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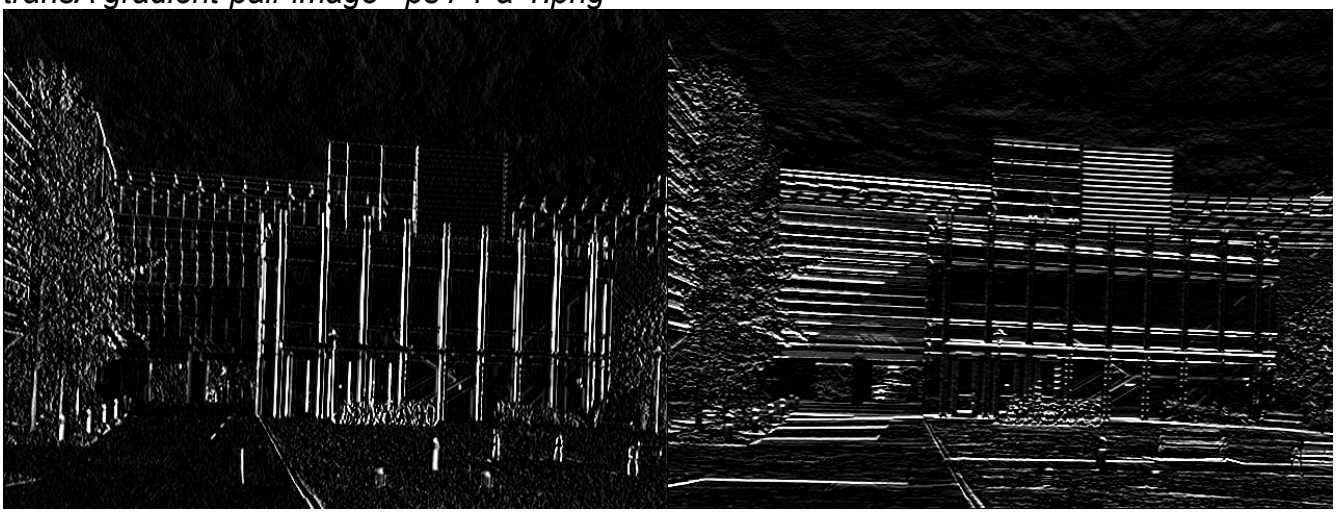
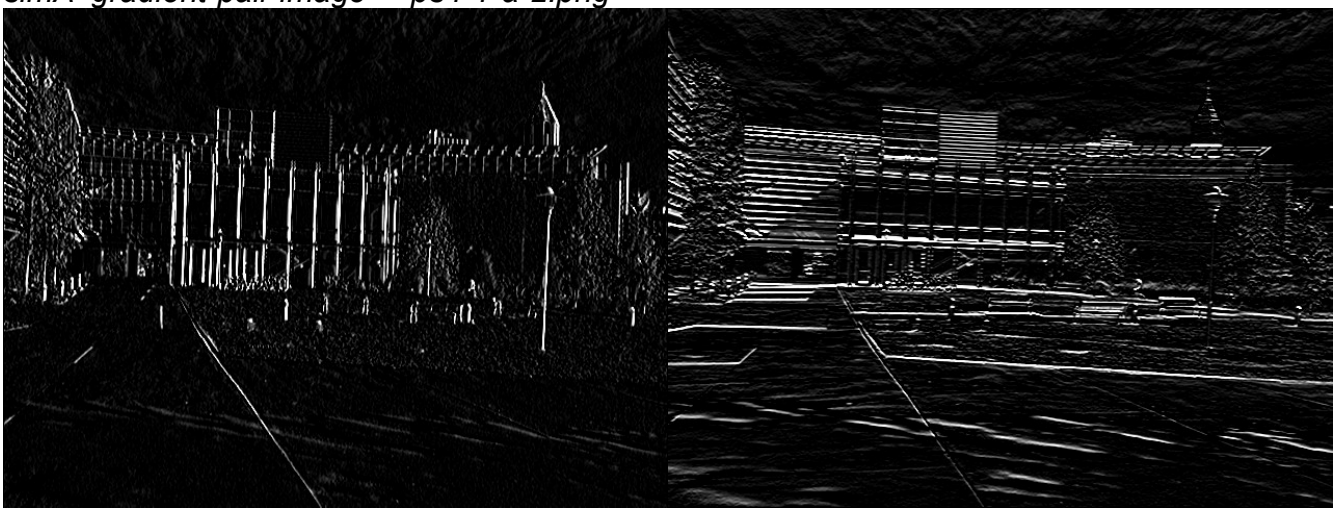
Problem Set 4: Harris, SIFT, RANSAC
CS4495, Spring 2015 OMS
GTID: 903050550

