1. **SURF** :
    a. The algorithm calculates approximately 500-600 keypoint descriptors per image.
    b. It takes about 40s to calculate for each image.
    c. It gives a 64-d vector for each keypoint.
    d. The steps involved are :
        i. DoG creation.
        ii. Non maximal suppression.
        iii. Thresholding (removing low contrast points)
        iv. Thresholding (removing edge responses using hessian matrix)
        v. Orientation assignment using a fixed window size centered around the keypoints
        vi. Making Histogram of oriented gradients to get possible angles.
        vii. Applying tilted region (using sin and cos direction of the angle) to get the pixels in the oriented region.
        viii. Calculating dx, dy, |dx|, |dy| for 4x4 cells averaged and normalized.
    e. Thresholding at higher values would give lesser interest points but, lose the details.
    f. The approximations made are as follows:
        i. The haar wavelet transform hasn't been implemented, instead a square region and sliding window have been used.
        ii. Image has been converted to grayscale.
    g. Parameters are taken from the paper itself.
    h. Sobel filter is used to assign edge histogram and also calculate descriptors.
2. Scale invariant Blob detection using LoG:
    a. This works by calculating LoGs at different scales.
    b. It yields a lot of points(~5000) so to reduce them overlapping points are removed using circular intersection and thresholding.
        i. If the circles are overlapping partially their area of intersection is calculated and threshold is applied on those.
        ii. If the overlap completely then, the bigger circle remains.
    c. Here the 26 neighbourhood comparison turns out very slow, so, a whole column along the scale space is checked for maxima of the points.
    d. It takes around a minute to run for each image and gives around 700 blobs.
    e. Here small blobs are prevalent as the larger scales had very less content of the image.

3. Color Autocorrelogram:
    a. The CA has been calculated for d = 1 D_8 distance due to the constraint of speed.
    b. Each image took almost 20 sec to generate CA for d = 1 and quantization of 64 colors.

Stats in q1.txt