CS 6476: Computer Vision, Fall 2019

PS3

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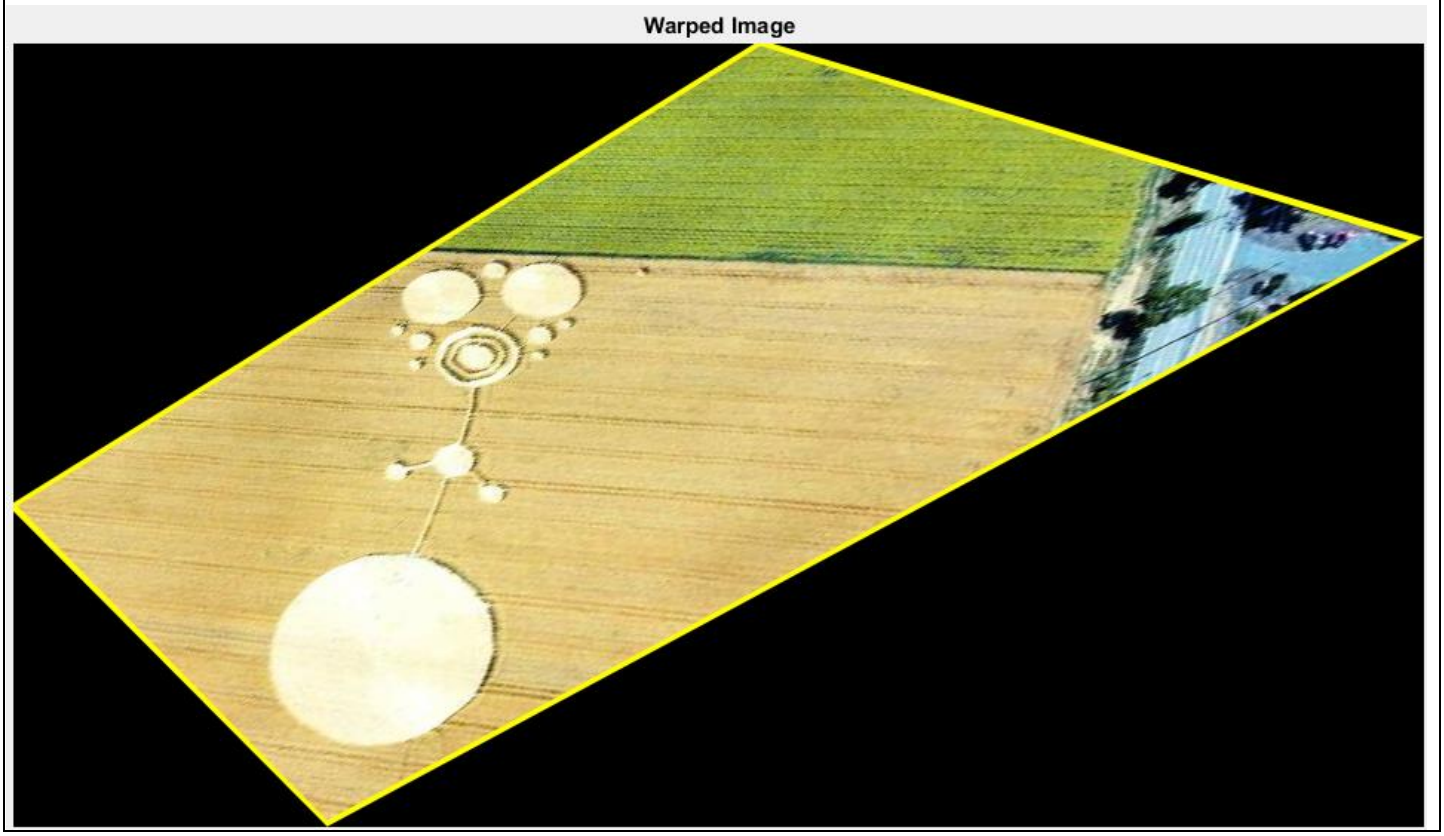
Date: 10/16/2019