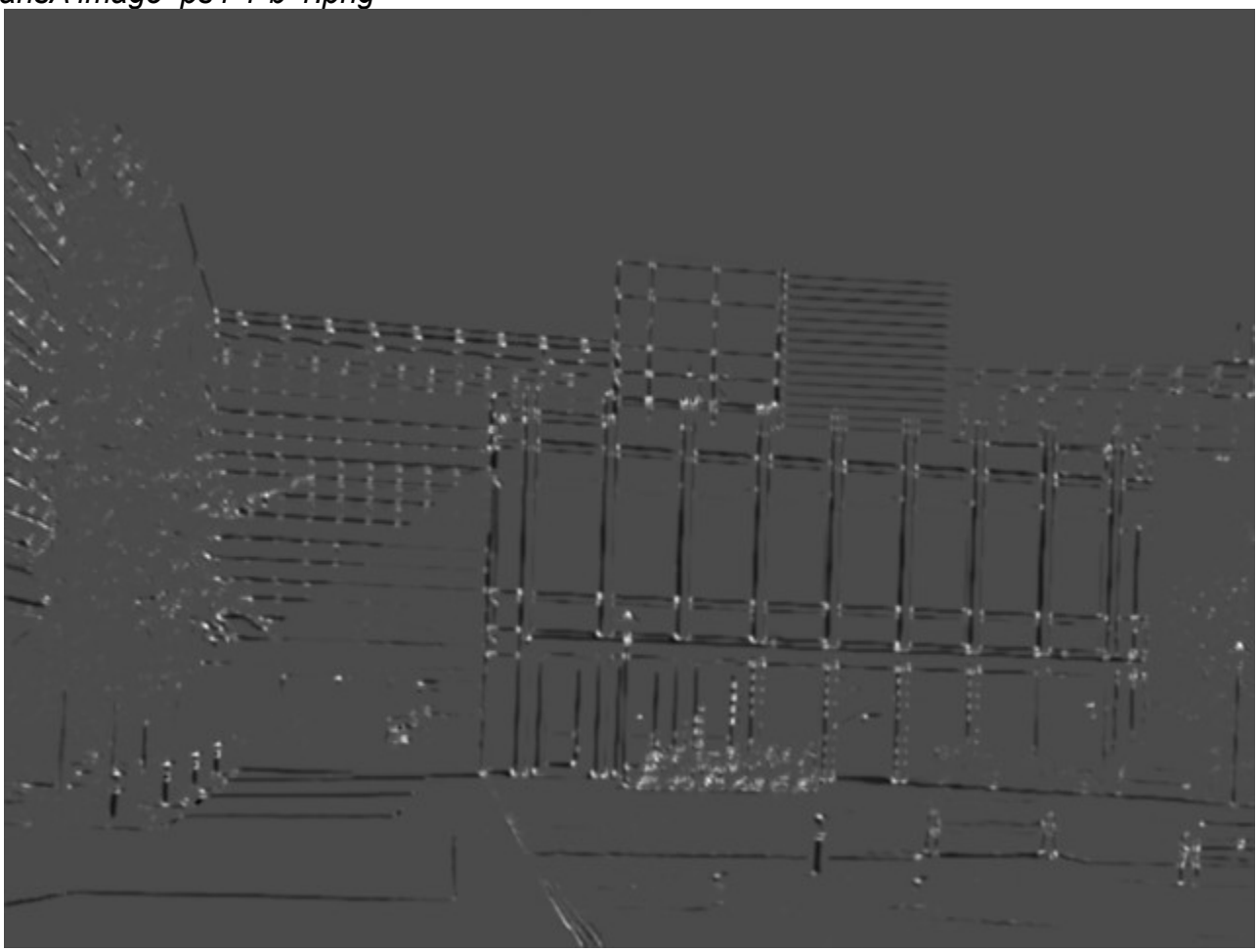
Part 1a:
transA gradient-pair image ps4-1-a-1.png



