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A BITPLANE SLICING APPROACH FOR IMAGE SHARPENING

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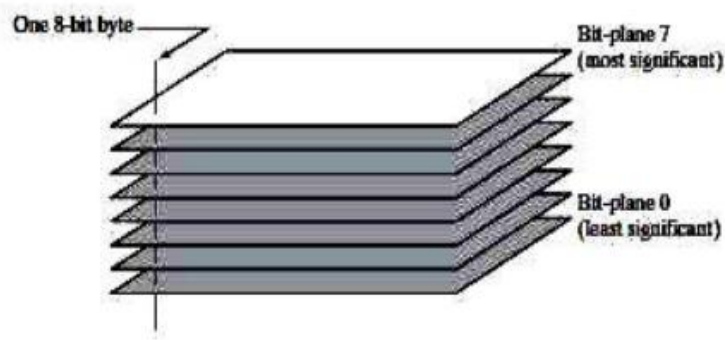
ABSTRACT

A bitplane is used in this paper. Slicing is a way of reducing the original grey level to a binary image by using one or more bits of the byte for each pixel. Assume that each pixel in a picture is represented by an 8-bit value. Consider an image composed of 8, 1 bit planes ranging from bit planes 1-0 (LSB) to bit planes 7 (MSB). When the output image is displayed, the 8th bit image will appear bonder. In this software, we extract 7-8 bias images, subtract 7 and 8 bit images, and display the final image. The original image is added to the subtract image. This paper provides an overview of Bitplane slicing.

Keywords: Bitplane, Image Processing, Intensity Level, Pixel, Bits.

1. INTRODUCTION

Digital image processing is one of the fastest-growing fields of technology. Picture processing is a technique for applying operations on an image in order to improve it or extract relevant information from it. Computers are used to manipulate digital photographs utilizing digital image processing techniques.



Pixels are digital numbers, each one composed of 8 bits. The image is composed of 8 1-bit planes. Plane 0 contains the least significant bit and plane 7 contains the most significant bit. In terms of 8-bits bytes, plane 0 contains all lowest order bits in the bytes comprising the pixels in the image and plane 7 contains all high order bits. Instead of highlighting gray-level range, we could highlight the contribution made by each bit.Only the higher order bits (top four) contain visually significant data. The other bit planes contribute the more subtle details. This method is useful and used in image compression.

2. METHODOLOGY

2.1 Subtraction

The term "bitplane slicing" refers to the subtraction operation.

Select the 7th and 8th bit images first, and then subtract the 7th and 8th bit images.

If I subtract the 7th and 8th bits from the picture. 9 will be obtained by subtracting the picture..

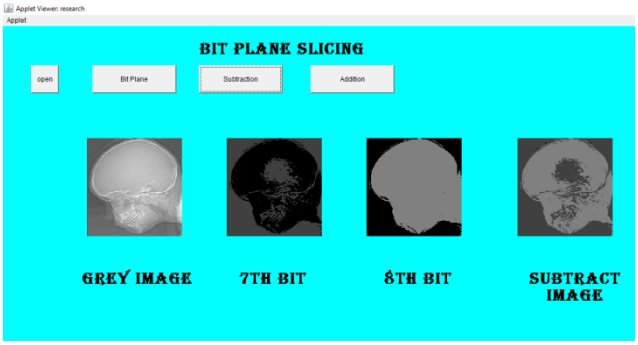


Figure 1: Subtraction

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2.2 Addition

A word used to describe the Addition process is bitplane Slicing.

To acquire the output of my bitplane slicing image, I'll take my original image and subtract it from it.

Finally , I received my addition image .

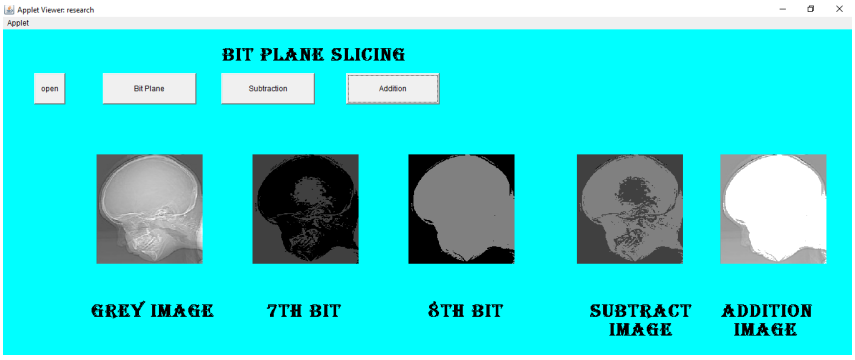


Figure 2 : Addition

2.3 Image Sharpening :

To enhance line structures or other details in an image.[Enhanced image = original image + scaled version] of the line structures and edges in the image. Line structures and edges can be obtained by applying a difference operator (=high pass filter) on the image .Combined operation is still a weighted averaging operation, but some weights can be negative, and the sum=1.In frequency domain, the filter has the “highemphasis” character ..

