

NEURAL NETWORKS IN IMAGE COMPRESSION

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Abstract

Image is better than any other information form for human being to perceive. Vision allows humans to perceive and understand the world surrounding us. Image processing refers to manipulation and analysis of pictorial information. Any operation that acts to improve, correct, analyze an image is called image processing. Digital image processing operations can be broadly grouped into five fundamental classes: image enhancement, restoration, analysis, compression, and synthesis. Each class contains specific operations [1].

Image compression is way of encoding digital data so it reduces redundant information in image and takes less storage space. Compression is an important component of the solutions available for creating file sizes of manageable and transmittable dimensions and with reduced bandwidth while transmission[4].

Apart from the existing technology on image compression represented by series of JPEG, MPEG, and H.26x standards, new technology such as neural networks and genetic algorithms are being developed to explore the future of image coding. Successful applications of neural networks to vector quantization have now become well established, and other aspects of neural network involvement in this area are stepping up to play significant roles in assisting with those traditional compression techniques[2]. The present research in this field can be summarized as follows:

1. Back-Propagation Image Compression;
2. Hebbian Learning Based Image Compression;
3. Vector Quantization Neural Networks;
4. Predictive Coding Neural Networks.

The present paper reviews the neural networks application in image compression techniques .It also gives the implementation of back-propagation algorithm and gives the results of the same.

Keywords:- Image coding, ANN(Artificial Neural Network), JPEG, Vector Quantization