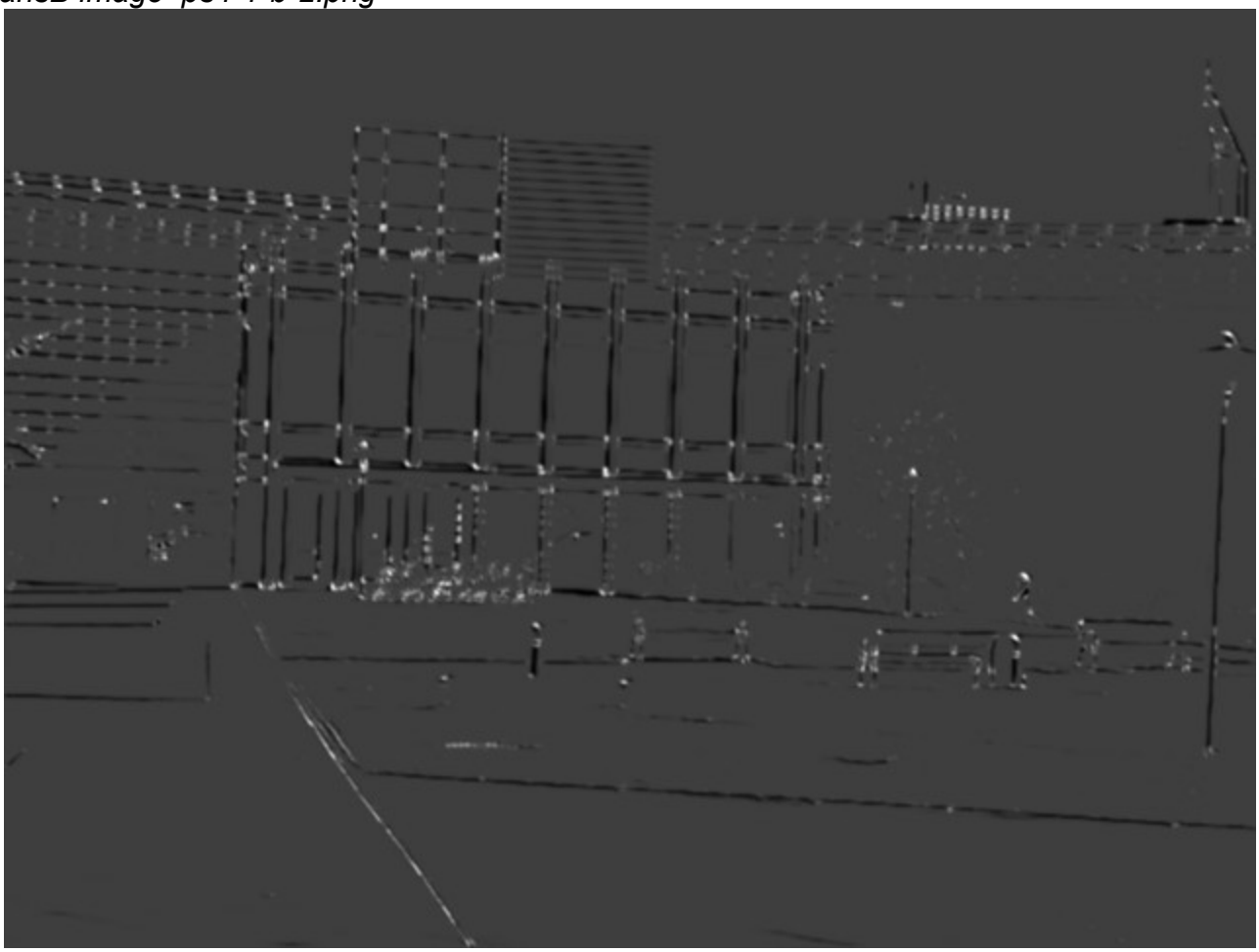
simA gradient-pair image ps4-1-a-2.png



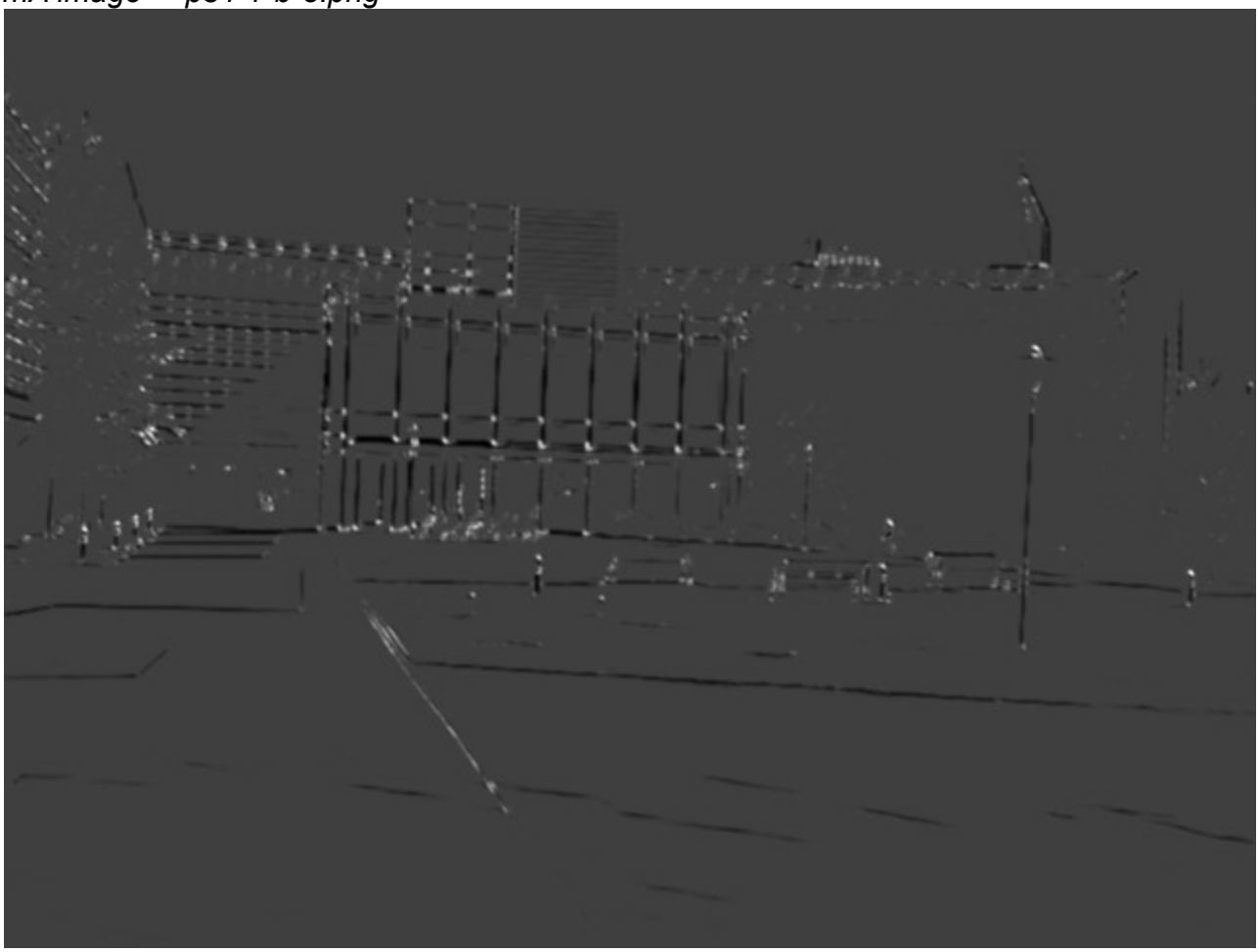
