6.1 PRESENT WORK

This chapter gives the details of research carried out along with the limitations and recommendation for future enhancements.

The Lossy and Lossless Block-Based Binary Plane Technique produce better compression rate than JPEG subject to the suitability of the spread of the redundant pixels in the image.

The Lossless Block-Based Binary Plane Technique is simple and produces moderate compression rate (some better than JPEG as shown in the earlier tables and graphs) and with 100% quality reconstruction.

The Lossy Block-Based Binary Plane Technique achieves higher compression rate by introducing the loss. The loss can be controlled by varying the threshold value. Only when the threshold is very high the loss is visually observable. Otherwise the loss cannot be seen by naked eye. By using the Lossy Block based compression technique with maximum threshold value on the area outside the selected region and the Loss Less technique on the selected region, both desirable compression rate and desirable quality in selected important region can be achieved.

Both these techniques are applied for color images, without much change in the logic. So the greatest feature of Block-Based
Technique is its simplicity. Even in the case of color images also good compression rate is achieved.

With respect to memory usage, the Block-Based Binary Plane Technique requires \((3 \times \text{columns})\) number of bytes at any time, because it reads 3 rows at a time. But in the case of JPEG, the entire image is read at a time. So the memory utilization is better in Block-Based Binary Plane Technique than that of JPEG.

**Limitations:**

1. It can be applied to the images with different color models such as CMYK & HSI.

2. In region specific compression, only one region of importance can be selected. However this can be extended to more than one region.

3. The rate of compression is based on the suitability of the redundancy in the region or image. This is applicable to all images.

4. The speed of compression can also be taken as one parameter for comparing the performance of different compression techniques.

**6.2. FUTURE ENHANCEMENTS**

1. The image can be divided into blocks of suitable sizes (e.g. 8X8). For each block some important parameter such as average, standard deviation or any other suitable parameter is calculated. Based on this parameter the blocks are arranged in
ascending order and then the Block-Based Binary Plane Technique is applied to achieve a better compression rate.

2. The Block-Based Binary Plane Technique can also be applied to Fractal images.

3. The Block Based Binary Plane Techniques can be extended to gnomes of cells to achieve better compression in storage and transmission of these gnomes.

4. The effect of using the modified Run Length Coding in place of Huffman/Canonical Huffman Coding can be studied.

I wish to round of my dissertation by reiterating my thesis statement that the tool I have developed, namely, Block-Based Binary Plane Technique can be effectively applied for lossy as well as lossless and region-specific compression to obtain a better compression rate.