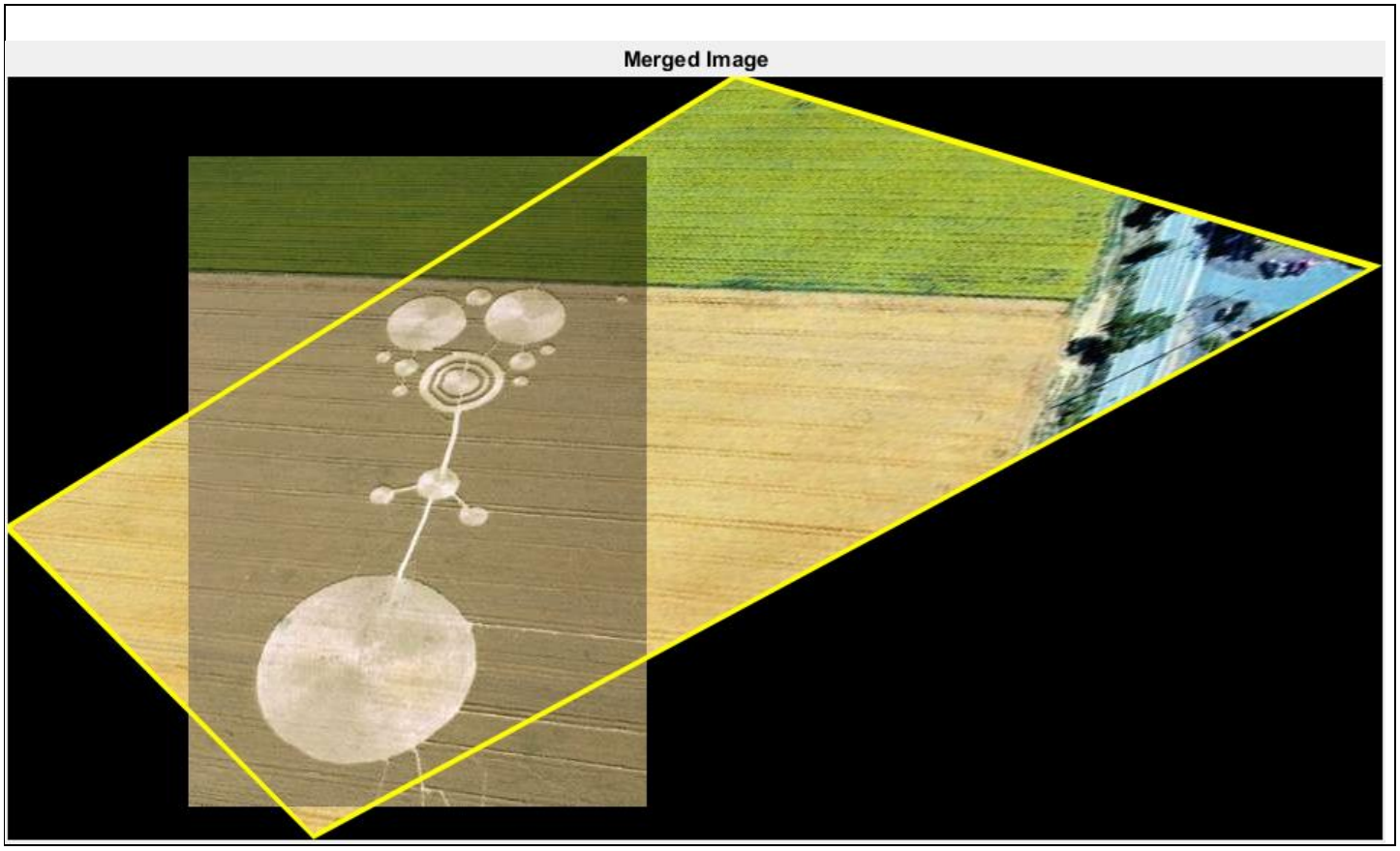
1 Programming

4.

