

**IMAGE COMPRESSION AND DECOMPRESSION TECHNIQUES  
FOR FUTURE APPLICATION IN TRANSMISSION TO REMOTE  
MONITORING CENTER USING TELEPHONE NETWORK:  
SOFTWARE DEVELOPMENT**

**This is presented in partial fulfilment for the award of the  
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## ABSTRACT

This thesis proposes a software development of image data compression and decompression techniques. The compression takes place through a process of removal redundant data in image file and representing the data to more efficient codes. After completing the compression process, the amount of data required to represent digital image is reduced. This reduction is justified from compression ratio. Whereas, decompression is done through inversion of compression to get the original amount of data for that particular image file. Both techniques can be performed by using LZW and Huffman algorithm. For future application, the compressed image file is to be used in image transmission over telephone network via modem to remote monitoring center. The software development is done using Turbo C++ language in the DOS environment.

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**All perfect praises belong to Allah swt , Lord of the universe. May His blessing upon the prophet Muhammad saw and members of his family and companions.**

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## 1. INTRODUCTION

The application of computer-based image analysis and interpretation is an emerging technology[9]. It includes finding flaws, identifying parts, gauging, determining x, y and z coordinates to locate parts in three-dimensional space, collecting statistical data and record keeping. The term image in this project refers to two dimensional light intensity function  $F(x,y)$  where x and y denote spatial coordinates and the value of F at any point.  $F(x,y)$  is proportional to the brightness (or graylevel) of the image at that point[1]. Images are often obtained by viewing natural objects using optical-electronic device like video camera. The captured images are to be displayed or stored through image processing system. A generalized image processing system is devised to exhibit a wide range of phenomenon associated with imaging apparatus and correspondingly wide range of knowledge that can fruitfully be brought to bear on the subject.

An image captured by the camera is firstly digitized and stored as matrix elements of binary digit in computer memory. The stored capturing image can later be compressed to reduce the amount of its data required to represent a digital image for the purpose of transmission through telephone line. This is achieved through the representation of image data by more efficient codes[5]. This data reduction results from elimination of redundant fields of information while representing the data elements in the remaining fields with as few logical indicators as is feasible. The compressed image data is then expanded at the destination to get original image. This overall system is shown in figure 1.0.