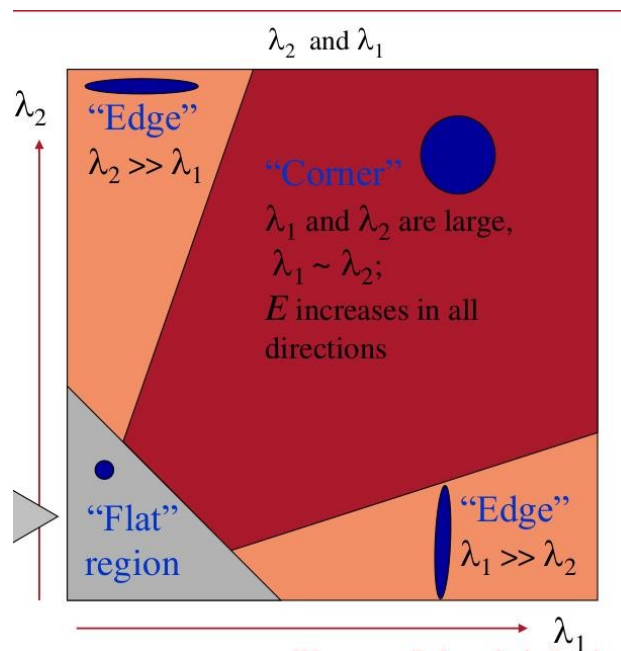


CS549/RBE549 Computer Vision

Assignment 2

WRITE UP

1. Features a good detector should have:
 1. **Invariant to any photometric transformations**, that is invariant to intensity of light falling on the image. Here, invariance means that if the image is transformed photometrically, the location of corners do not change.
 2. **Covariant to any geometric transformations**, that is change of scale, rotation, or translation of the image. Here covariance means that if an image is geometrically transformed, the corners should be identified in the transformed location/orientation.
2. The diagram shown below represents the relation of eigen values to corner detection.
 - a. If both eigen values are large and almost then it signifies fastest change in intensities and hence it is a corner.
 - b. If one of the either eigen values is significantly large, it is an edge.
 - c. If both eigen values are small, it is a flat edge.



3. Good method for feature descriptor matching.

A good method of feature descriptor matching is the Nearest Neighbor Distance Ratio (NNDR). This method results in correct matches unlike the method of direct thresholding on the distances between the features which often results in incorrect and false positives. The test uses two neighbors of a feature and their ratio.

ALGORITHM AND IMPLEMENTATION (56% accuracy)

1. Finding keypoints using harris corner detector and acquiring the x and y coordinates of these points.
2. Using these coordinates for generating feature descriptor.
3. Matching the features obtained using Nearest Neighbor Distance Ratio test to improve accuracy.

