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Abstract

This document contains the description and comparison of 2 different image compression algorithms, comparing both in their strong and weak points.

Iimage compression

For AZERTY

Contents

[Assignment 2](#_Toc137754400)

[The Plan 2](#_Toc137754401)

[Algorithm 1 – JPEG 2](#_Toc137754402)

[Colour Space Conversion 2](#_Toc137754403)

[Chrominance Down Sampling 2](#_Toc137754404)

[Discrete Cosine Transform 2](#_Toc137754405)

[Quantization 2](#_Toc137754406)

[Run Length and Huffman Encoding 2](#_Toc137754407)

# Assignment

# The Plan

# Algorithm 1 – JPEG

The first algorithm is based on the JPEG image compression algorithm, to reconstruct this method 5 main steps are used:

## Colour Space Conversion

The first step of the algorithm is Colour Space Conversion. A regular image is made from a matrix of pixels, with each pixel having 3 colour values: red, green, and blue (RGB). But RGB aren’t the only colours you van use to create an image. The JPEG algorithm uses the YCbCr colour space, this colour space consists of Luminance (Y), Blue Chrominance (Cb) and Red Chrominance (Cr). The Luminance layer has the black/white values from the image, whilst the Blue- and Red Chrominance layers consists of the colours, that altogether create the same image as when you would use the RGB colour space.

## Chrominance Down Sampling

With the YCbCr colour space, we can use a trick on our eyes. We can down sample the chrominance layers whilst keeping the sharpness by using the Luminance layer. This creates a – still good-looking – image when we deleted half of the data we started with. Both the Chrominance layers are 1/4th the original size.

Y + Cb + Cr → 1 + 1 + 1 = 3

Y + Cb + Cr → 1 + ¼ + ¼ = 1.5

The down sampling on the chrominance layer works by taking a 2×2 square of pixels and putting the average of those 4 values in the new pixel. The old layer is deleted and when reconstructing the image, the layers that are down sampled get upscaled back to the original resolution, creating the full image.

## Discrete Cosine Transform

## Quantization

## Run Length and Huffman Encoding