Input image

Reference Image

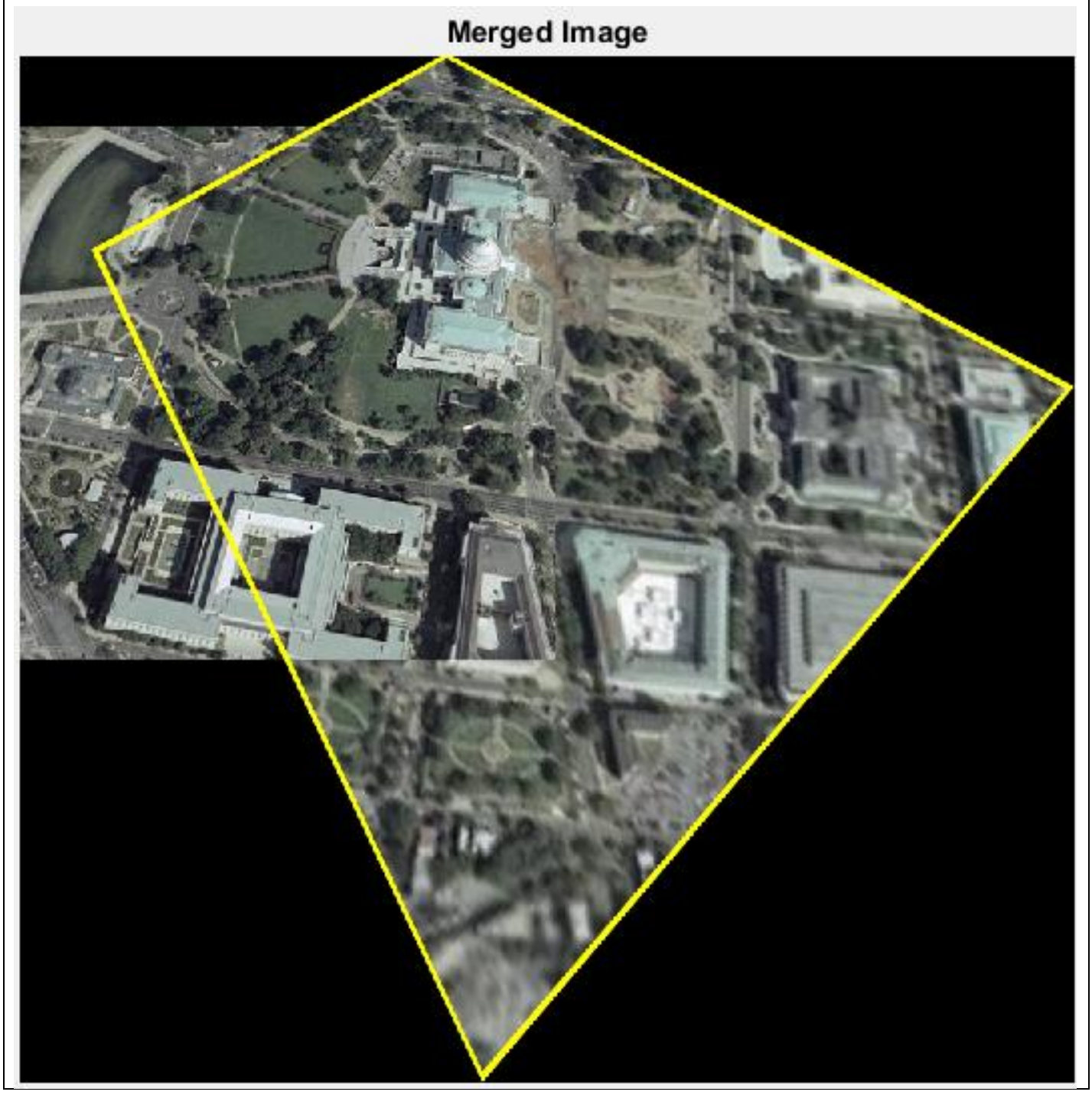




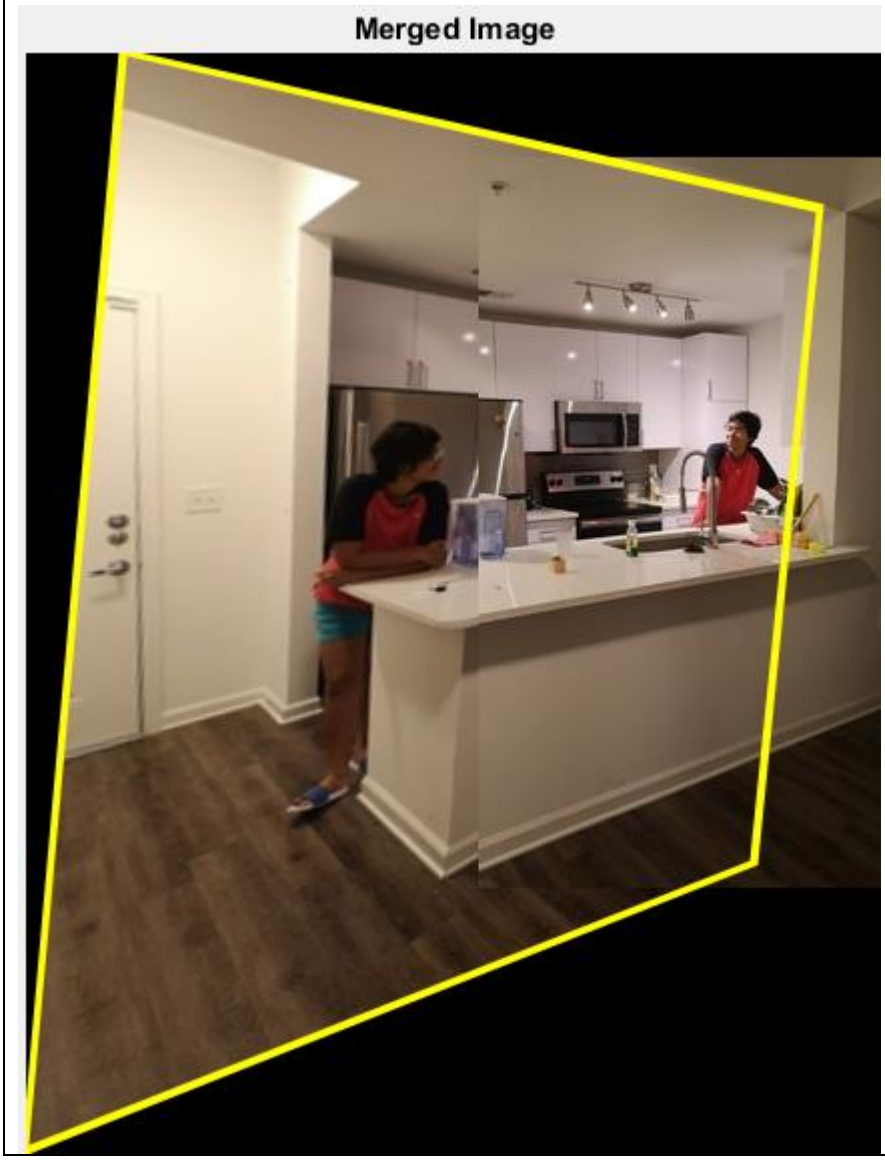
Input Image

