Task 3.1P Answer sheet

Fill in the "**Results**" column with relevant results

Notes:

- Examples are given for illustration purposes only and need to be replaced by your own results.
- Missing any required results will result in a re-submission.

1. Harris corner detection

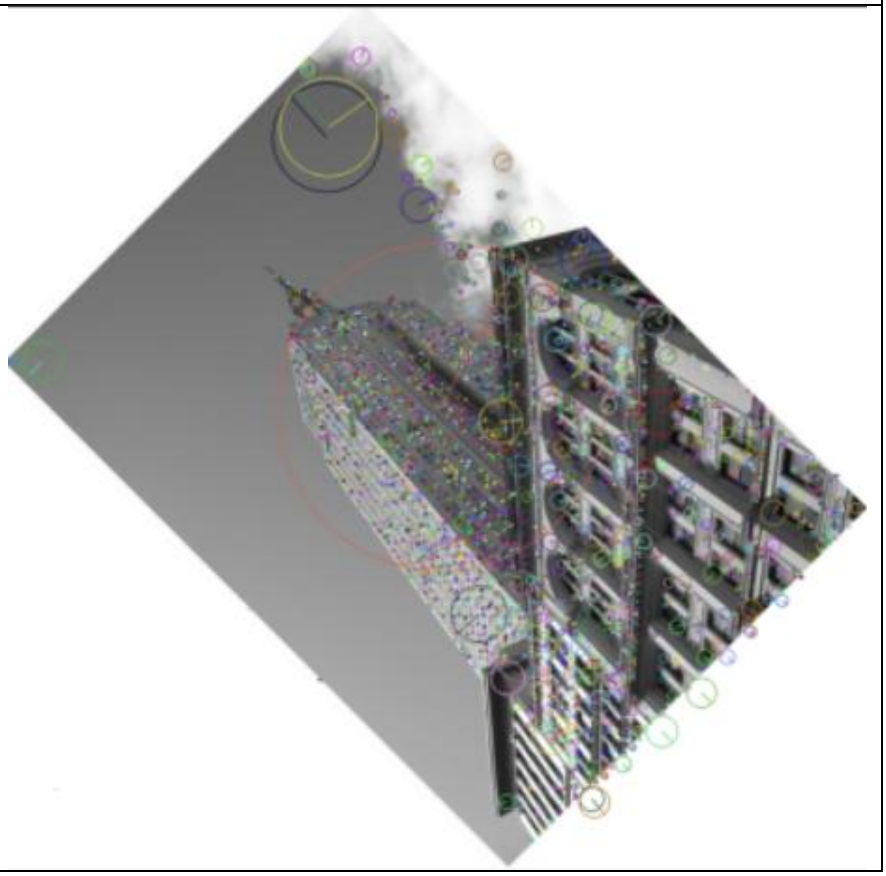
	Number of corners detected	**Corner detection result**
ratio = 0.1%	39280	

ratio = 0.5%	18163	
ratio = 1%	10896	

Discussion of the above results

The results became packed at 0.1% due to the huge number of corners (39,280) that were discovered, including many weak or redundant features. By increasing the threshold to 0.5%, the count dropped to 18,163, indicating stronger structural elements like building edges. Only the strongest corners (10,896), mostly at high contrast areas, were left at 1%. Corner detection gets more reliable and selective as the threshold rises, but it loses finer details in the process.

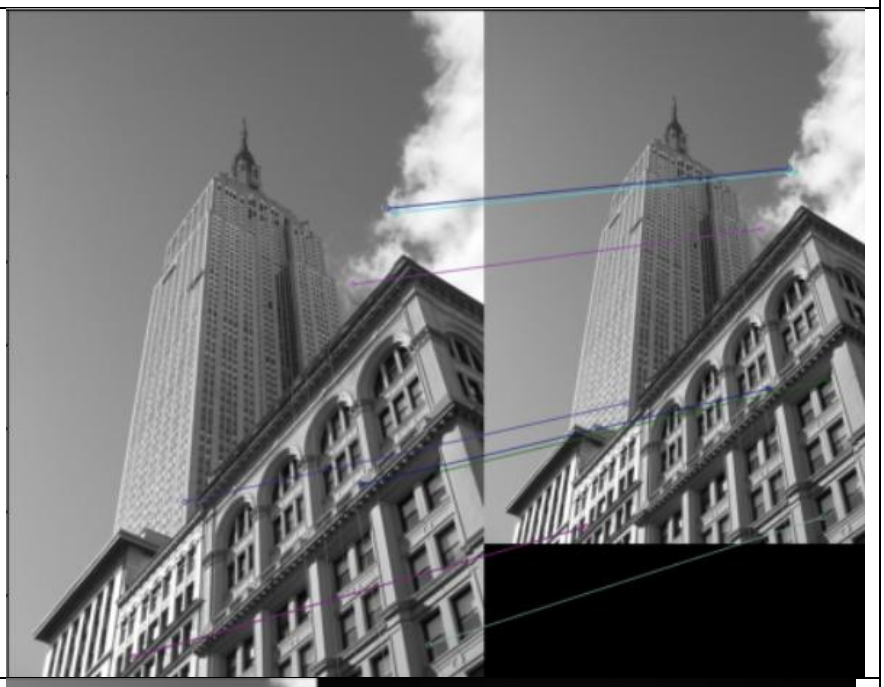
2. SIFT

	Results
Keypoints (with radius and orientations) on empire_45.jpg	

Keypoints (with radius and orientations) on empire_zoomedout.jpg	
Keypoints (with radius and orientations) on fisherman.jpg	

3. Image matching using SIFT

Visualisation

	Result
empire.jpg vs empire_zoomedout.jpg with nBestMatches=10	
empire.jpg vs fisherman.jpg with nBestMatches=10	

Dissimilarity scores

	nBestMatches=10	**nBestMatches=50**	**nBestMatches=100**
empire.jpg vs empire_45.jpg	126.06704616546631	920.1556854248047	2133.9572887420654
empire.jpg vs empire_zoomedout.jpg	114.81388759613037	839.6173696517944	2003.75674533844

empire.jpg vs fisherman.jpg	861.1744499206543	6909.1140213012695	17156.097869873047

Discussion of the dissimilarity scores of the image pairs (empire.jpg vs empire_45.jpg), (empire.jpg vs empire_zoomedout.jpg), (empire.jpg vs fisherman.jpg)

How well SIFT manages rotation, scaling, and entirely distinct content is shown by the dissimilarity scores. The dissimilarity between empire.jpg and empire_45.jpg is comparatively low for all match counts (126.07 for 10, 920.16 for 50, and 2133.96 for 100), showing that SIFT is adaptable to rotation and can still identify reliable feature matches. SIFT's high scale-invariance is also shown by the comparable and slightly lower scores (114.81, 839.62, and 2003.76) for empire.jpg versus empire_zoomedout.jpg. However, there are very few significant matches between two semantically different photos, as shown by the much higher scores for empire.jpg compared to fisherman.jpg (861.17, 6909.11, and 17156.10). These findings demonstrate that SIFT performs badly when content similarity is minimal yet successfully manages geometric adjustments like rotation and scaling.