Features

Colour Features: It is a property of a single pixel and preserve colour constancy. Colour histograms are invariant to translation and rotation. Specifically, colour histograms summarize target objects.

Texture Features: capture the frequency with which patterns of colour/grey level appear. Local Binary Patterns: 1. Divide the patch into cells 2. Compute the local patch description number of each pixel. 3. Histogram these numbers 4. Optionally normalize each histogram 5. Concatenate histograms to make the feature vector.

Shape Features: Focus on image gradient measures: Distributions of gradients and gradient orientations reflect boundary shape. Histogram of Oriented Gradients(Hog): 1.Divide the patch into cells 2. Define larger blocks, covering several cells. 3. Compute gradient magnitude and orientation at each pixel. 4. Compute a local weighted histogram of gradient orientations for each cell. 5. Concatenate histogram to form a HoG vector for each block 6. Normalize vector values by dividing by some function of vector length

SIFT (Scale Invariant Feature Transform)

Scale Invariance: Find points whose surrounding patches are distinctive with using Gaussian mask

Translation Invariance: key point localization. (Scale alone gives too many points, some not accurate) if shifting the window causes a big change, its more likely to be a good feature.

SIFT (Scale Invariant Feature Transform)

patch