ECE 251C Project Proposal

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The fast development of the Internet has made it possible to distribute digital data. In order to protect the copyright of the data, a watermark is frequently used in digital media such as audio, images and video. Here in our project, we will focus on implementing an algorithm to produce an imperceptible, robust watermark with high resistance to image alterations. These algorithms use the discrete wavelet transform to embed the copyright image in the wavelet domain into the host image without significant alterations to the appearance of the host image. Additional transformations in the wavelet domain such as SVD or fractional fourier transforms may be applied in order to improve watermark embedding.

We will use the LENA image of size 512x512 with 256 gray level as the host image and the binary COPYRIGHT image of size 20x50 as the watermark image. Since most of the researches are focused on grayscale image, we will also try to implement the algorithm on RGB images if time permits.

Results will be evaluated on the basis of image quality and quality of recovered watermark using metrics such as PSNR and correlation to the original host image. Additionally, the embedded image will be corrupted using a variety of methods such as cropping, blurring, and compression.

Fig 1. Test images. (left: LENA, right: COPYRIGHT)

References:

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