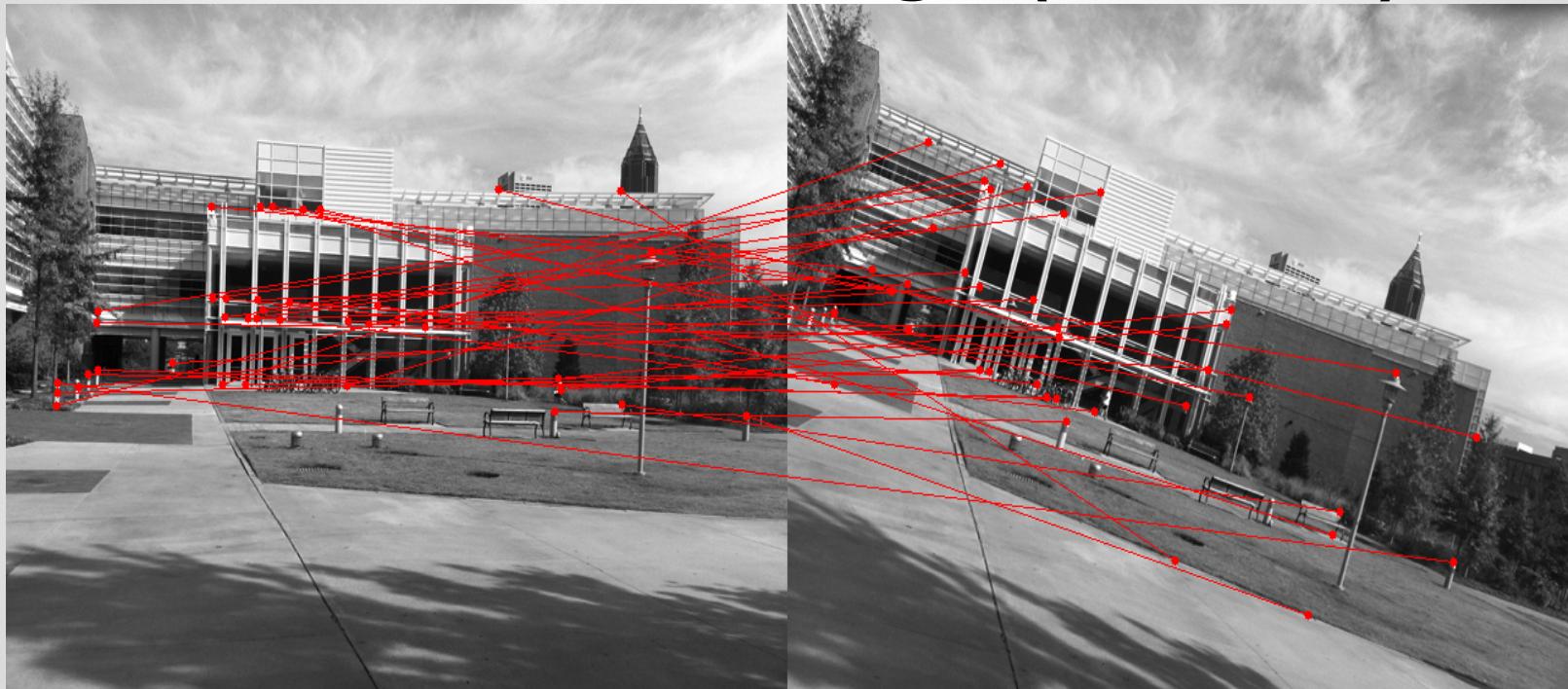
Interest points with angles show on simA/B-pair image - ps5-2-a-2.png

2b: Putative Pair Image (transA-B)



Putative transA/B-pair image - ps5-2-b-1.png

2b: Putative Pair Image (simA-B)



Putative simA/B-pair image - **ps5-2-b-2.png**

3a: Consensus Set Image (transA-B)



Biggest consensus set lines drawn on pair - ps5-3-a-1.png

3b: Consensus Set Image (simA-B)



blank

Biggest consensus set lines drawn on pair - **ps5-3-b-1.png**

3c: Consensus Set Image II (simA-B)



blank

Biggest consensus set lines drawn on pair - **ps5-3-c-1.png**

3d: Warped Image



blank

warpedB image- ps5-3-d-1.png



blank

overlay image - ps5-3-d-2.png

4a: Warped Image (CHALLENGE)



blank

warpedB image- ps5-4-a-1.png



blank

overlay image - ps5-4-a-2.png

5: Discussion

For question 1, describe the behavior of your corner detector including anything surprising, such as points not found in both images of a pair.

Corner detector does a good job in detecting points where the intensity is varying in both x and y direction. Corner detector kind of detected some of the points that were not actually corners such as bicycle head, or shadow in front of door. Also I'm little surprised the the corner detector didn't pick the peak of the tower as corner. Corner detector does a good job in finding corners around objects on ground and trees

5: Discussion

For questions 2 and 3, ORB and RANSAC:

- What translation vector was used?

In ransac, translation vector is used is the spatial distance between the interest points in the image.

- What percentage of your matches was the biggest consensus set?

In translated images, 65.38% of the matches were in biggest consensus set.
(Translation ransac)

In similar images, 48.53% of the matches were in biggest consensus set.
(Similarity ransac)

5: Discussion

Regardless of whether you implemented the challenge problem, comment as to whether using the similarity transform or the affine one would give better results, and why or why not.

I think affine transform would give better result. I think affine transform would do a better job in finding corners around the objects in foreground and background