DIGITAL IMAGE COMPRESSION

WITH WAVELET TRANSFORMS

A PROJECT REPORT PRESENTED BY

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ABSTRACT

Title of Project: Digital Image Compression with Wavelet Transforms

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Summary:

This is an attempt in using Wavelet Transforms in enhancing the process of Image Compression. Image Compression has become the essential need of the present society as the usage of digitized images has come to the doorsteps to ordinary people of all walks of life.

Wavelet Transformation was used with Haar Transform as a start, to keep the calculations simple. Wavelet Transforms are normally considered to be loss less. GIF images are used so that analysis is easier and that resulting images are stored as GIF images to observe the real effect on the image by the tests carried out.

GIF format was selected as it is using a Run Length Coding Algorithm which is effective in compressing machine mage images as the future digital imaging is more towards machine made images with applications like of Software Interfaces, Computer Games and advancement in animation in video and film industry. Furthermore GIF has

minimum loss in compression compared to other compression techniques and maintains a healthy colour depth.

Colour images were used for testing over the traditional gray scale images that were being used, to ensure the results of the project to be more realistic in contemporary and future applications.

The results are promising. There is improvement in compression with Wavelet Transform and the loss is significantly low.

The coding is in Java to have more flexibility in future expansions with Internet and web based use. The Least Significant Bit is used as the sign bit of color bytes in calculations to minimize the loss. As wavelet transform is a loss less technique, the loss can be limited to 0.4% using this method.