LA-SS Project Week 1-2
9th October 2015

Compression

At first we take the image and convert it to matrix containing the RGB values.The dimension of that matrix will be the Rows and Columns of the RGB matrix.

After getting the RGB matrix we convert it to grey scale matrix and then it is thresholded to either black or white values which includes background and foreground separation and connected component labelling.
We try compression using this two methods

• PDP^{-1} : For doing compression through PDP^{-1} we first diagnolized the matrix into PDP^{-1}. Here P is made up of Eigen Vectors and D Matrix contains the Eigen Values of the Matrix.
The issue in using PDP^{-1} is that it only works for square matrix. Mostly the image matrix is not square matrix . Hence we add rows or columns filled 0 to make the matrix A square matrix.But creating P^{-1} requires more steps and hence this method takes too much time to implement

• SVD : Hence as PDP^{-1} was not feasible , we use SVD (Singular Value Decompostion) to compress the image.It also takes too much time but as it converts into transpose it will take less time thanPDP^{-1}.Hence this method can be used.

• Head Count : To locate a object we threshold the image using otsus thresholding method.
Output of otsus thresholding method.
[trim = 1mm 8mm 2mm 5mm, clip, width=14cm]$1_b in.jpg$

The Problems Faced In This Method Was :

The difficulty in this method was that the furniture the background were also getting included in the above mentioned range.

Requirement of noise reduction in image, mixing of black and white particles, issues that arise due to head radius decreasing as distance from camera location increases, and these may get eradicated while implementation of compression or thresholding onto the image. Larger sized objects which are

not removed lead to problems in component labelling and hence segmentation is ruined.

We are solving problems regarding background substraction and countingtThe no of heads by noise removal by using techniques such as averaging filter and median filtering.

There are many more methods which we can use such as : Eigenfaces, Watershed-based Object Detection, Harr wavelets etc..