CHAPTER 6

CONTRIBUTIONS OF THE RESEARCH WORK AND SUGGESTED FUTURE WORK
6.1 SUMMARY OF WORK

This research work is performed on various image processing techniques. It has many general goal and objectives. To achieve the goal and fulfill the objectives researcher has performed much work on this area.

In this research first of all study the various types of images and image represent formats are available. Different types of image represent formats are used in different application. It studies on various image characteristics of different images.

In this work various image processing techniques are studied such as image compression, image registration, image segmentation, etc.. From this different techniques, researcher has selected one technique i.e. image compression. So, researcher has carried out his work on only image compression process.

For image compression, researcher has studies different types of image compression methods. Generally there are two different types of image compression method. These are Lossless and Lossy image compression. In lossless image compression method, the original image can be recovered from the compressed image. That means you can recover the original image from compressed image. There is no data lost from the image. So it is called lossless image compression. Lossless image compression has lower compression ratio. In lossy image compression method, it has less ability to recovered original image from the compressed image. That means you can not exactly recover the original image from compressed image. There may be data lost from the image. So, it is called lossy image
In this research work four different image compression algorithms are studied. These are Wavelet, JPEG, Vector Quantization and Fractal image compression algorithms. These algorithms are performed on different images with different properties set with the algorithms.

In wavelet based image compression performed on different five algorithms such as: Haar, Daubechies, Biorthogonal, Symlets and Coiflet. It performed on different decomposition level. Finally, we compared these image compression algorithms.

6.2 CONCLUSION

The research work started with the objectives of study, and modelling for image processing algorithms. The study of the various image processing algorithms and select any one image process for algorithm. In our study we select image compression process because there are many difficulties and problem for image storage and transmission over network or internet.

The outcome or result of this research work provides the help to select the image compression algorithm. Image compression is most useful because there are many problem related to storage image data and transmission of image data over network. There are various image compression algorithms are available. To select appropriate algorithm for image compression, this study is very useful. This work is also useful to develop a new image compression algorithm. These different image compression algorithms are suitable for different situation.
In this work, conclusion is written after every image compression algorithm. In this thesis, it also written the comparison of these all image compression algorithms.

In this work four different image compression algorithms are studied. These are Wavelet, JPEG, Vector Quantization and Fractal image compression algorithms. These algorithms are performed on different images with different properties set with the algorithms.

Each image compression algorithms has some advantages and disadvantages.

The advantage of wavelet based image compression algorithm is give high compression ratio. The disadvantages of wavelet based image compression algorithms are bit allocation and coefficient quantization.

The advantage of JPEG based image compression algorithm is used for current standard. The disadvantages of JPEG based image compression algorithms are bit allocation and coefficient quantization.

The advantages of VQ based image compression algorithm is provide simple decoder and it has no coefficient quantization. The disadvantages of VQ based image compression algorithms are it gives good result only for small bpp and it has slow process of codebook generation.

The advantage of fractal based image compression algorithm is good for mathematical encoding frame and it provide resolution free decoding. The disadvantages of fractal based image compression algorithms are bit allocation and slow for encoding process.
In this work, it concludes that, these all four algorithms give satisfactory result for 0.5 bits per pixel (bpp). Embedded Zero tree Wavelet (EZW) algorithms is superior to all other algorithm for very low bit rate i.e. 0.25 bpp or lower.

In practical approaches to all image compression algorithms, it concludes that:

(1) Wavelet based image compression algorithms are strongly recommended.

(2) JPEG/DCT based image compression algorithms might use an adaptive quantization table.

(3) VQ based image compression algorithms is not appropriate for a low bit rate compression although it is simple.

(4) Fractal based image compression algorithms should utilize its resolution free decoding property for a low bit rate compression.

6.3 FUTURE WORK

In this study, we select some limited numbers of images. In future work, we can extend this work for many different images for different characteristics.

In this study, we select only one operation i.e. image compression. In future work, we can extend for many different operations such as image registration, image restoration, image fusion, image enhancement, image segmentation in image processing area.
In this research work, we select four different image compression algorithms such as Wavelet, JPEG, Vector Quantization and Fractal. In future work, we can extend for many different image compression algorithms.

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