ABSTRACT

Digital Image Processing is a rapidly evolving field with growing applications in Science and Engineering. Modern digital technology has made it possible to manipulate multi-dimensional signals. Digital Image Processing has a broad spectrum of applications. They include remote sensing data via satellite, medical image processing, radar, sonar and acoustic image processing and robotics.

Uncompressed multimedia graphics, audio and video data require considerable storage capacity and transmission bandwidth. Despite rapid progress in mass-storage density, processor speeds, and digital communication system performance, demand for data storage capacity and data-transmission bandwidth continues to outstrip the capabilities of available technologies. This is a crippling disadvantage during transmission and storage. So there arises a need for data compression of images.

There are several Image compression techniques. Two ways of classifying compression techniques are mentioned here.

1) Loss less Vs Lossy compression

2) Predictive Vs Transform coding

For correct diagnosis, the medical images should be displayed with 100% quality.
The popular JPEG image compression technique is lossy technique so causes some loss in quality of image. Even though the loss is not a cause of concern for non-medical images, it makes the analysis of medical images a difficult task. So it is not suitable for the compression of medical images.

In the proposed work a Region Based Compression Approach using Block-Based Binary Plane Technique for medical images is developed. This is based on the fact that in the case of medical images, such as X-rays, only some part of the image is useful.

In this technique the X-ray image is displayed to the Physician. The Physician identifies the region (rectangular in shape) where the important information for the diagnosis is present. Then the part identified by the Physician is compressed using loss less technique so that it is extracted with no loss in quality when it is displayed. The remaining part of the image is compressed with some loss.

For the compression of region identified we use the Loss less Block Based Binary Plane Technique and for the other part Lossy Block Based Binary Plane Technique is used.