INTRODUCTION
TO
IMAGE PROCESSING

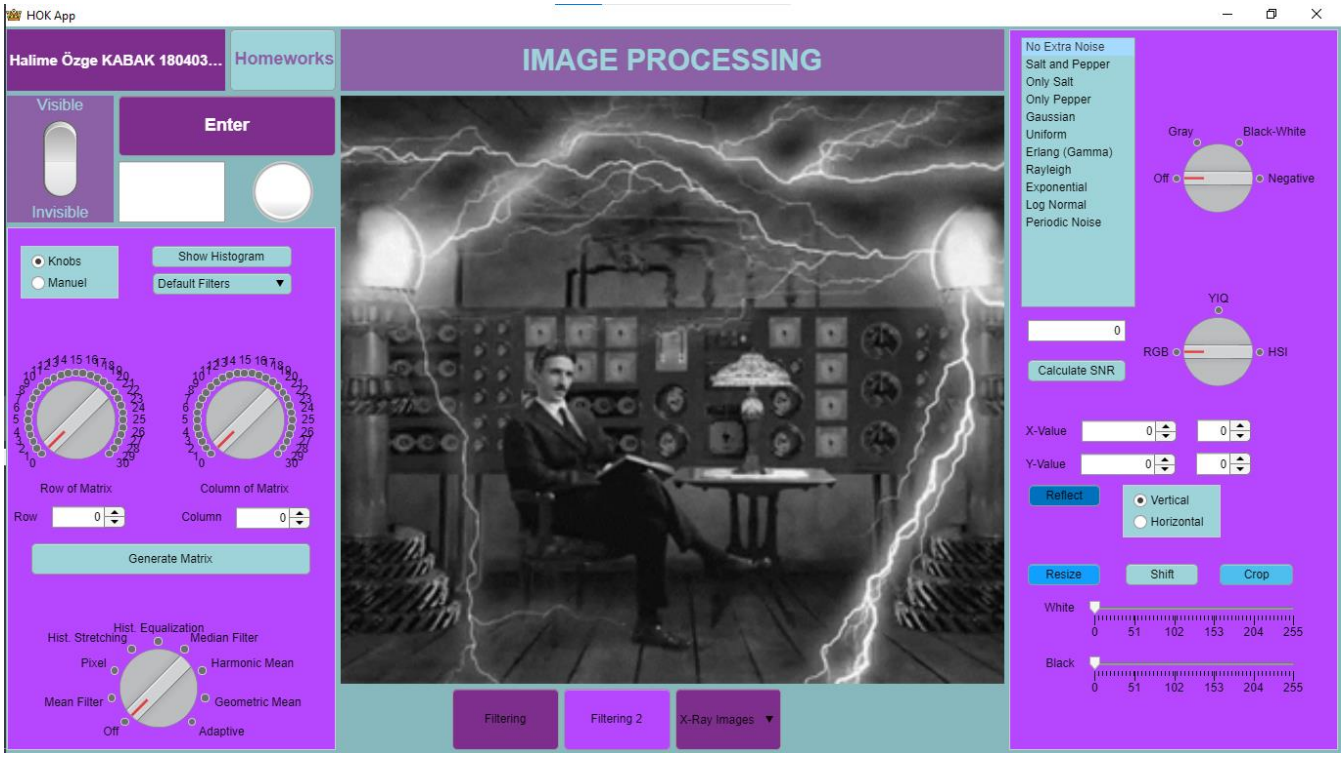
EEE410

HOMEWORK 1

HALİME ÖZGE KABAK
180403001

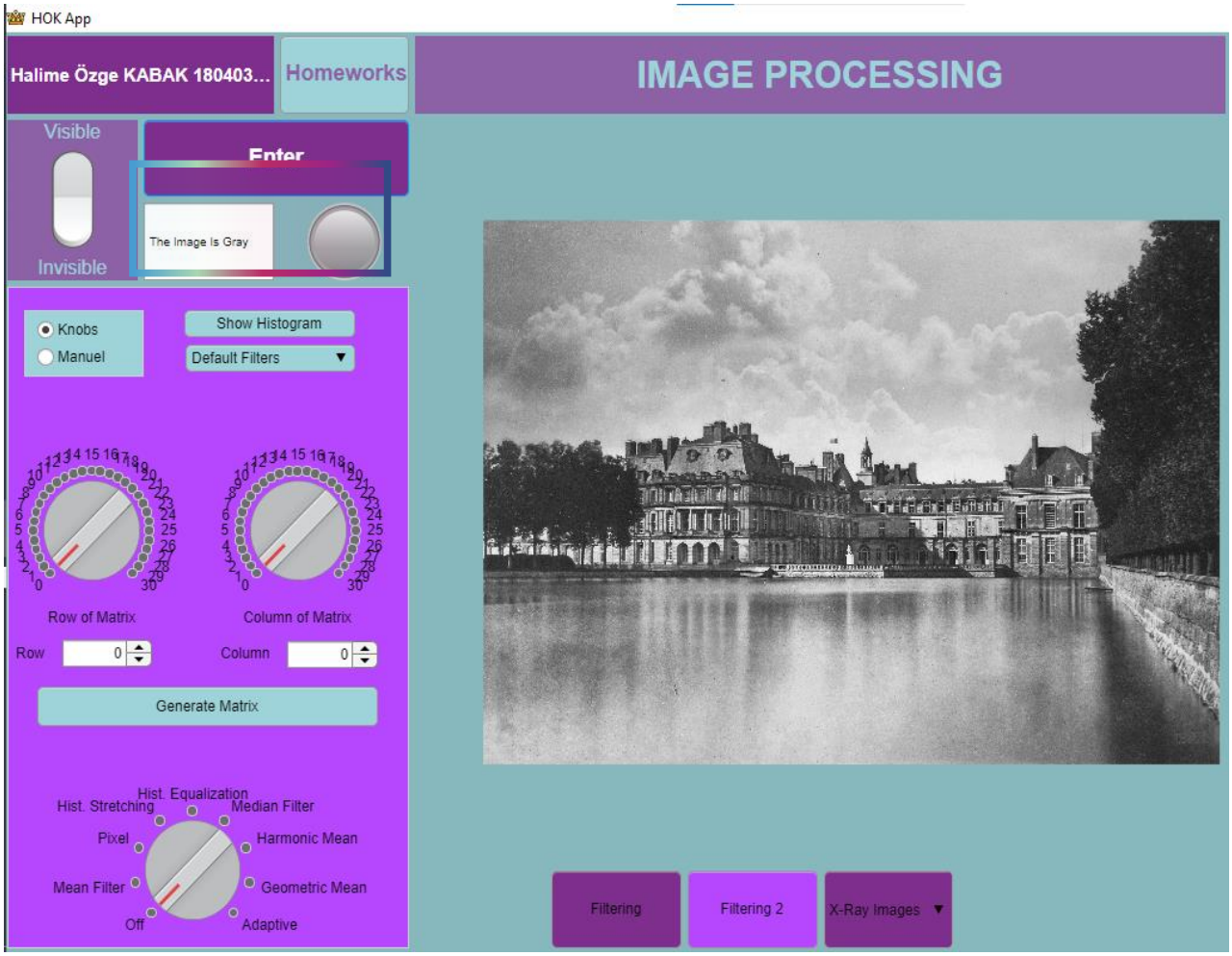
♦ MATLAB

❖ This is my graphical user interface in MATLAB.



