

# FAST COLOR QUANTIZATION OF COMPRESSED TRUE COLOR IMAGES

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## Abstract

The ever increasing spectral and color resolution of digital images used in imaging tools like multimedia applications in computer communication networks has increased the demand for compression techniques to improve the efficiency of transmission and storage. Several approaches which attempt to exploit the statistical properties of image signals have been proposed for twodimensional color image compression. Today's most sophisticated lossy compression schemes operate on an image representation where the components are proportional to a physical value. Due to the features of the human perceptual system, for true color images this property leads to an acceptable visual degradation even with high compression ratios.

In order to visualize true color images on a CLUT graphic device, where the pixels are not represented by color intensities but instead by pointers to a color lookuptable, we have to apply a *color quantization algorithm* to build a subset of the original colors. Unfortunately, the general optimal color quantization problem is proven to be NP-hard, leads to unacceptable runtime problems and is therefore often approximated by suboptimal heuristic approaches with reduced visual quality.

In this paper, we present a new coding scheme which reduces the color quantization process for compressed true color images to a linear-time procedure. Our proposal is based on performing some of the required computations as a preprocessing step before the compression and storing their results as part of the compressed image data with a specially adapted coding scheme, which is an improved version of our recently presented approach [1]. By applying this new method, the time for the visualization process becomes independent of the chosen quantization quality.

## References

- [1] A. Schrader, F. Wittgruber, *Fast Color Compression for JPEG images*, The International Conference on Technical Informatics CONTI'96, Timisoara, Romania, Nov. 14-16, 1996.