Part 1b:
transA image ps4-1-b-1.png



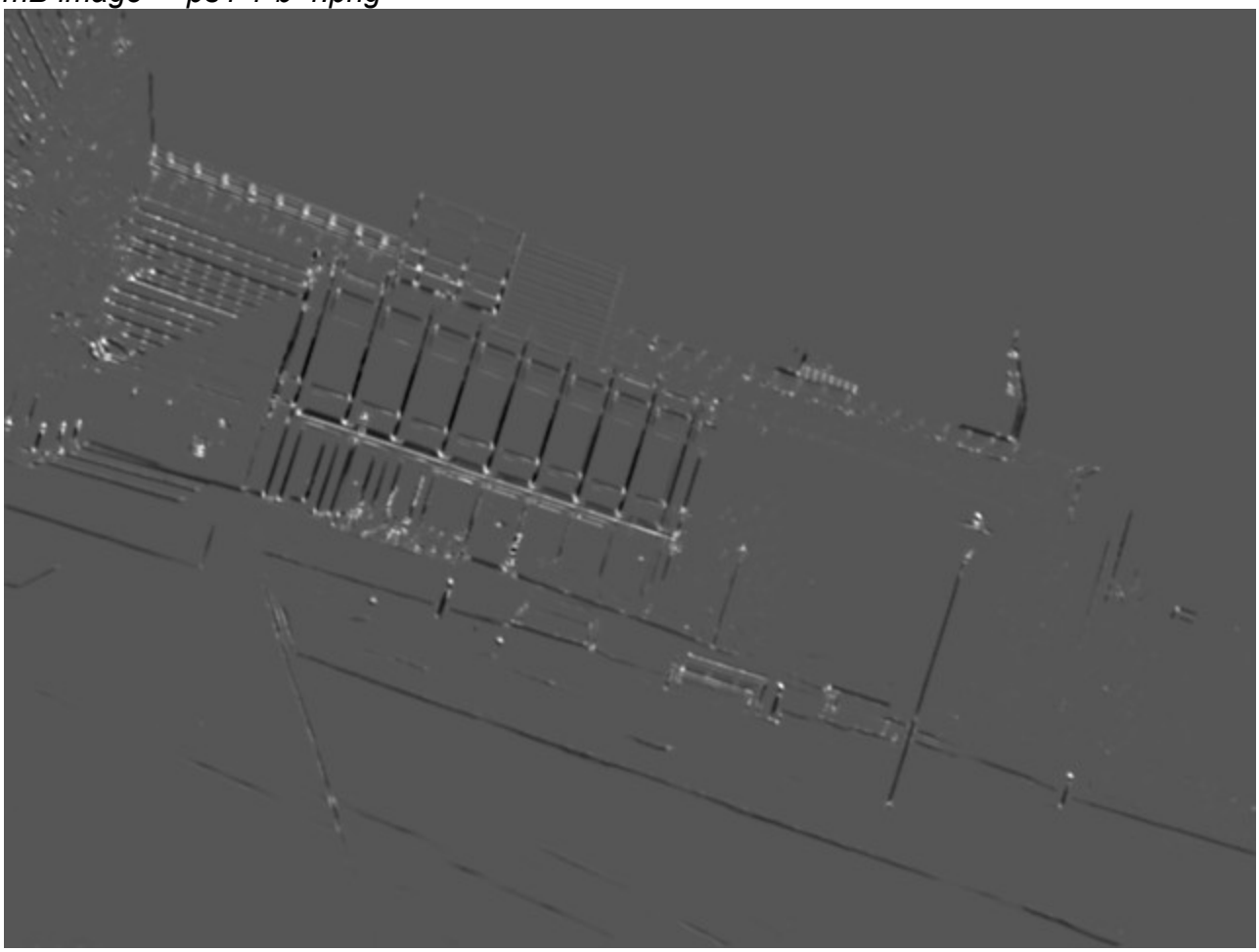
transB image ps4-1-b-2.png