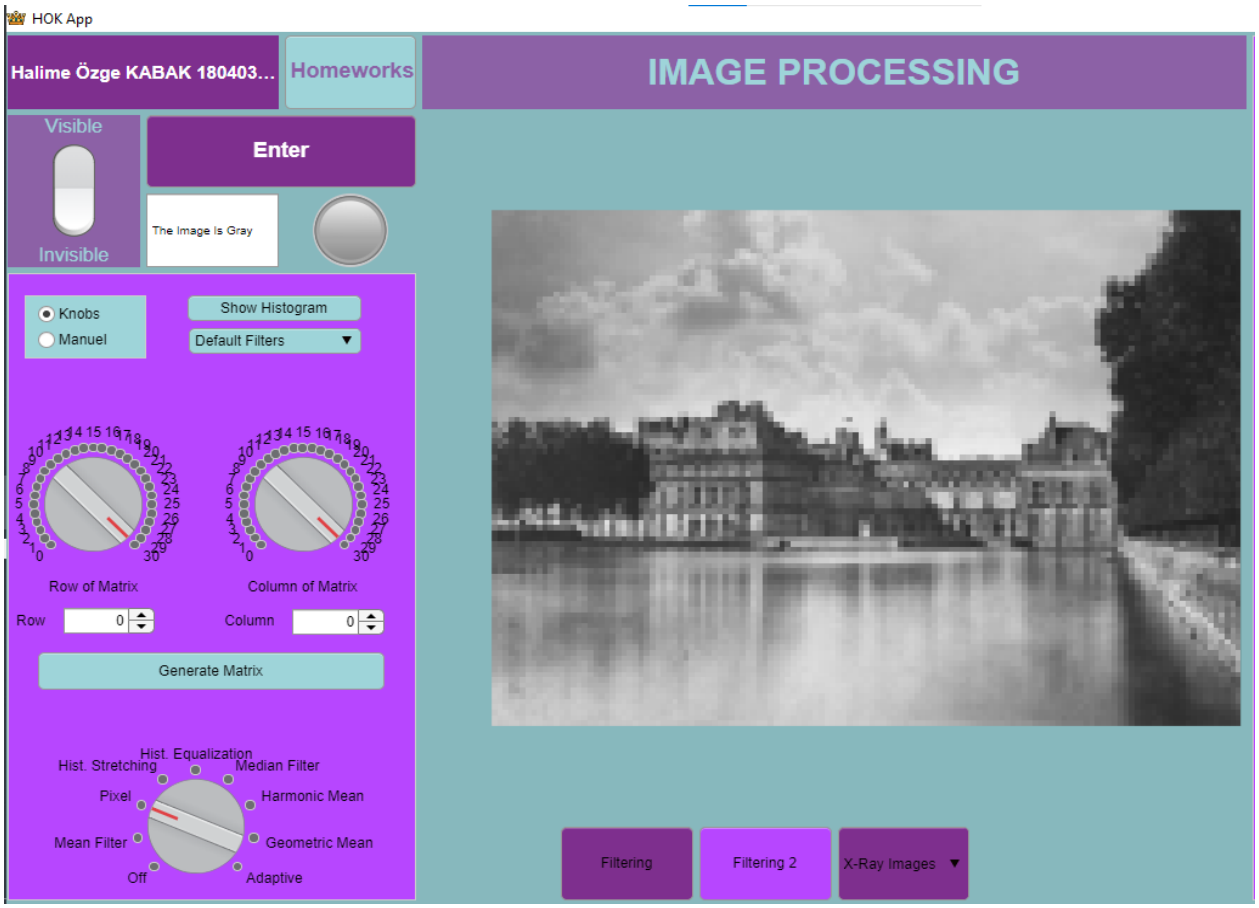
❖ First, the GUI can detect whether the image is a RGB or gray scale. If the image is gray scale, "The Image is Gray" will be displayed, if it is RGB, "The Image is RGB" will be displayed. In addition, the lamp next to the text will light up in the color of a random pixel in the picture.


HOK App
Halime Özge KABAK 180403...
Homeworks
IMAGE PROCESSING
Visible
Invisible
Enter
The Image Is RGB
Knobs
Manuel
Show Histogram
Default Filters
Row of Matrix
Column of Matrix
Row
0
Column
0
Generate Matrix
Hist. Equalization
Hist. Stretching
Median Filter
Pixel
Harmonic Mean
Mean Filter
Geometric Mean
Off
Adaptive
Filtering
Filtering 2
X-Ray Images

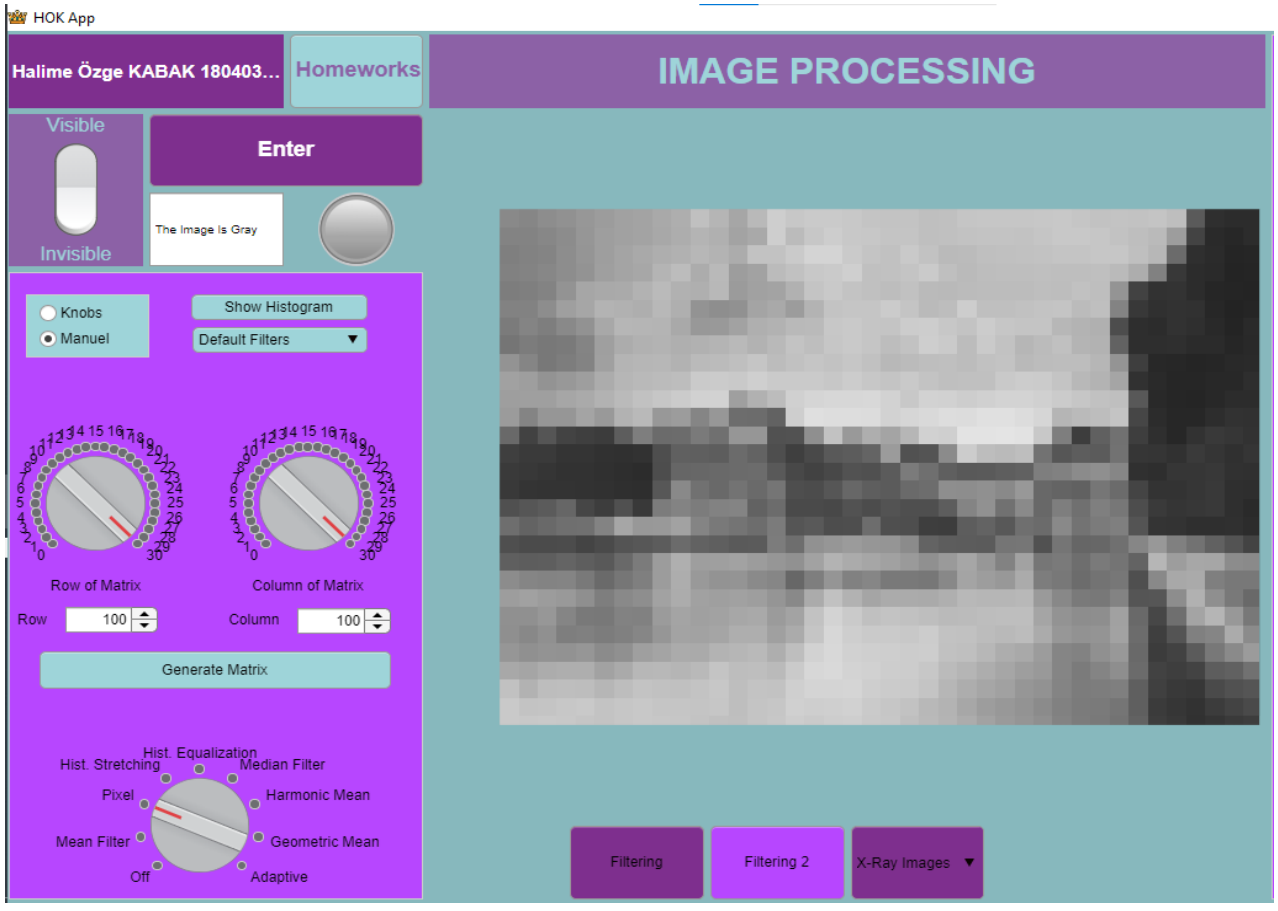


❖ Pixel width and height can be adjusted manually or by using the knobs for the pixelization of the pictures. While the highest number is 30 in the adjustment with knobs, the desired number can be selected in manual adjustment. Pixelation of pictures can be done both in gray pictures and rgb pictures.

