

IMAGE AND VIDEO COMPRESSION TECHNIQUES IN IMAGE PROCESSING

AN OVERVIEW

¹S.SUKUMARN & ²T.VELUMANI

¹Associate Professor, Department of Computer Science, Erode Arts & Science College, Erode, Tamil Nadu, India

²Research Scholar, Department of Computer Science, Kongu Arts & Science College, Erode, Tamil Nadu, India

ABSTRACT

At the present time, we stand upon the threshold of a Revolution in the means available to us for the widespread dissemination of information in visual form through the rapidly increasing use of international standards for image and video compression. Yet, such standards, as observed by the casual user, are only the tip of the coding iceberg. Something like half a century of scientific and technological development has contributed to a vast body of knowledge concerning techniques for coding still and moving pictures, and the present article presents a survey of developments which have taken place since the first (predictive) coding algorithms were implemented in the 1950s. Initially, we briefly review the characteristics of the human eye which influence how we approach the design of coding algorithms; then we examine the still picture techniques of major interest—predictive and transform coding, vector quantization, and subband and wavelet multiresolution approaches. Recognizing that other forms of algorithm have also been of interest during this period, we next consider such techniques as quad tree decomposition and segmentation before looking at the problems arising from the presence of motion and its compensation in the coding of video signals. In the next section, various approaches to the coding of image sequences are reviewed, and we concentrate upon the now universally used hybrid motion compensated transform algorithm before examining more advanced techniques such as model and object based coding. Of course, the key to widespread acceptance of any technological development is the establishment of standards, and all major proposals—JPEG, MPEG-I,II,and IV, H.261, and H.263, are considered with emphasis on the way in which the coding algorithm is implemented rather than on protocol and syntax considerations. Finally, comments are offered in respect of the future viability of coding standards, of less well researched algorithms, and the overall position of image and video compression techniques in the rapidly developing field of visual information provision.

KEYWORDS: MPEG, JPEG, Quadtree, Ltiresolution, H. 261.