Reference Image

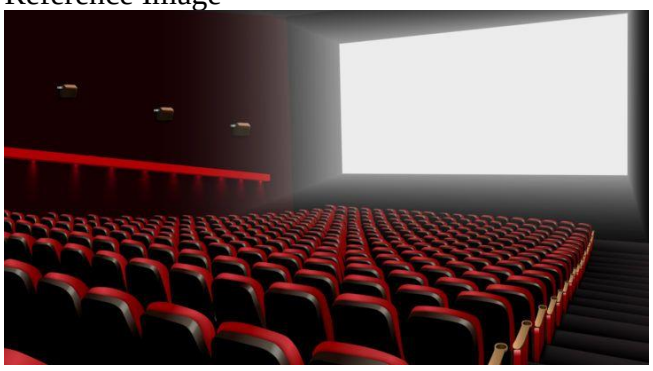

Warped Image


Merged Image

5.



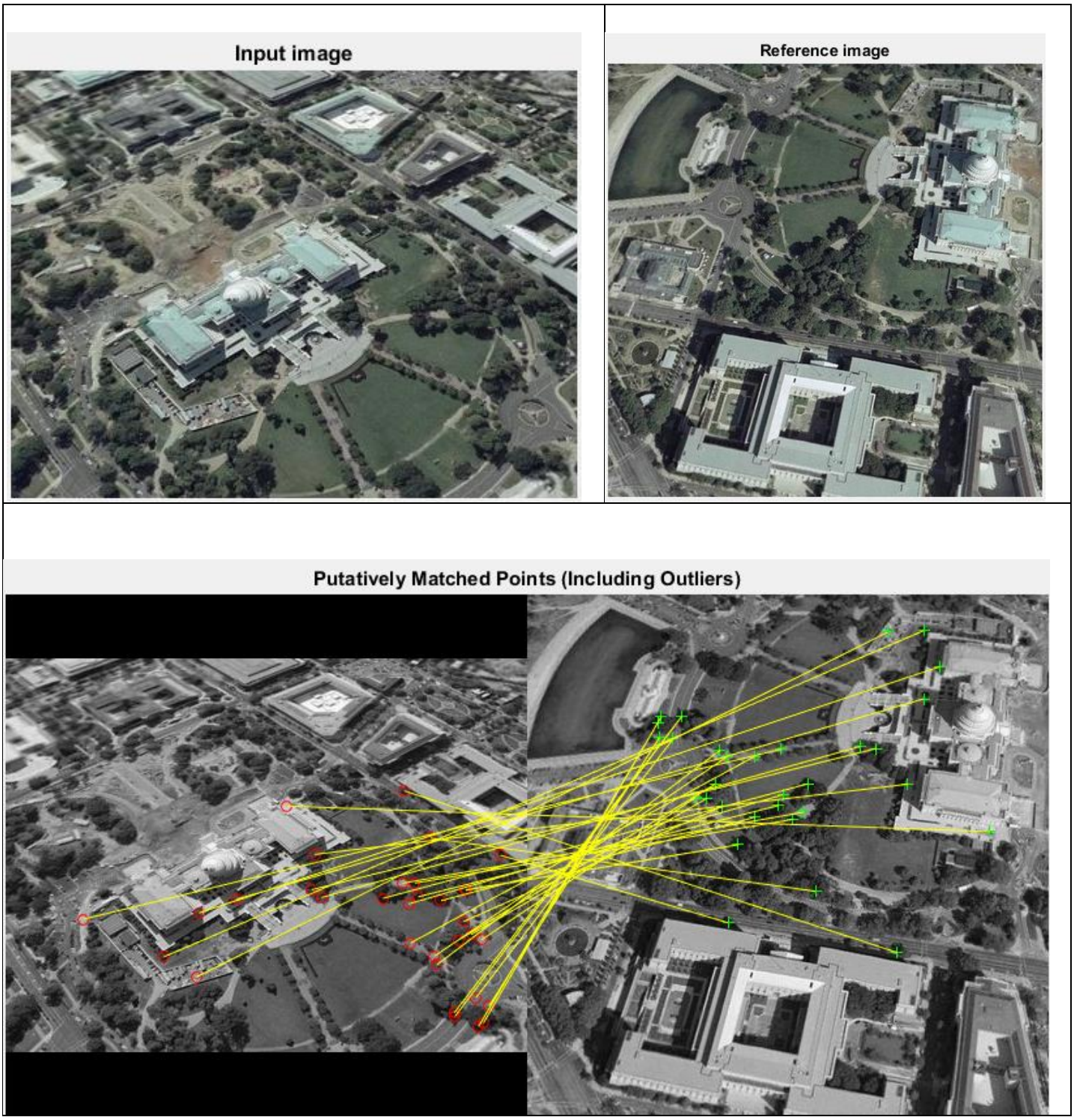
6.