simA image ps4-1-b-3.png



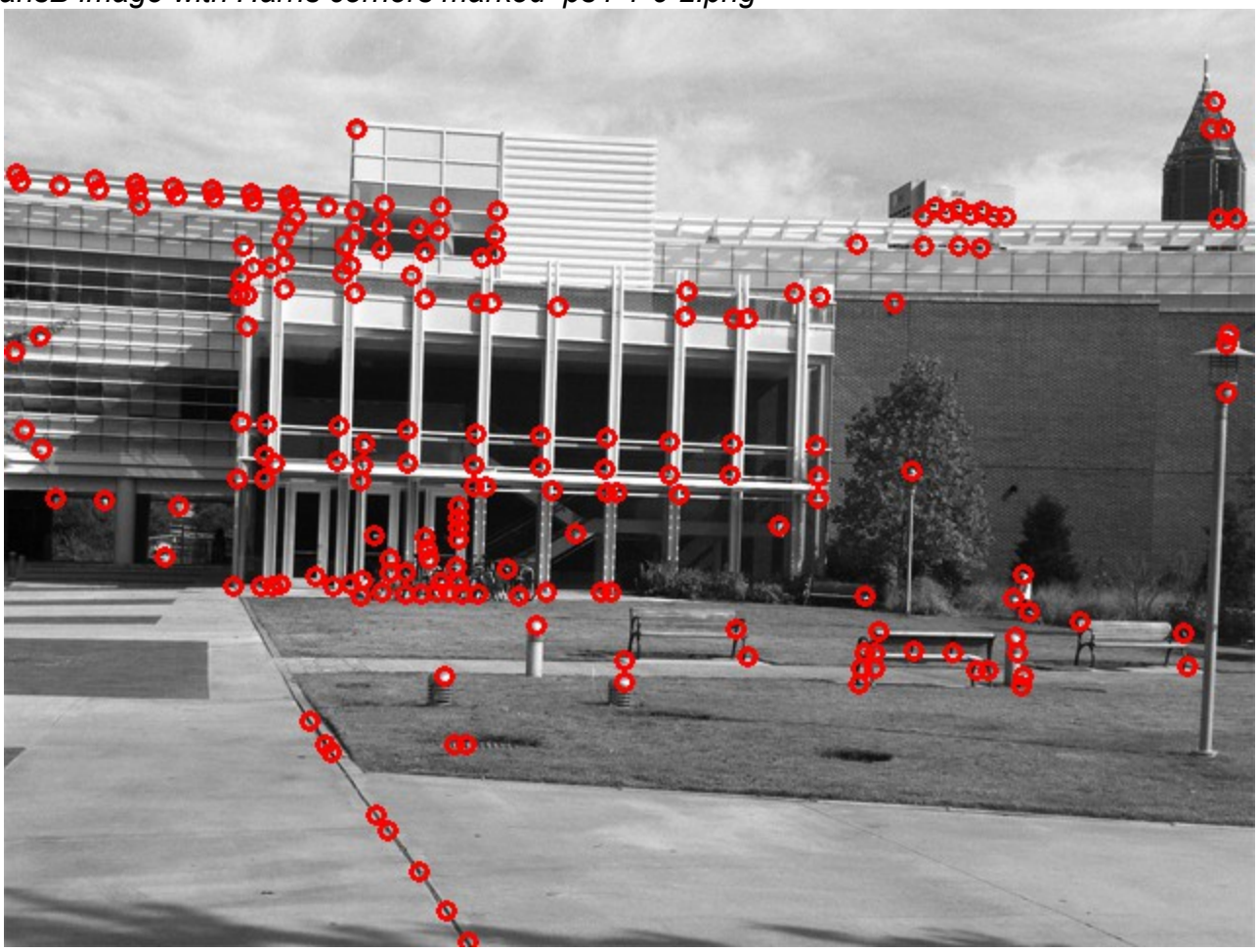
simB image ps4-1-b-4.png



Part 1c:

transA image with Harris corners marked ps4-1-c-1.png

transB image with Harris corners marked ps4-1-c-2.png



simA image with Harris corners marked ps4-1-c-3.png

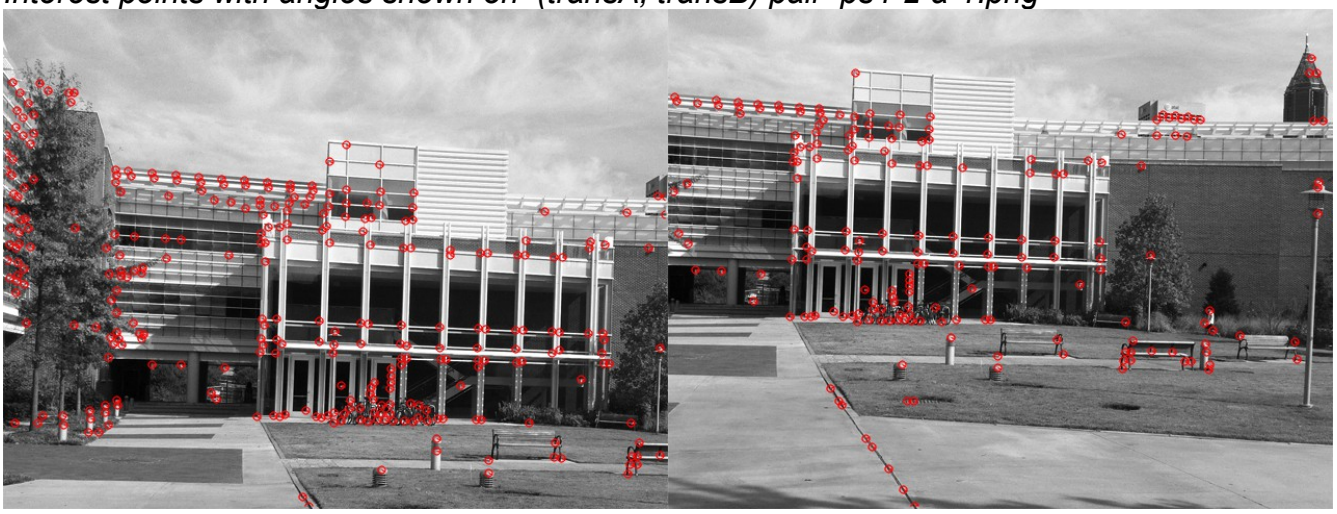
simB image with Harris corners marked ps4-1-c-4.png

-Describe the behavior of your corner detector including anything surprising, such as points not found in both images of a pair.

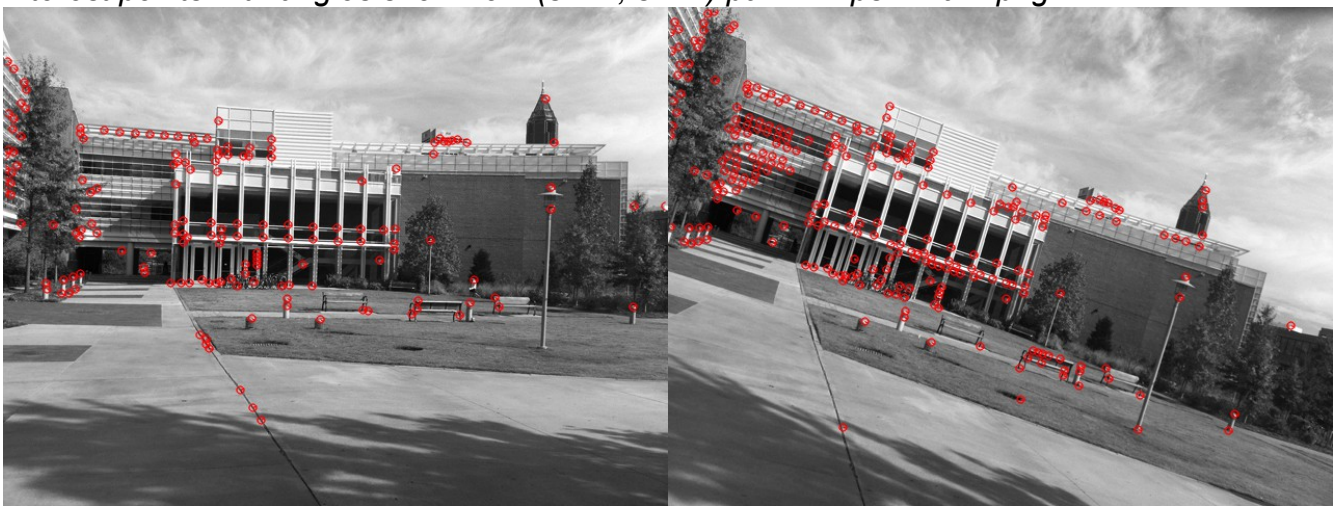
The corner detector does a good job of identifying similar features. However, there are many corners that get missed. For instance the top left corner of the middle structure gets "missed" in 2 out of the 4 images and the top right corner of the same structure gets "missed" in all images. The first missing corner is probably because it gets assimilated in one of the two nearby corners. The second missing corner is probably because the white background washes out the corner.