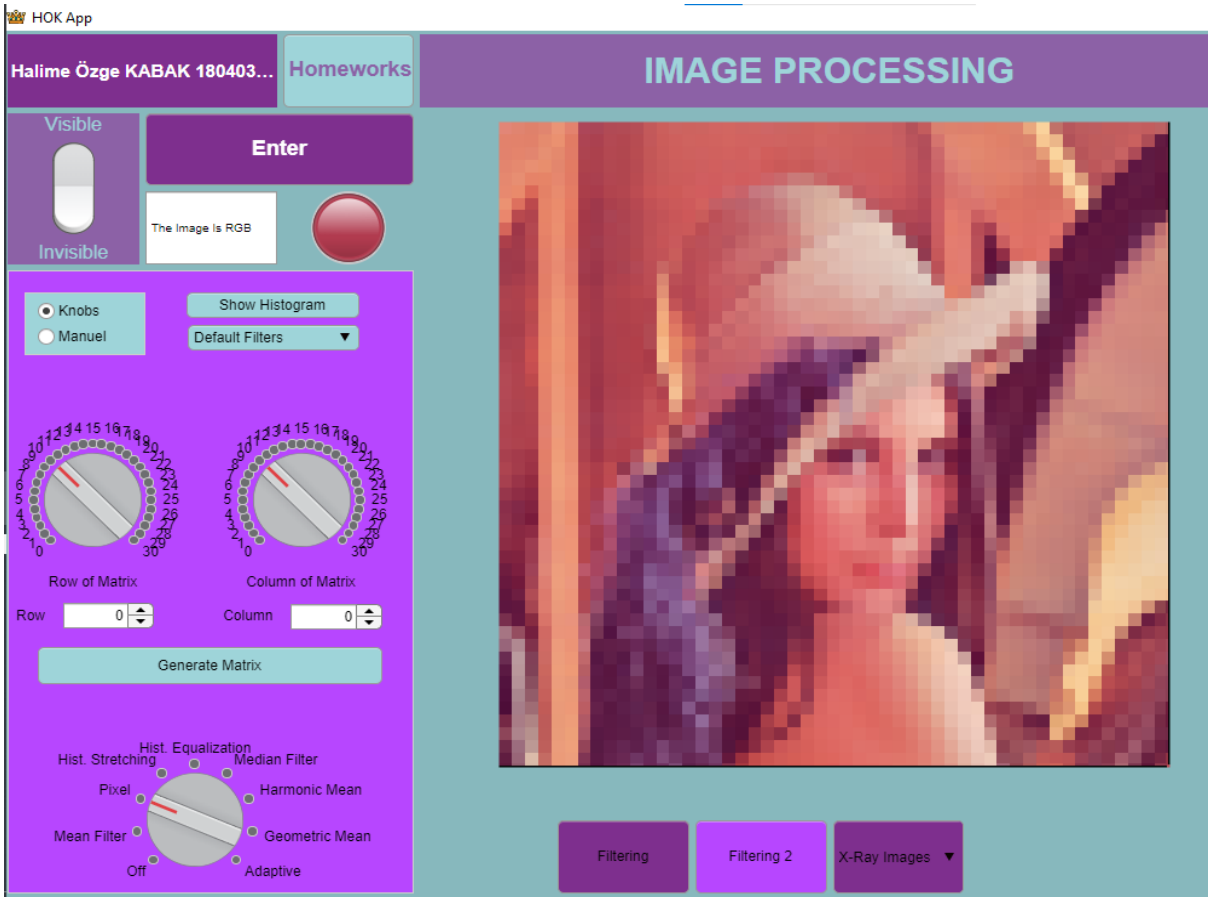
➢ 30x30 Pixelation (Gray Image)



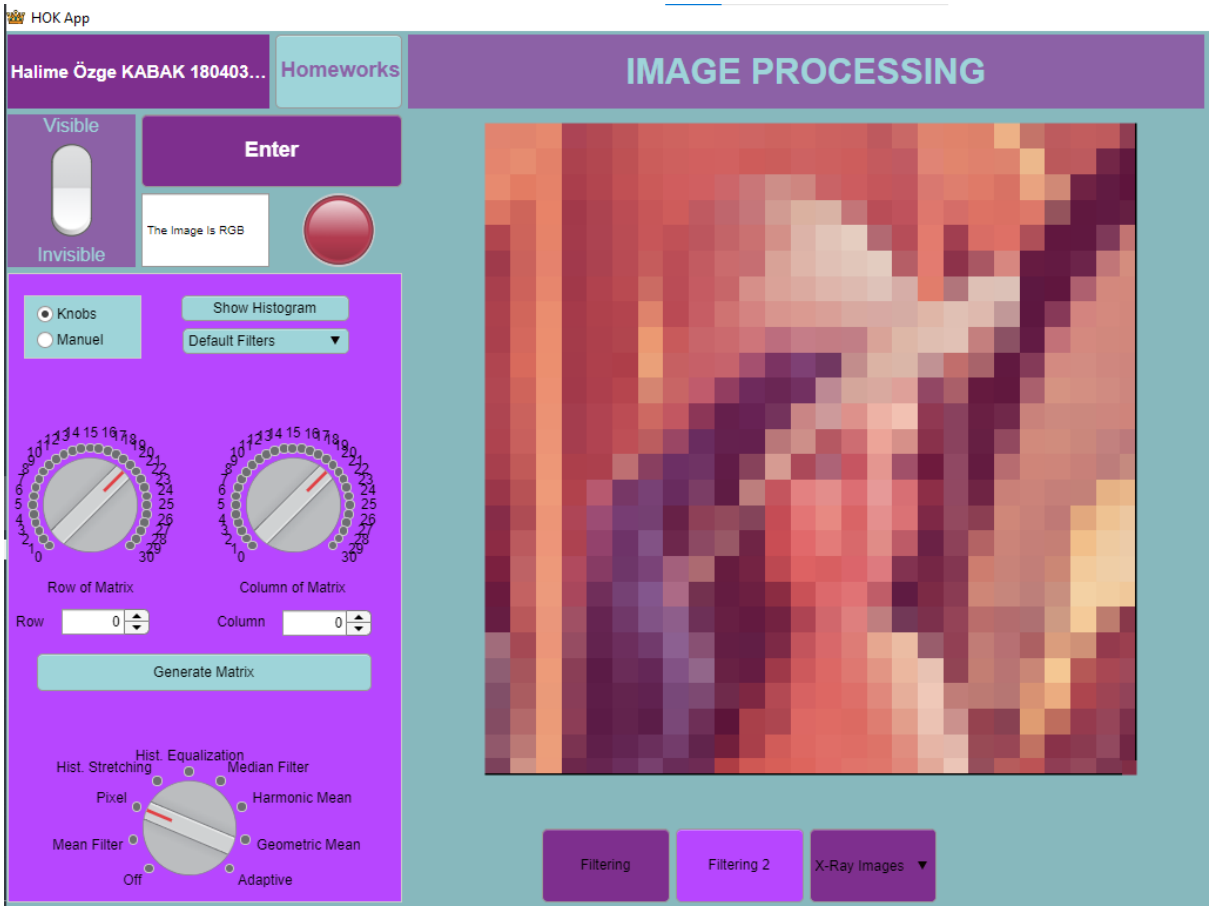
➢ 100x100 Pixelation (Gray Image)



➢ 10x10 Pixelation (RGB Image)



➢ 20x20 Pixelation (RGB Image)



➢ 50x50 Pixelation (RGB Image)

❖ As an extra feature, I added a button that can make colour images gray, binary and negative.

