perception. A texton images generated from an input image is an image of pixels , where each pixel value in the texton image is a representation of its corresponding pixel value in the input image. Specifically, each pixel value of the input image is replaced by a representation e.g., cluster identification, corresponding to the pixel value of the input image after the input image is being processed. For example, an input image is convolved with a filter bank resulting in 17 degree vectors for each pixel of the input images. The image textonization mainly has two modules: Image Convolution and Image Clustering. And before clustering the augmentation is carried out to improve the accuracy. The whole image textonization module is as shown in Fig 3.2.

The advantages of textons are:

1. Effective in categorizing materials
2. Find generic object classes.

Image textonization process includes the image convolution module and image clustering module which is discussed as below:

3.2.1 Image convolution:

Image convolution process includes the convolution of the pre-processed image training set with a filter bank. There are many types of filter banks like MR8 filter bank ,28D filter Bank, Lung and Malik set etc. [Kang et. Al., 2008]In that MR8 filter bank is utilized in the monochrome image for texture classification experiments. It cannot be applied to color images. The 17 D filter bank is designed for color image segmentation .So MR8 filter bank is expanded up to the infrared band image.The convolution module uses a seventeen dimensional filter bank consisting of Gaussians at scales 1, 2 and 4 . A derivative of Gaussian along x and y axes at scales 2 and 4 and finally Laplacian of Gaussian at scales 1,2,4 and 8.Here the image is first converted from RGB image into the CIE Lab color space. Thus, these Gaussian filters are computed on all three channels of CIE Lab color space and the rest of the filters are only applied to the luminous channel.

3.2.2 Image Augmentation

The output resulted from convolution is augmented with CIE lab color space. It slightly increases the efficiency.

3.2.3 Image Clustering:

Before clustering the output of convolution which is 17 Dimensional vectors is augmented with the CIE Lab image, thus finally the 20 Dimensional vectors are resulted. The resulted vector is then clustered using the k-means clustering method. In this the number of clusters K must be specified previously. In that from the color image the identification of number of cluster also can be possible. The k-means clustering is preferred because it a consider pixels with relatively close intensity values as belonging to one segment even if they are not locationally close and also it is not complex.

3.2.3.1 K-means clustering

K-Means algorithm is an unsupervised clustering algorithm that classifies the input data points into multiple classes based on their inherent distance from each other. The algorithm assumes that the data features form a vector space and tries to find natural clustering in them. The points are clustered around centroids $\mu_i \forall i = 1...k$ which are obtained by minimizing the objective