

EACCC - An Evolutionary Algorithm for Color Cell Compression

A. Schrader

CCRL Heidelberg, NEC Europe Ltd.
Adenauerplatz 6, D-69115 Heidelberg, Germany

B. Freisleben

Department of Electrical Engineering and Computer Science (FB 12)
University of Siegen
Hölderlinstr. 3, D-57068 Siegen, Germany

Abstract *High quality images and video sequences are important components of multimedia applications and digital video broadcasting environments. Image compression schemes such as JPEG or MPEG are used to reduce the memory requirements for storing or transmitting them. However, the main drawback of these schemes is their symmetrical nature: in both the coding and decoding phase a time-consuming discrete cosine transform must be computed. In this paper we present the EACCC image compression algorithm, an evolutionary optimized version of the standard color cell compression (CCC) algorithm. The asymmetrical organization of EACCC enables us to improve the image quality with even higher compression ratios using an evolutionary color mapping function and an adaptive block coding scheme. This leads to a compression algorithm with a very fast decompression scheme, allowing video-realtime software-solutions on contemporary workstations.*

Keywords: Image Compression, Color Quantization, Evolutionary Algorithms, Block Coding