Input image	Reference Image
	

Warped Image

Merged Image

2. 1




```
function [ t1, t2 ] = featureMatches( inputIm, refIm )
```

Function takes input image and reference image as input and computes corresponding coordinates. Function returns two 2xN matrices consisting of corresponding coordinates from input image and reference image respectively. It also displays two images juxtaposed with their putatively matched points.

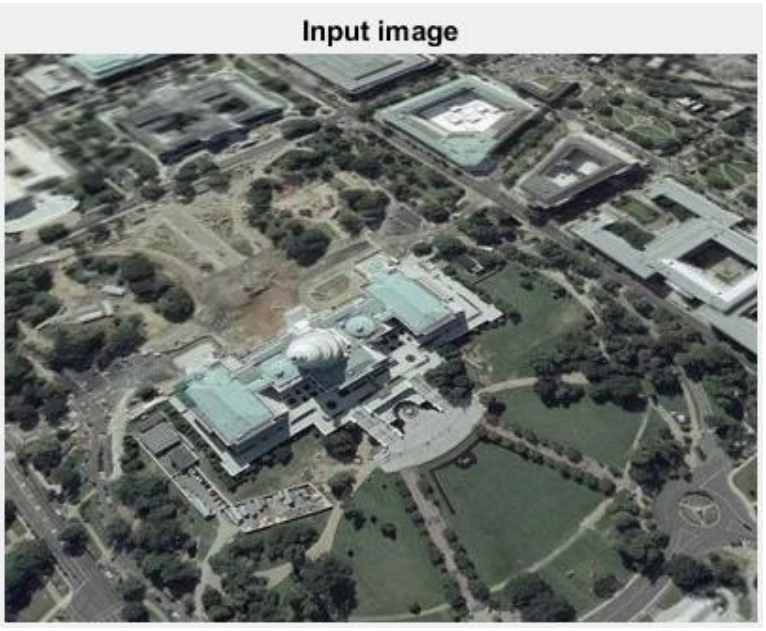
For the above images wdc1.jpg and wdc2.jpg, following are the first 10 values of matched coordinates:

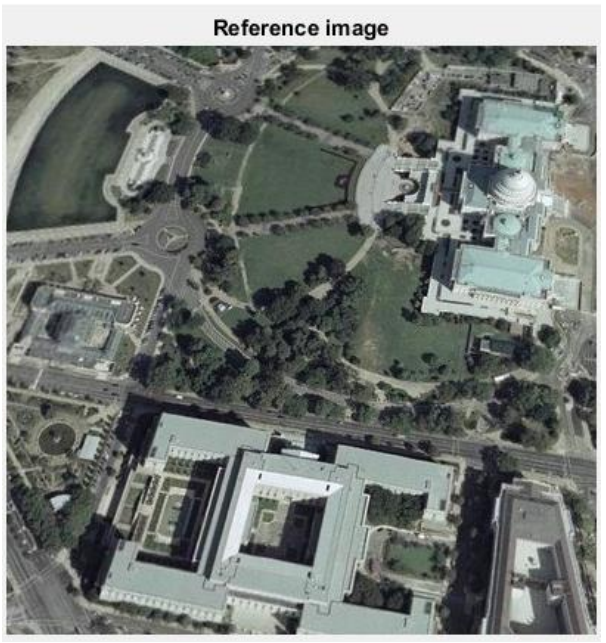
t1:
237.6396 304.8488 365.6024 148.8893 242.8563 121.8134 367.0085 354.2114 334.4883 306.2484
150.7961 172.9592 216.2007 195.6936 183.9067 229.4621 280.1182 177.9004 186.3338 102.0956

t2:
292.4690 212.4878 129.7396 316.7776 255.7016 304.6156 100.8411 162.4930 175.4176 284.3103
146.0042 167.4699 156.1570 055.9919 117.1232 28.2504 98.5150 192.4419 171.2375 275.1289