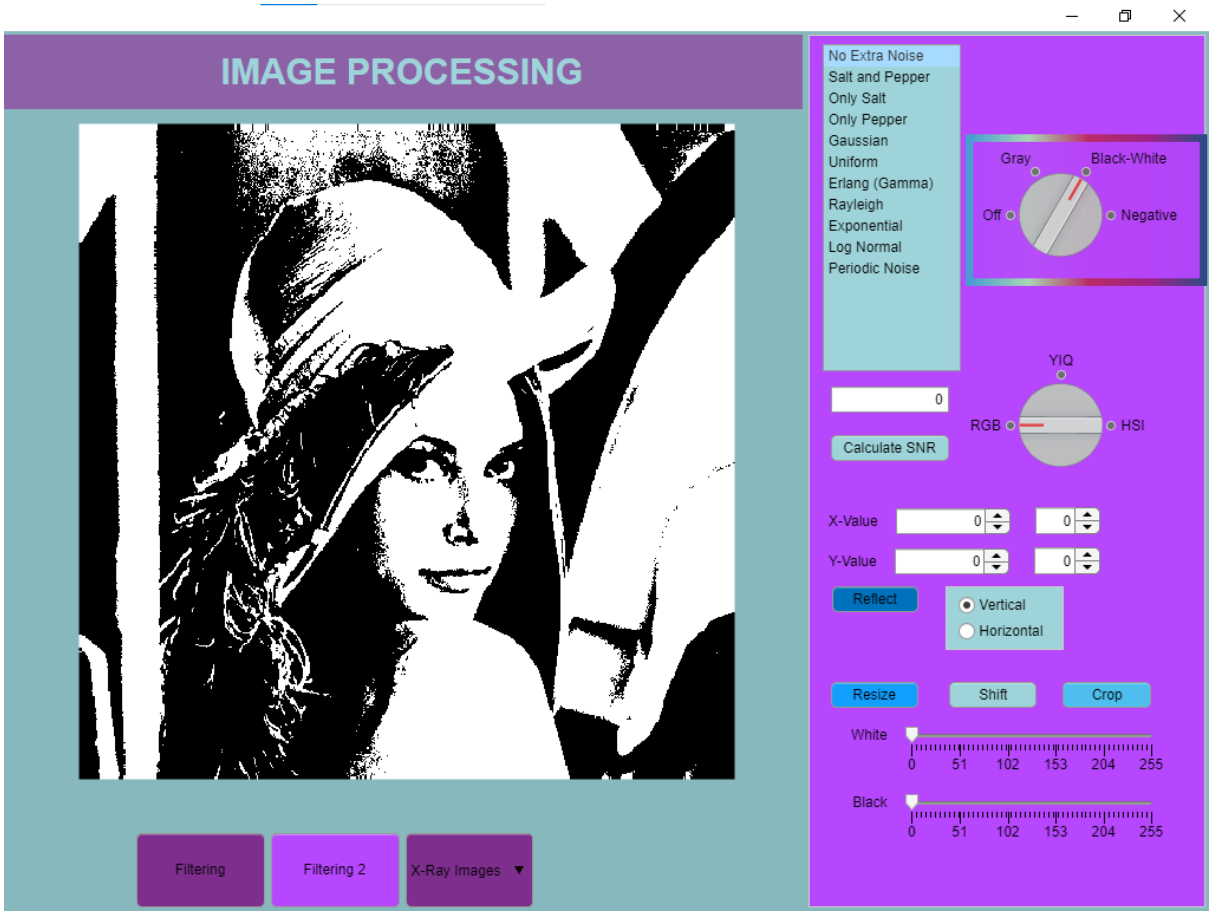


IMAGE PROCESSING
No Extra Noise
Salt and Pepper
Only Salt
Only Pepper
Gaussian
Uniform
Erlang (Gamma)
Rayleigh
Exponential
Log Normal
Periodic Noise
Gray
Black-White
Off
Negative
YIQ
RGB
HSI
0
Calculate SNR
X-Value
Y-Value
Reflect
Vertical
Horizontal
Resize
Shift
Crop
White
Black
0
51
102
153
204
255
Filtering
Filtering 2
X-Ray Images

