**Assignment No: 2**

**Problem Statement:** Why given option is chosen?

**Algorithms:**

Following Algorithms we are going to use in Project:

1. HAAR
2. Covariance Texture Color Co-occurrence
3. Geometric Moment
4. HMM

Why we choose above algorithms?

**Benefit of HAAR:**

HAAR algorithm is used for the face detection from image, it is much faster than other one. Efficiency also greater than other algorithms.

It is used to recognize static images and can be modified to work with dynamic images. In that case the dynamic images received from the camera can first be converted in to the static ones and then the some procedure can be applied on them [3]. This is to improve the face detection system by using Haar Classifier to get higher accuracy result. Haar Classifier is used for face detection because it can detect the desire image very fast. The main challenge for a face recognition system is of effective feature extraction. In this project we implementing the system to find the locations of Log-Gabor features with maximal magnitudes at single scale and multiple orientations using sliding window -based search and then use the same feature locations for all other scales. For further feature compression we used Principal Component Analysis (PCA) because its simple implementation, fast training. The proposed system utilizes the Eigen face method is information reduction for the images. There is an incredible amount of information present even in a small face image. Each face that we wish to classify can be projected into face-spaced and then analyze as vector.

**Benefits of Covariance:**

Since the earliest work in appearance-based analysis, it has been acknowledged that the high dimensionality of image space is a problem. Often the number of training images available N is less than the dimensionality n and therefore much less than M, the number required to estimate a distribution’s parameters directly. M’s value depends on the model assumed for the multivariate distribution, but it is certainly much more than n. Dimensionality reduction is sometimes offered as a solution to this problem, but must itself rely on statistics. Almost always the total scatter matrix is used as an estimate for a global covariance matrix and a process then selects combinations of measurements that are supposed to characterize the class. Usually the transform which maps into the subspace also scales along the new feature axes. Principal Components Analysis (often used for dimensionality reduction even when more sophisticated classifiers are used within the subspace) derives the transform and the scalings simultaneously as the eigenvectors and eigenvalues of the estimated covariance matrix. The problem for PCA of N < n is soluble by a simple algebraic trick. But this does nothing for the real problem, which is that N << M and that the scatter matrix is therefore certainly not a reliable estimate for the covariance matrix.