# LBG IMAGE COMPRESSION BY VHDL SIMULATION

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**Abstract**— Compression as name implies deals with technique for reducing storage require to save an image. Compression to makes file storage and transmission over any communication media. Image compressions address the problem of reducing amount of data to represent digital image with no significant loss of data. In this paper  LBG algorithm used for image compression. These algorithms require as codebook generation. The codebook is the collection of codeword. The compress image will be stored into VHDL simulation. The performance of compression ratio will be measure in compression ratio and peak signal to noise ratio.

**Keywords**— Image Compression, LBG Algorithm, Codebook, Vector Quantization.

## INTRODUCTION

Image compression is the art of science, which reducing the amount of data to represent image. Image compression is the most useful technology in the field of digital image processing. To reducing the amount of data requires to represent given quality of information is called as data compression. The compression technique represent image data using fewer bits than what is required for original image. The main purpose of these paper  is  to compress image by using LBG algorithm. Image compression fall under two techniques: Lossless Compression and Lossy Compression. If amount of data error introduced is zero, without any loss of data called as lossless compression or error free compression. In lossless process image compression and decompression is identical to original image. Lossless compression can be exactly recovered from its compress representation. In case of lossy compression is irreversible process because perfect recovery of original image is not possible. There are small amount of  redundancy represent .On the other hand, the amount of data reduction is usually more in case of lossy compression than that of lossless compression. The LBG algorithm in community of vector quantization(VQ) for purpose of data compression. Vector quantization is widely used in image compression owing to it's simple structure and low bit rate. Vector quantization works by divided n overlapping block of size then image is store as set of pixel values within each block. The encoding procedure divided into several k-dimension vectors and each vector encoded by index of codeword by simple table look-up operation and decoding procedure will compress image getting output in decoder.

## Literature Survey

The multimedia gadgets generates of large amount of data and images. These service require higher speed and high transfer rate. Image compression can solve this problem by using LBG algorithm. LBG algorithm is to reduce the computation cost in codebook training process. A significant reduction in computation cost is obtained reduction [1]. Vector quantization is an essential tool in signal processing compression achieved by forming vectors from training data sequence grouping similar vectors into cluster represents single vector [2]. The performance of the standard LBG algorithm highly depended on choice of initial codebook [3]. The methodology of vector quantization is also called "block quantization" is often used in lossy image compression [4]. One of the key roles of vector quantization is how to generate a good codebook such that distortion between the original image and reconstruct image is the minimum [5]. Image pixels that are highly correlated and VQ performs better if it's input vector have components that are more highly correlated. Therefore vector in image domain are formed as compact little connect of adjacent pixels. Quality or efficiency can

attained by size of the block [6]. To acquire new initialization technique known for LBG algorithm. The main idea in VQ is to find a codebook which minimizes the quantization mean error reconstructed images [7].

## Vector Quantization Scheme

Vector quantization done three steps (1) codebook design (2) encoding process (3) decoding process. In LBG algorithm an initial codebook is chosen at random from the training vectors. The codebook and the index-table is nothing but the compressed form of the input image. The encoding process, any arbitrary vector corresponding to a block from the image under consideration is replaced by the index of the most appropriate representative codeword. In decoding process, the codebook which is available at the receiver end too, is employed to translate the index back to its corresponding codeword. Figure shows schematic diagram of VQ encoding and decoding process.
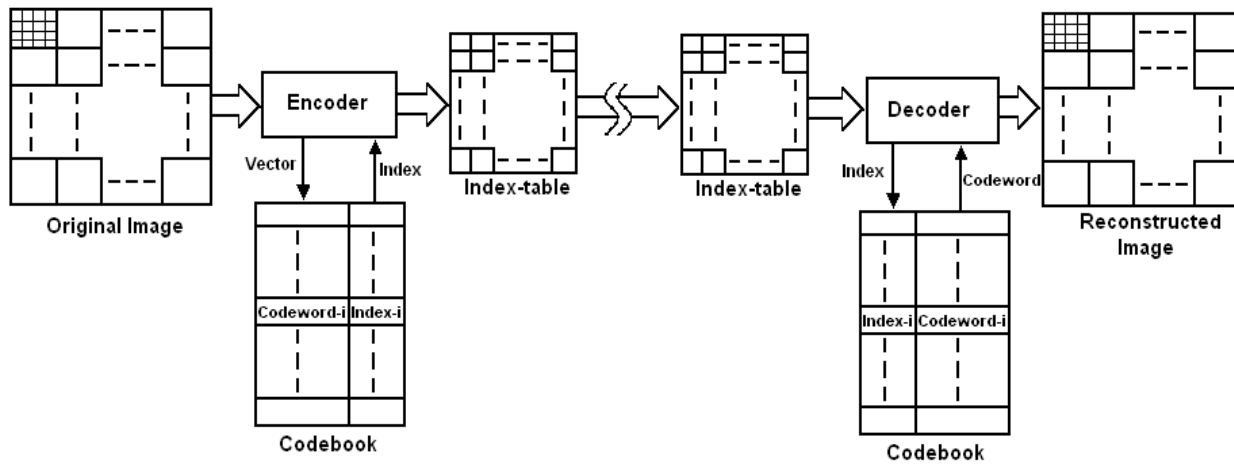
**Fig. The Schematic diagram of VQ Encoding and Decoding Process.**

## CONCLUSION

In this paper image compression technique by which image information can be represented by less number of bit's. The image can be compressed by using LBG algorithm. Vector quantization is an established lossy compression technique that has been used successfully to compress signals.

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