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Report on Challenging Task 2

ECE3043 Digital Image Processing for Medical Applications

[Slot: L11+L12]

Submitted by

Addisu Amare

18BML0104

To

Dr. Sharmila N

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Expt No. 1	
	Shifting the image
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**Aim: to shift the given image with the help of MATLAB software.**

Theory

Image shifting is occasionally **used** as a trompe effect in scenes which incorporate reflections in a body of water. The **image** is deliberately inverted so that people slowly discern that something is 'not quite right' with the **picture**, and come to notice that it is upside down.

Most visual theory implies that our eye enters the frame from the left, so **shifting an image** can help influence where the eye is drawn. If elements are moving left to right, the momentum is comfortable and easy. If they are moving right to left, there is tension or struggle introduced into the scene.

Programming algorithm:

- *Read the source image file in MATLAB environment*
- *Get the Dimensions of the image matrix*
- *Reverse the order of the elements of each column in every image plane*
- *Display (diagonally flipped image).*

Flow chart:
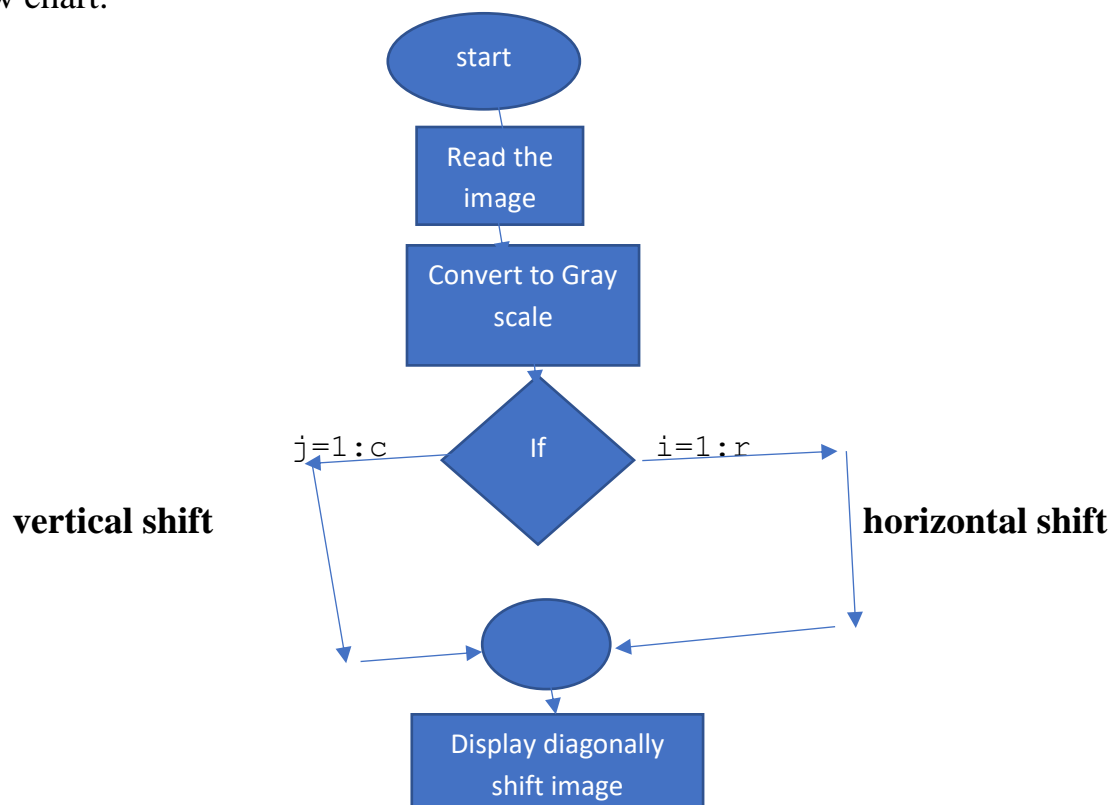
Code
Method1: using slicing technique:
Using slicing we can shift the image vertically and horizontally, as the result, we can place the image at the required position.

```matlab
clear all
clc
A=imread('C:\Users\hp\Desktop\pwd\IM _Shift.jpg');
org_img=rgb2gray(A);
B=org_img([end:-1:1],:,:);
C=org_img(:,[end:-1:1],:);
D=C([end:-1:1],:,:);
subplot(2,2,1);imshow(org_img);title('original image');
subplot(2,2,2),imshow(B);title('vertical shift');
subplot(2,2,3),imshow(C);title('horizontal shift');
subplot(2,2,4),imshow(D);title('digonal shift');
```
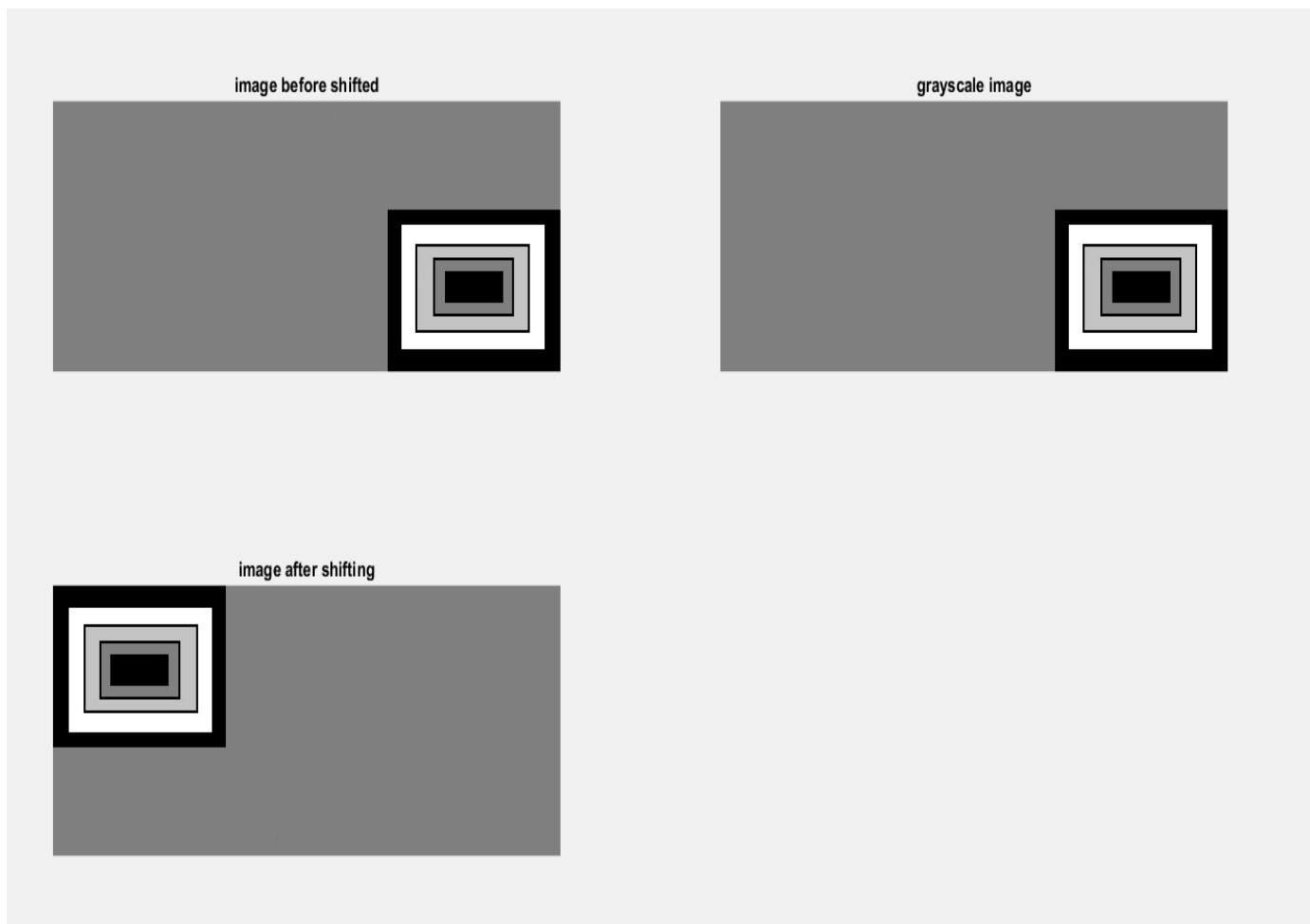
output:
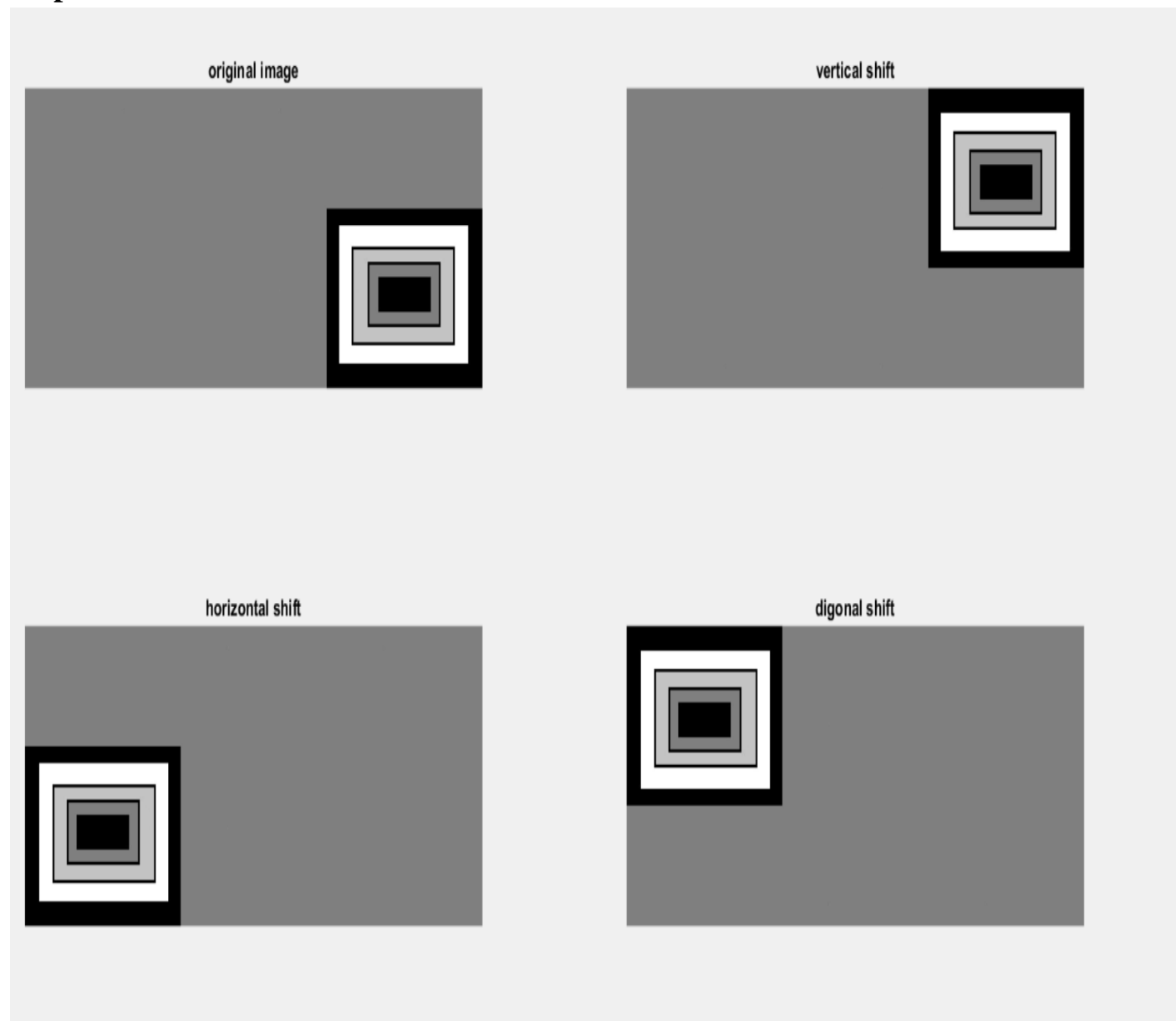
Method2 :using for loop

```
clear all
clc
y=imread('C:\Users\hp\Desktop\pwd\IM _Shift.jpg');
z=rgb2gray(y);
[r,c]=size(z);
 for i=1:r
     for j=1:c
         x(i,j)=z(r-i+1,c-j+1);
     end
 end
subplot(2,2,1),imshow(y),title('image before shifted');
subplot(2,2,2),imshow(z),title('grayscale image');
subplot(2,2,3),imshow(x),title('image after shifting');
```

Output

Interpretation

From this experiment we can see that **Image shifting** is simply **shifting** each pixel of the **image** to a new position. This is a method of pixel **shift** used in digital cameras to produce super-resolution **images**. We can think of a pixel as a point in the coordinate axis to be **shifted** in any direction. When we implement this on all the pixels of the image then we can say the image is shifted. Image shifting is very important to place the image at the required position. Even though the position of shifted is image is different, the image is shifted with out any distortion(it is exactly the same as the image at the original position).So, image shifting process retains the image with out distortion.