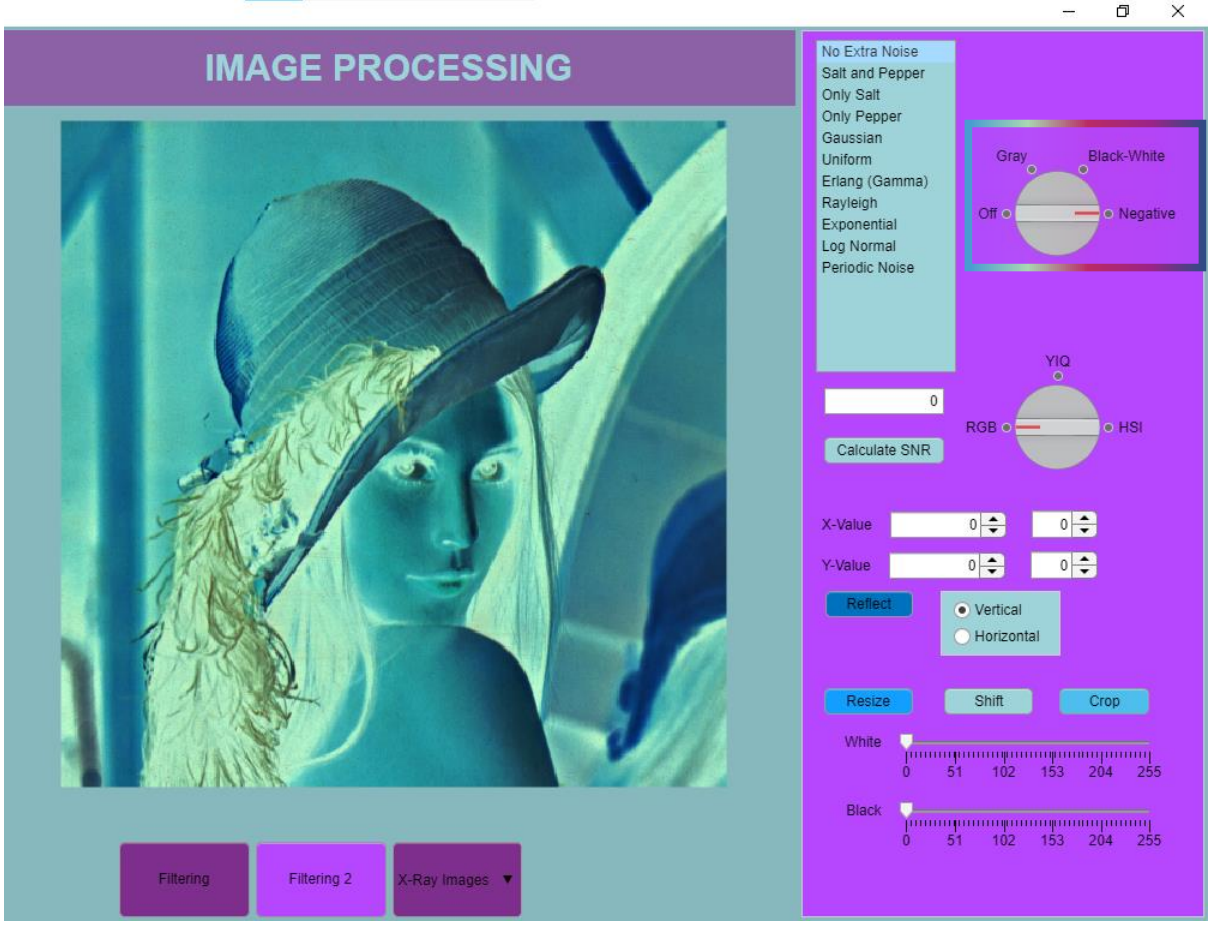


IMAGE PROCESSING
No Extra Noise
Salt and Pepper
Only Salt
Only Pepper
Gaussian
Uniform
Erlang (Gamma)
Rayleigh
Exponential
Log Normal
Periodic Noise
Gray
Black-White
Off
Negative
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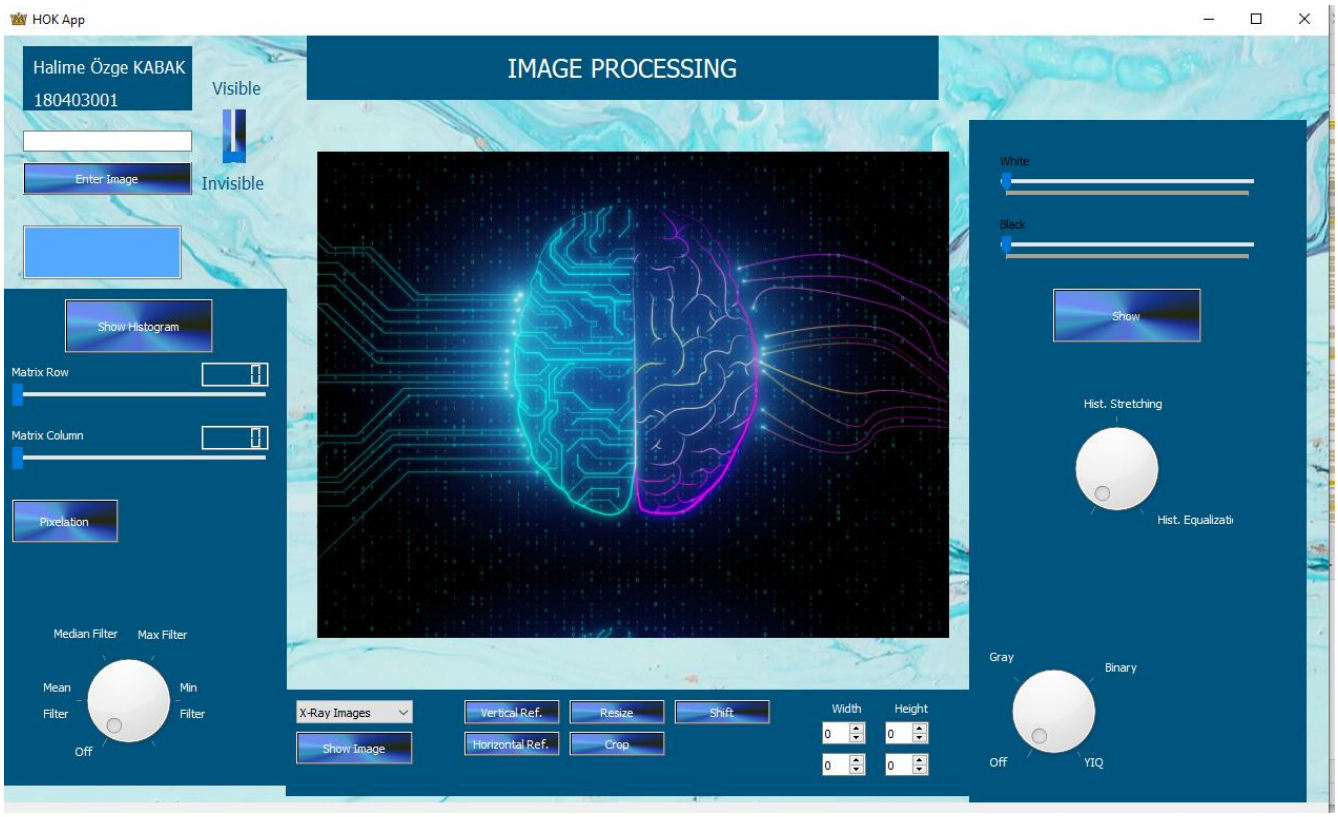
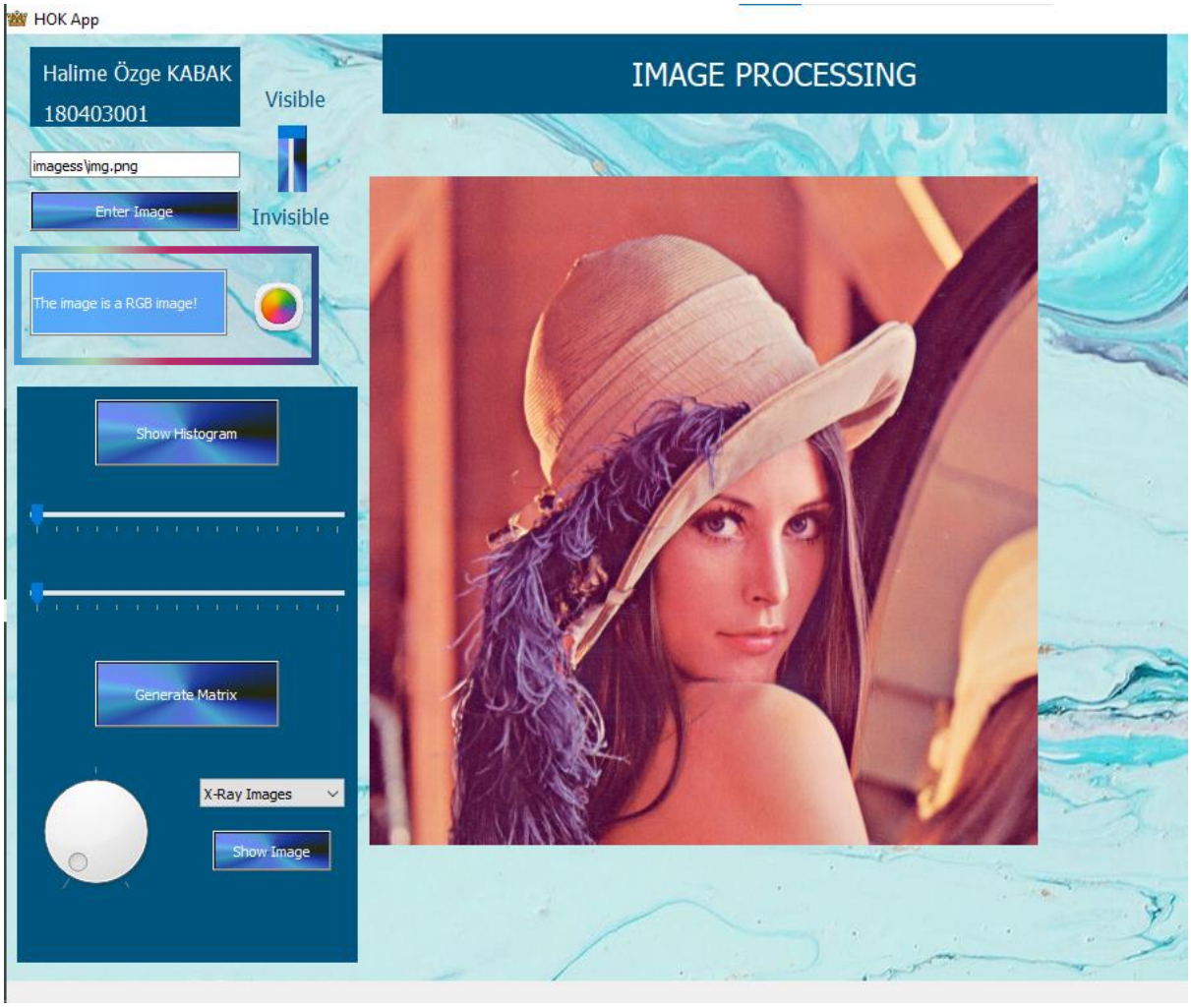
0
Calculate SNR
X-Value
Y-Value
Reflect
Vertical
Horizontal
Resize
Shift
Crop
White
Black
0
51
102
153
204
255
Filtering
Filtering 2
X-Ray Images

♦ PyQT

❖ This is my graphical user interface in PyQT.