Part 2a:

Interest points with angles shown on (transA, transB) pair ps4-2-a-1.png

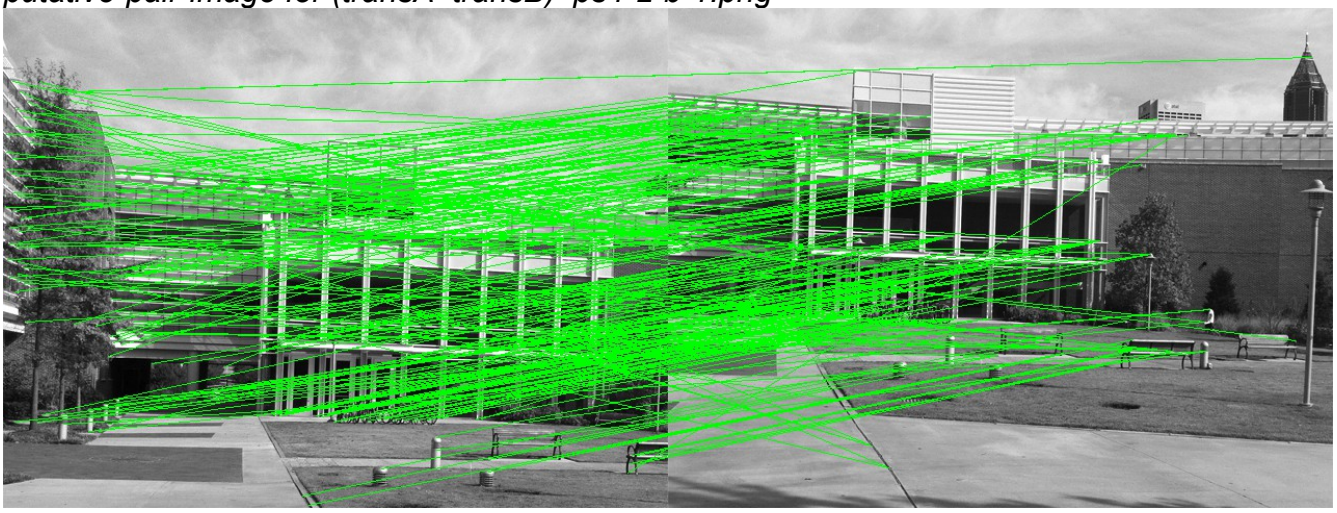


Interest points with angles shown on (simA, simB) pair ps4-2-a-2.png

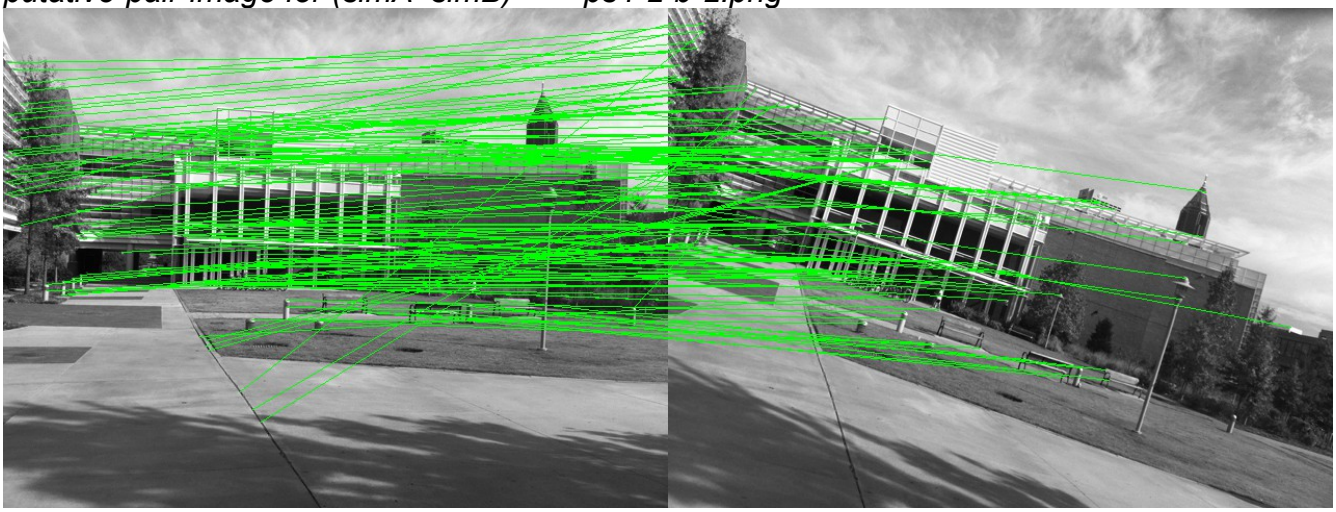


Part 2b:

