MCA Assignment 1
Nitigya Pant
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Correlogram

Formula used:

$$|I - I'|_\gamma \equiv \frac{1}{m} \sum_{i \in [m], k \in [d]} \frac{|\gamma_{C_i}^{(k)}(I) - \gamma_{C_j}^{(k)}(I')|}{1 + \gamma_{C_j}^{(k)}(I) + \gamma_{C_i}^{(k)}(I')}$$

I and I' refer 2 images, Sigma being the correlograms, k is the distance. This formula form the base of my code.

Computation

1. Calculated probability.
2. Applied formula, *s += abs(g1[color][d] - g2[color][d]) / float(1 + g1[color][d] + g2[color][d])*
3. Iterated over all images to get values.

Similarity matching

- Image correlogram features are saved.
- For a given image, absolute distance between its correlogram and all other correlograms are saved.

Measure	Max	Min	Average
Recall	0.312	0.009	0.097
Precision	0.264	.010	0.047
F1 score	0.116	0.0094	0.045

Recall = Relevant images retrieved/ total number of relevant images
Precision = Relevant images retrieved/ total number of images retrieved

Scale invariant blob detector

Basic strategy of blob detection algorithm

- Convolve image at different scales.
- Find maximum squared Laplacian response.

Method applied

1. Load the image in grayscale.
2. Applied Gaussian blur.
3. Applied Laplacian operator.
4. Final value, laplacian_1 = laplacian/laplacian.max()
5. Iterated over all images

Example:

Figure: normal image

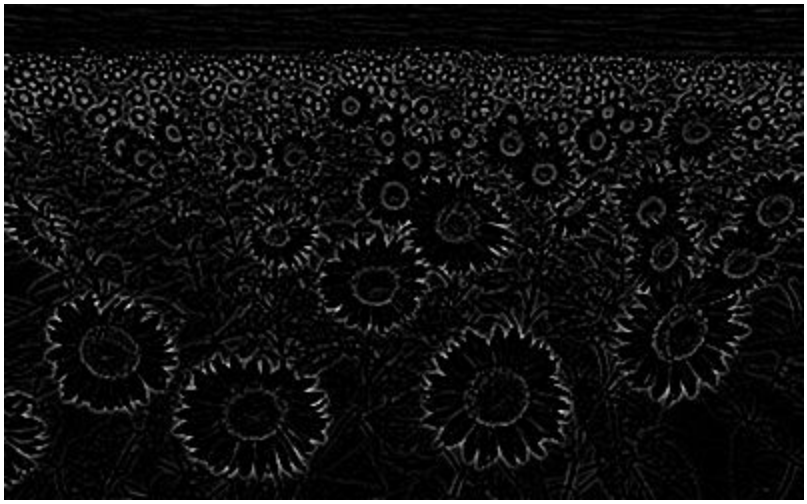

Figure: After application of blob detector