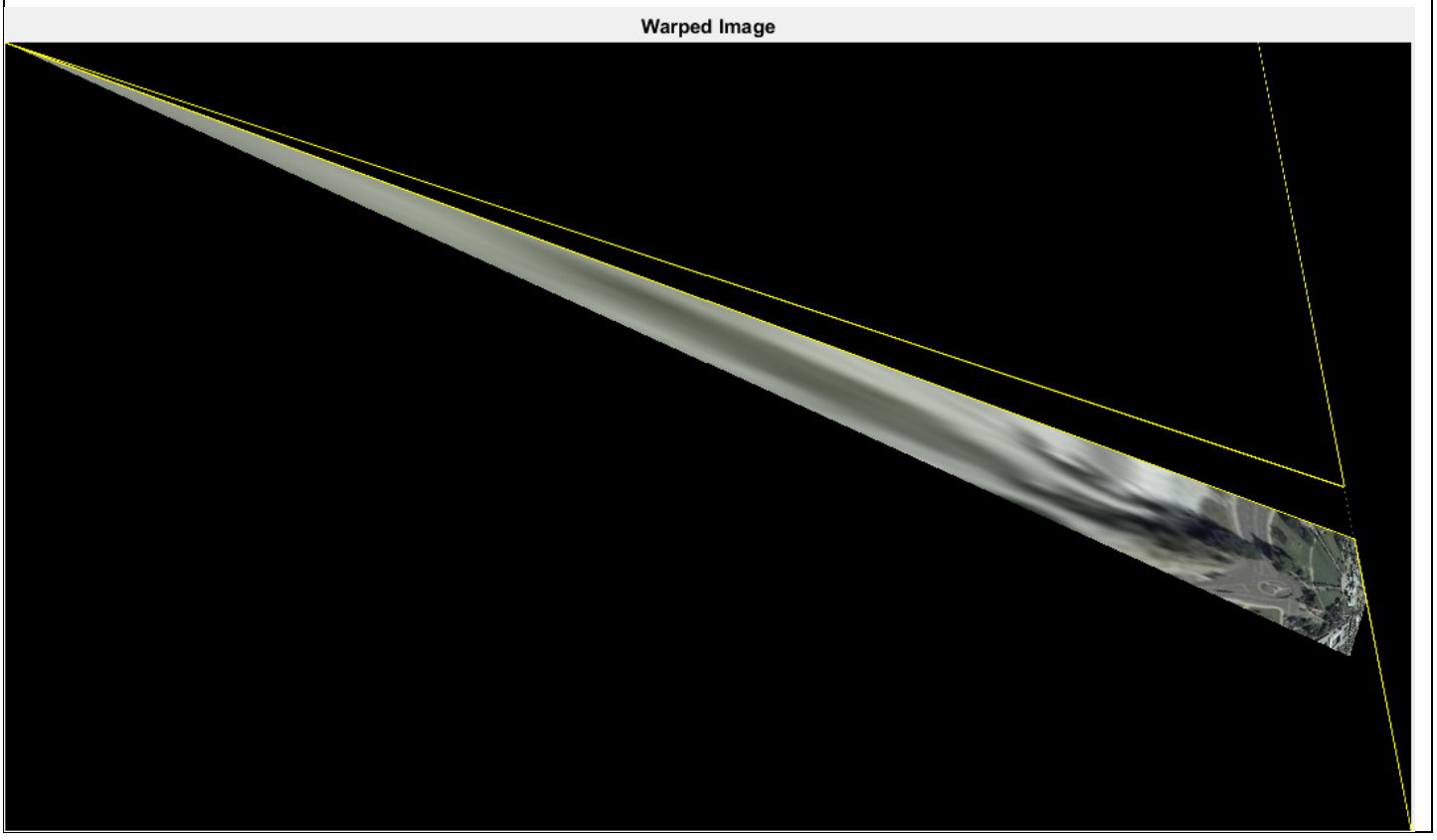
Driver file to verify the above: getCoordsFeatureMatching.m