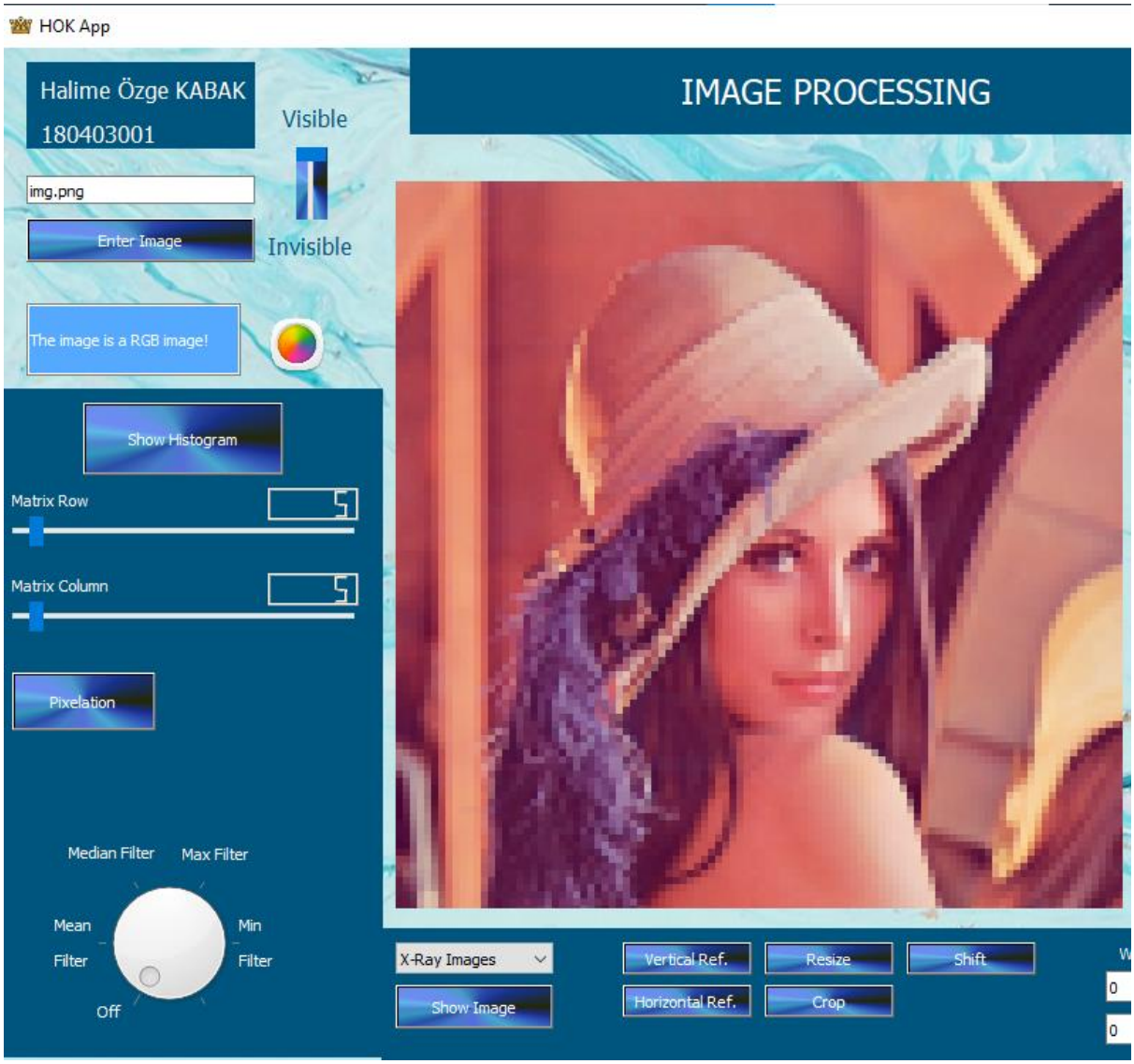


❖ First, the GUI can detect whether the image is a RGB or gray scale. If the image is gray scale, "The image is gray!" will be displayed, if it is RGB, "The image is a RGB image!" will be displayed.

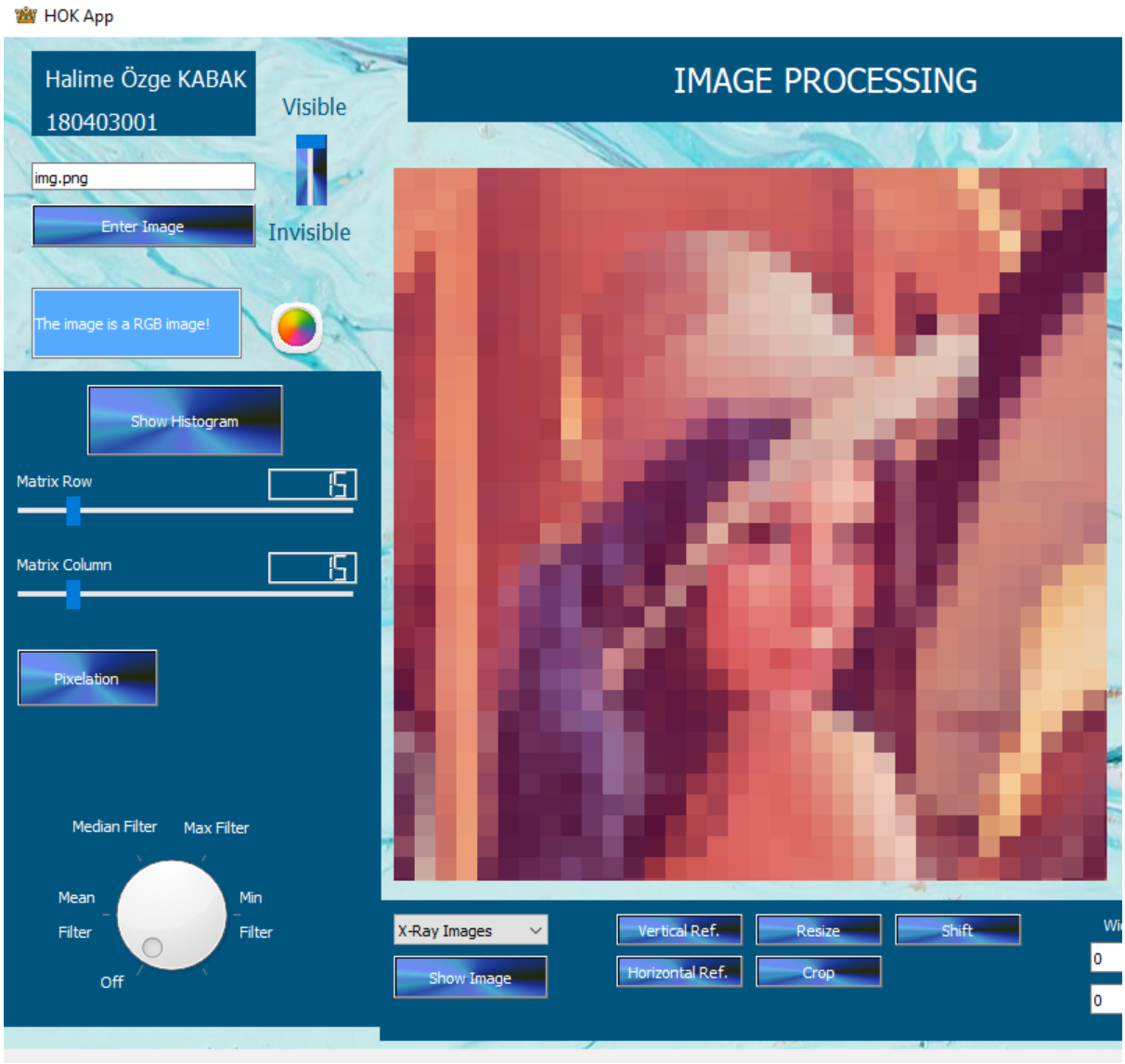

HOK App
Halime Özge KABAK
180403001
Visible
Invisible
imagess\img.png
Enter Image
The image is a RGB image!
Show Histogram
Generate Matrix
X-Ray Images
Show Image
IMAGE PROCESSING

- There are 2 sliders to adjust the width and height of the pixel and the maximum value of the sliders is 100. Pixelation of pictures can be done both in gray pictures and rgb pictures.

