

Exercise: Lossless Image Compression Challenge (Part I)

Implement an encoder and decoder for lossless coding of 8-bit color images:

- 1 We use the PPM format as raw data format:
 - The encoder should read the original images in PPM format.
 - The decoder should write the reconstructed images in PPM format.

Example images (24 PPM images of the Kodak set) are provided on the course web-site (and in the KVV).

- 2 Use coding techniques that you learned for efficiently compressing the 8-bit color images.
 - A combination of prediction and entropy coding of the prediction errors is suggested.
 - Start with a simple (but working) approach and try to improve your codec step by step.

structure of “ppm” files:

```
P6           // ascii (fixed)
width height // ascii
255         // ascii (max. value)
<binary data> // binary
```

binary data:

- pixels in raster-scan order (line by line)
- each pixel consists of three 8-bit values
 - ➔ R: red component (0..255)
 - ➔ G: green component (0..255)
 - ➔ B: blue component (0..255)
- the values R, G, B for a pixel follow each other (before the values for the next pixel)

suggestion:

- Store the red, green, and blue components of an image into separate arrays
- Code the color components independently