2.2

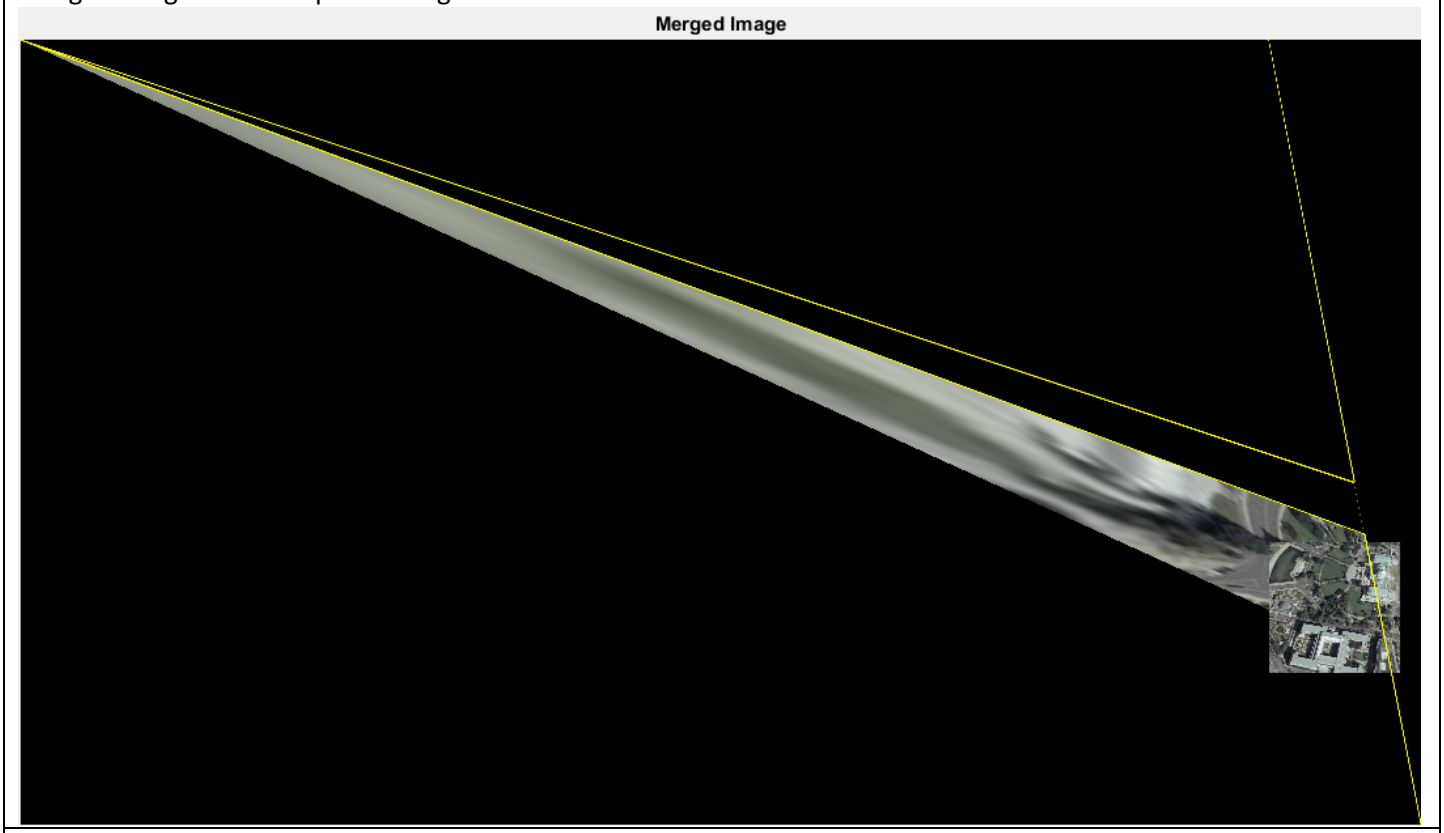




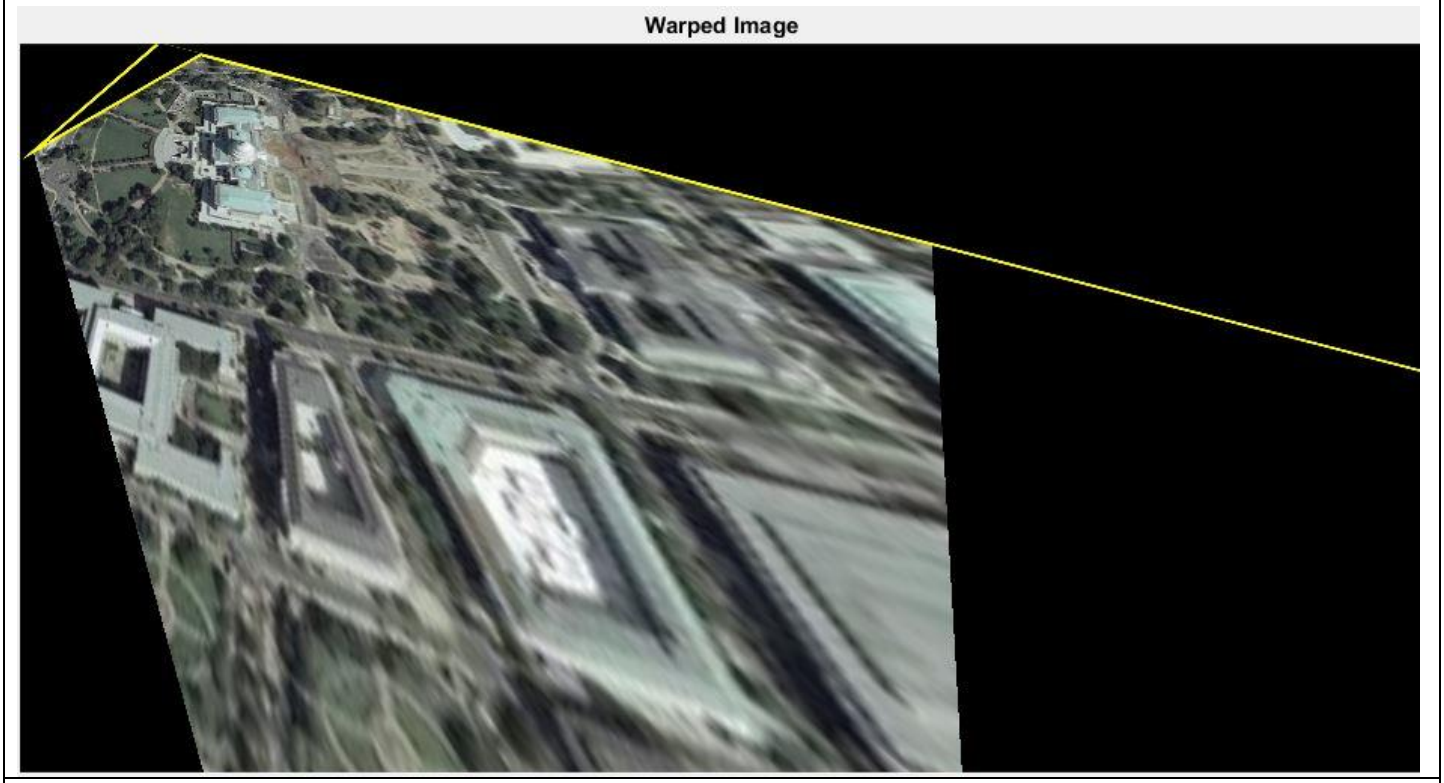
Warped Image before implementing Ransac



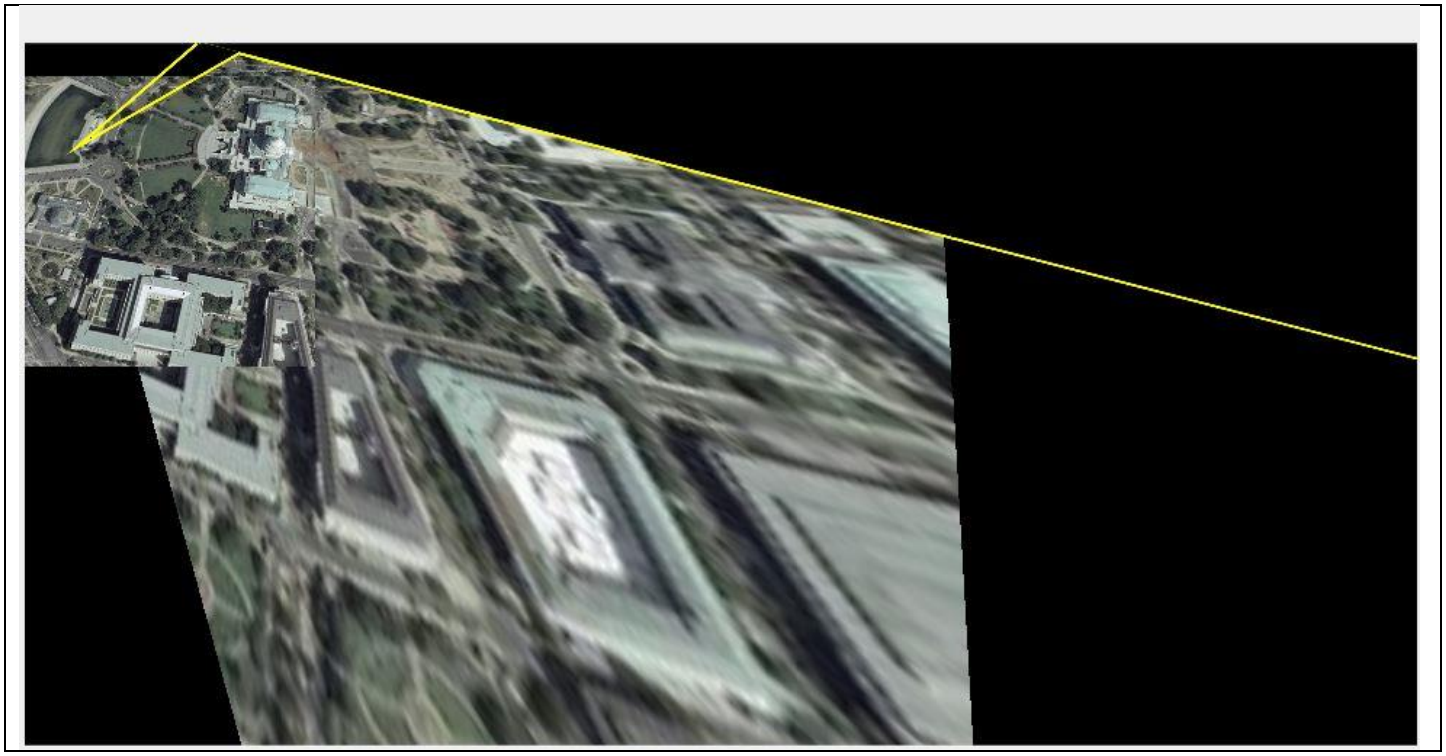
Merged Image before implementing Ransac



Warped Image after implementing Ransac



Merged Image after implementing Ransac



```
function [Hmin, maxIn] = findHomography(t1,t2)
```

This function takes the corresponding coordinates of both images and computes Homography using Ransac method. Hmin is the Homography matrix that is returned. Using this matrix, we get the highest number of inliers, given by maxIn.

For the above images wdc1.jpg and wdc2.jpg, the corresponding points extracted after feature matching are fed into the function findHomography. After several trials, we get the above image whose Homography matrix had an SSD of 0.0053 against the original Homography matrix taken from manually chosen corresponding points. Subsequent trials didn't lead to the above result, which largely depends on the random samples chosen.

Driver file to verify the above: getCoordsFeatureMatching.m