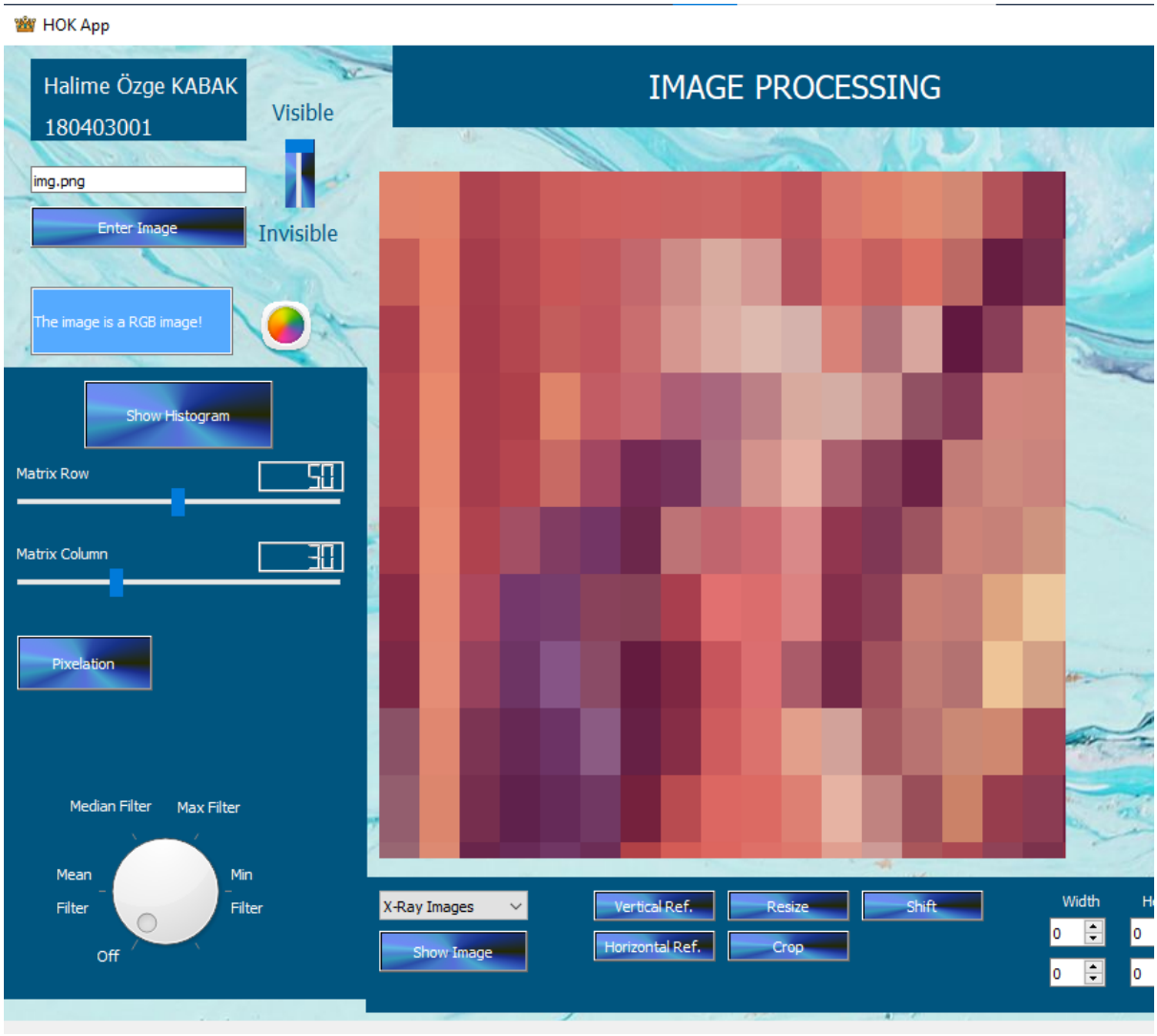
- **5x5 Pixelation (RGB Image)**



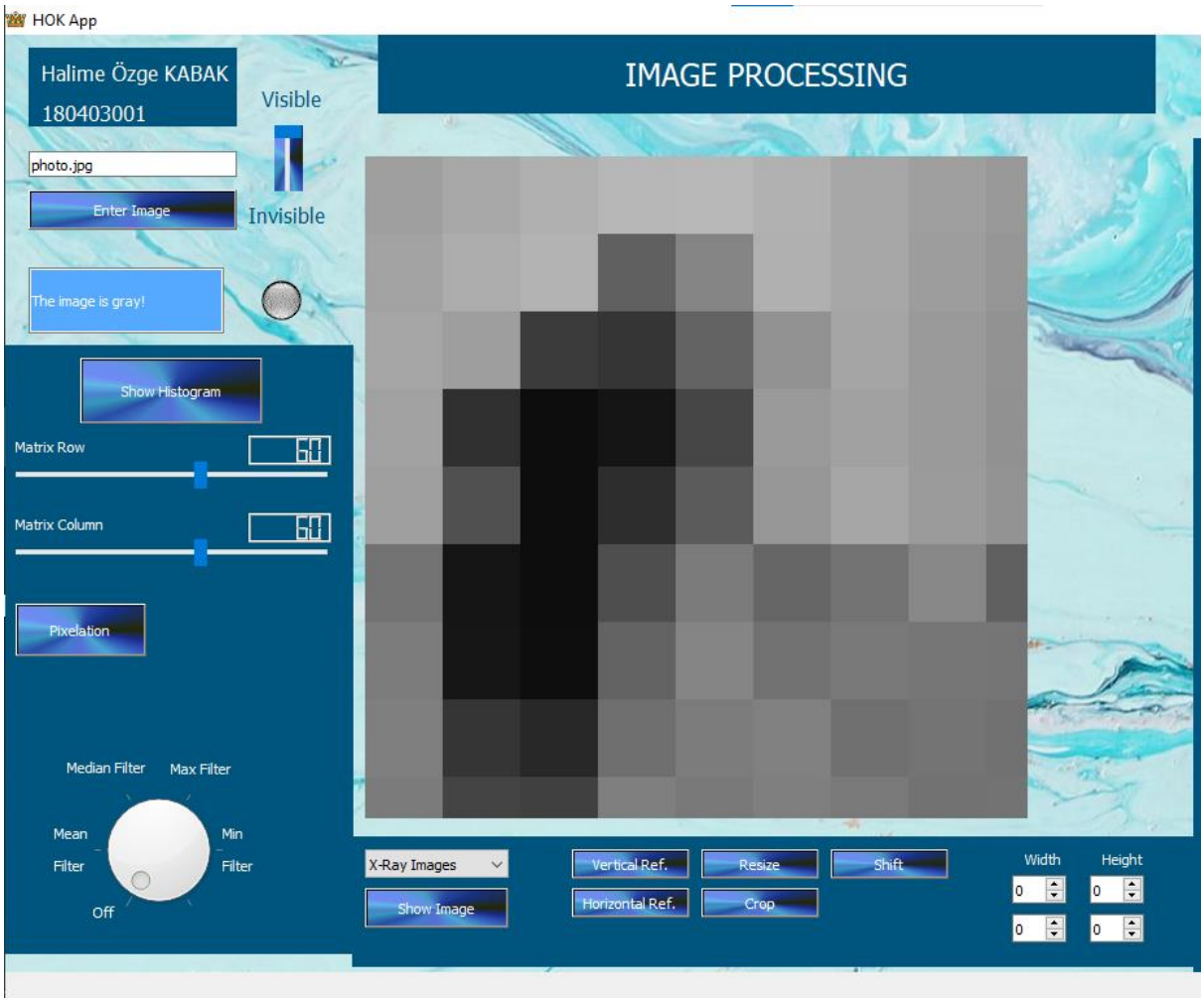
- **15x15 Pixelation (RGB Image)**



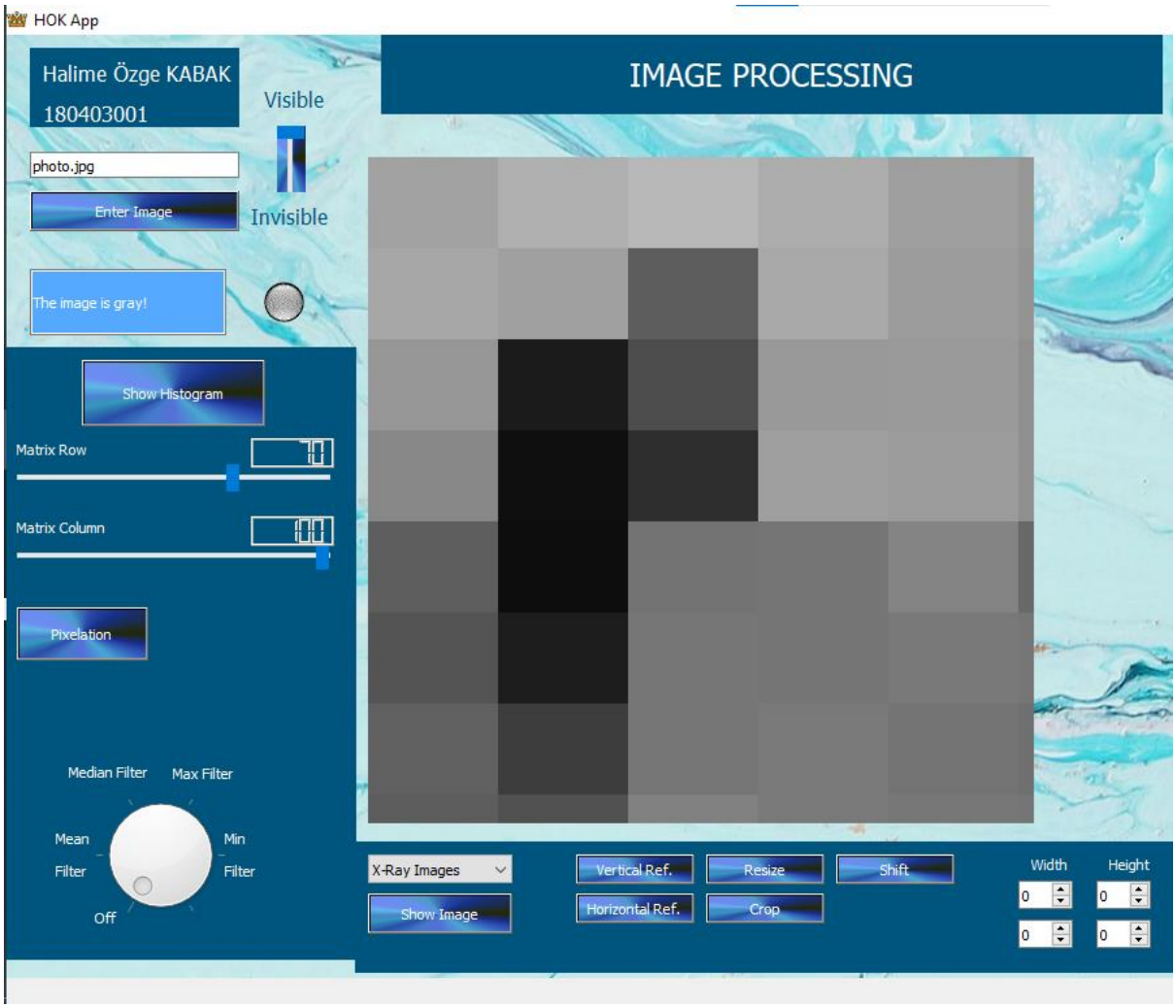
➢ 50x30 Pixelation (RGB Image)