putative-pair-image for (transA–transB) ps4-2-b-1.png

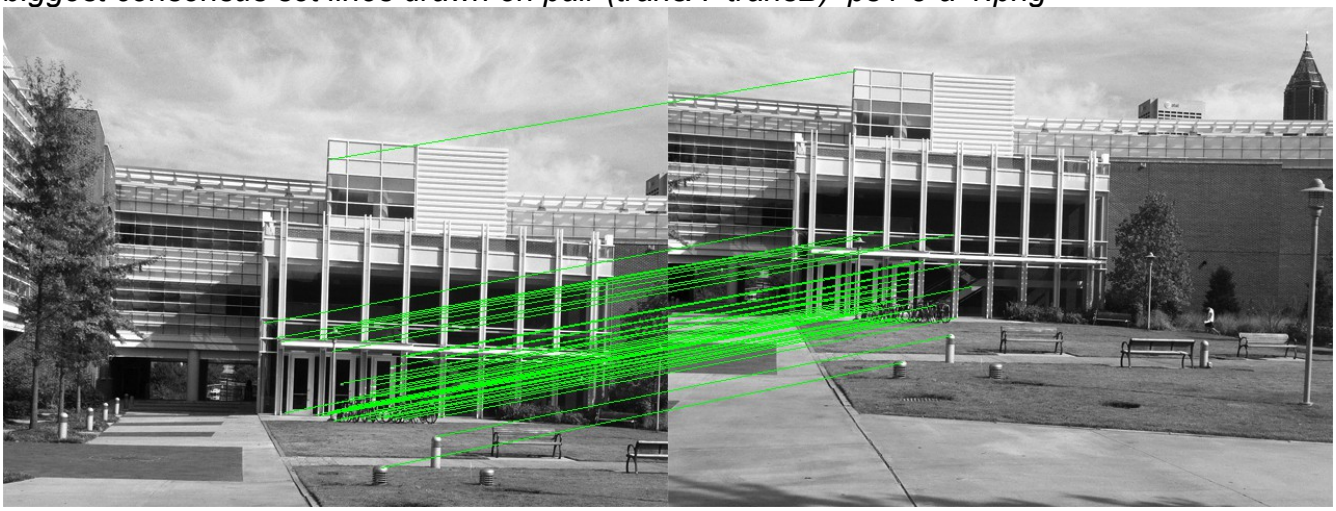


putative-pair-image for (simA–simB) ps4-2-b-2.png



Part 3a:

biggest consensus set lines drawn on pair (transA -transB) ps4-3-a-1.png



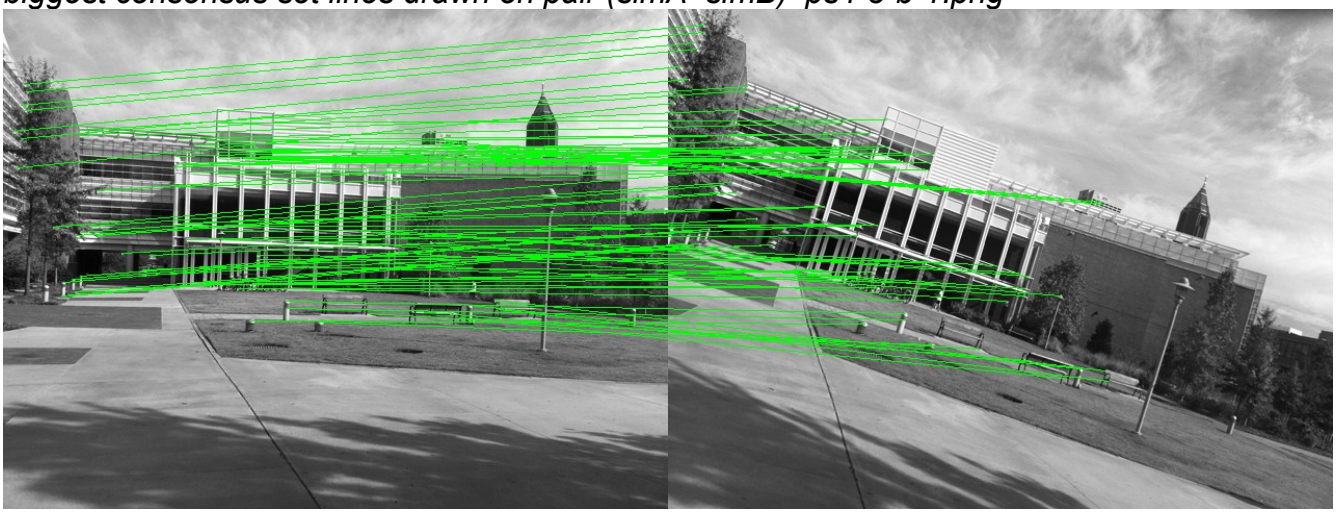
What translation vector was used?

translation: [-139. -93.]

What percentage of your matches was the biggest consensus set?

translation percent: 16.6%

Part 3b:
biggest consensus set lines drawn on pair (simA -simB) ps4-3-b-1.png



Output (Textual Response):
What is the transform matrix for the best set?
similarity matrix:
[[0.97912955 -0.28327819 38.66632731]
[0.28327819   0.97912955 -60.410028]]

What percentage of your matches was the biggest consensus set?
similarity percent: 54.0%