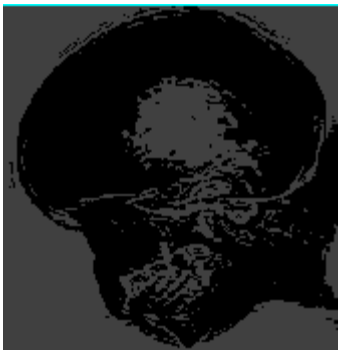
3. MODELING AND ANALYSIS

First we take a grey image . In comparison to 7^{th} bit and 8^{th} bit and expands the influence with more points .The explanation of Addition and Subtraction are explained below. The term "bitplane slicing" refers to the subtraction operation.

Select the 7th and 8th bit images first, and then subtract the 7th and 8th bit images. If I subtract the 7th and 8th bits from the picture. 9 will be obtained by subtracting the picture.. A word used to describe the Addition process is bitplane Slicing. To acquire the output of my bitplane slicing image, I'll take my original image and subtract it from it. Finally , I received my addition image .

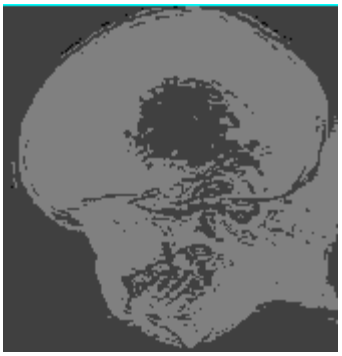
4. RESULTS

7^{th} bit , 8^{th} bit , Addition and Subtraction are examined on a variety of images , that are frequent in image processing



7^{th} bit

8^{th} bit



Subtract

Addition

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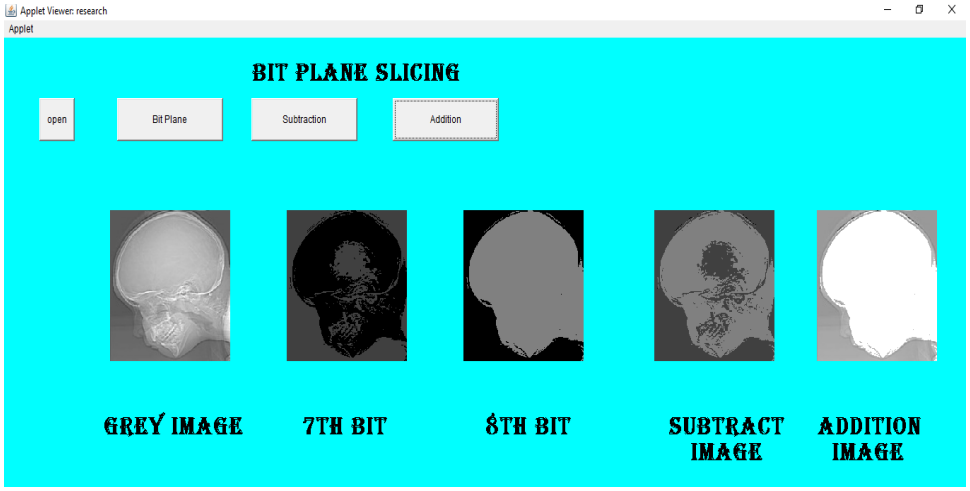
OUTPUT :



5. CONCLUSION

In today's world, digital image processing is frequently employed. Bit plane slicing has three major aims. Creating a binary picture from a gray-level image. In this article, we slice a bitplane. Any enhancing approach that accentuates edges and small details in a picture is known as image sharpening. Image sharpening is a technique for boosting local contrast and sharpening pictures that is frequently used in the printing and photography industries.Increasing the value results in a more sharper picture. The sharpening process begins with the creation of an unsharp mask, which is a slightly blurred replica of the original picture. To identify the existence of edges, this is removed from the original image. The contrast is then raised selectively along these edges using this mask, resulting in a sharper final image. In this article, we employed addition and subtraction to determine the final image of our output, and then we used bitplane slicing to obtain our sharpening image.

6. REFERENCE

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