MCA Assignment - 1

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Question 1

Part 1: Correlogram

The distances taken are 1,3,5 and 7 to check the vicinity of the color values.
Average time taken for correlogram: ~5 seconds

Scores:

PRECISION GOOD
Maximum: 7.0
Minimum: 0.0
Average: 1.4545454545454546
RECALL GOOD
Maximum: 66.66666666666667
Minimum: 0.0
Average: 11.400837724367136
F1 GOOD
Maximum: 12.669683257918551
Minimum: -1
Average: 2.57993658519501

PRECISION JUNK
Maximum: 3.0
Minimum: 0.0
Average: 0.42424242424242425
RECALL JUNK
Maximum: 25.0
Minimum: 0.0
Average: 1.7511735177140637
F1 JUNK
Maximum: 5.357142857142857
Minimum: -1
Average: 0.6830161387490723

PRECISION OK
Maximum: 4.0
Minimum: 0.0
Average: 0.7575757575757576
RECALL OK
Maximum: 25.0
Minimum: 0.0
Average: 3.7333456615471574
F1 OK
Maximum: 6.896551724137931
Minimum: -1
Average: 1.2595598559331398

Average percentage of queries retrieved:
Good:11.41
Junk:1.75
Ok: 3.73

Part 2: Laplacian of Gaussian(LoG)

In laplacian of gaussian, we apply filters on the image with different sigma values. Then perform non-maximum suppression to find the maximas. These maximas are the actual blobs present in the picture. Interest points are local maximas in both position and scale.
Average time taken for LoG: ~5 seconds

Part 3: SURF

The surf descriptor uses the determinant of Hessian matrix in order to obtain the interest points. The Hessian matrix gives us three values, Lxx, Lxy and Lyy. Using these values we obtain the determinant (H_{approx}). And using H_{approx}, we find out the local maxima to obtain the features(interest points).
Average time taken for SURF: ~5 seconds