Dhirubhai Ambani Institute of Information and Communication Technology

Assignment 2

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Developed using: Python(Using SimpleCV library)

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1 Bitplanes

1.1 Bitplanes slicing

In this problem we implemented a function mybitplane() that extracts all 8 bit planes of any input grayscale image I. As we can observe the most significant bits seem to have

Figure 1.1: Original Image

more information pertaining to the image

1.2 Watermarking

In this exercise we use the binary image `daiict.bmp` that was provied as a watermark and replace the i^{th} bit plane of the image `lena.jpg` and reconstruct the gray scale image

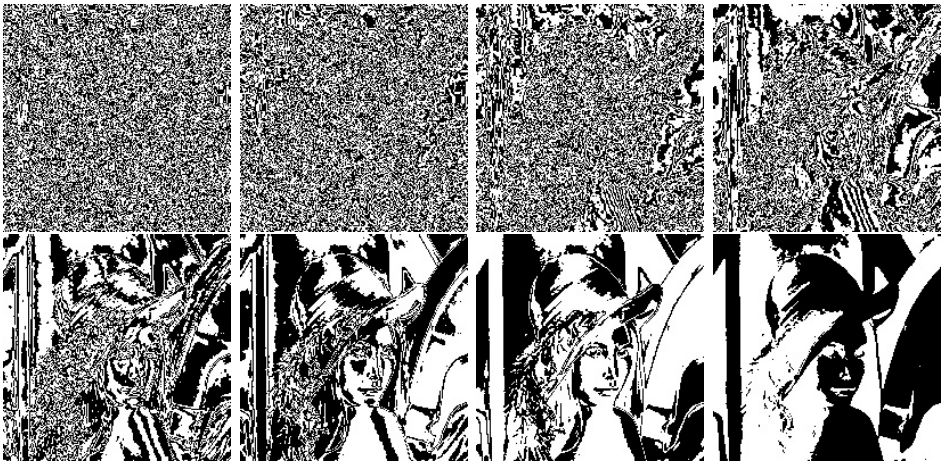

Figure 1.2: Bitplanes, Starting from Least significant bit(TopLeft) to Most significant bit in clockwise direction

Figure 1.3: Watermark

Figure 1.4: WaterMark applied on different layers of the original image. Starting from level 0(top-left) to level 7 in a clock-wise direction

J_i for $1 \leq i \leq 8$.

2 Histogram equalization

In this exercise we wrote a function `myhisteq()` that applies histogram equalization on any input grayscale image. We use the transfomration function
$T(r_k) = (L-1)\sum_{j=0}^{k} p_R(r_j)$

Figure 2.1: WaterMark applied on different layers of the original image. Starting from level 0(top-left) to level 7 in a clock-wise direction