➢ 60x60 Pixelation (Gray Image)



➢ 70x100 Pixelation (Gray Image)



➢ 20x30 Pixelation (Gray Image)

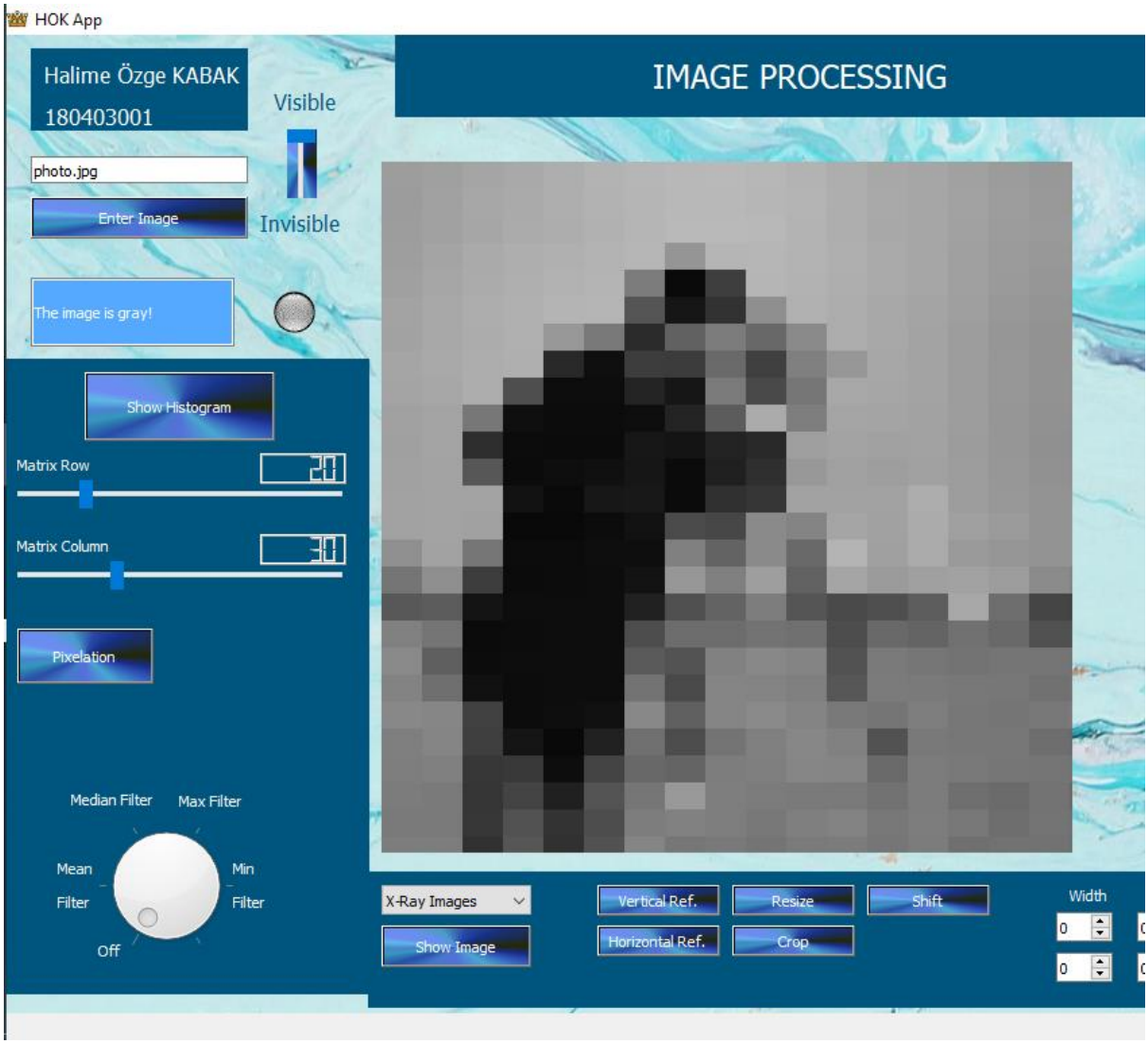

HOK App
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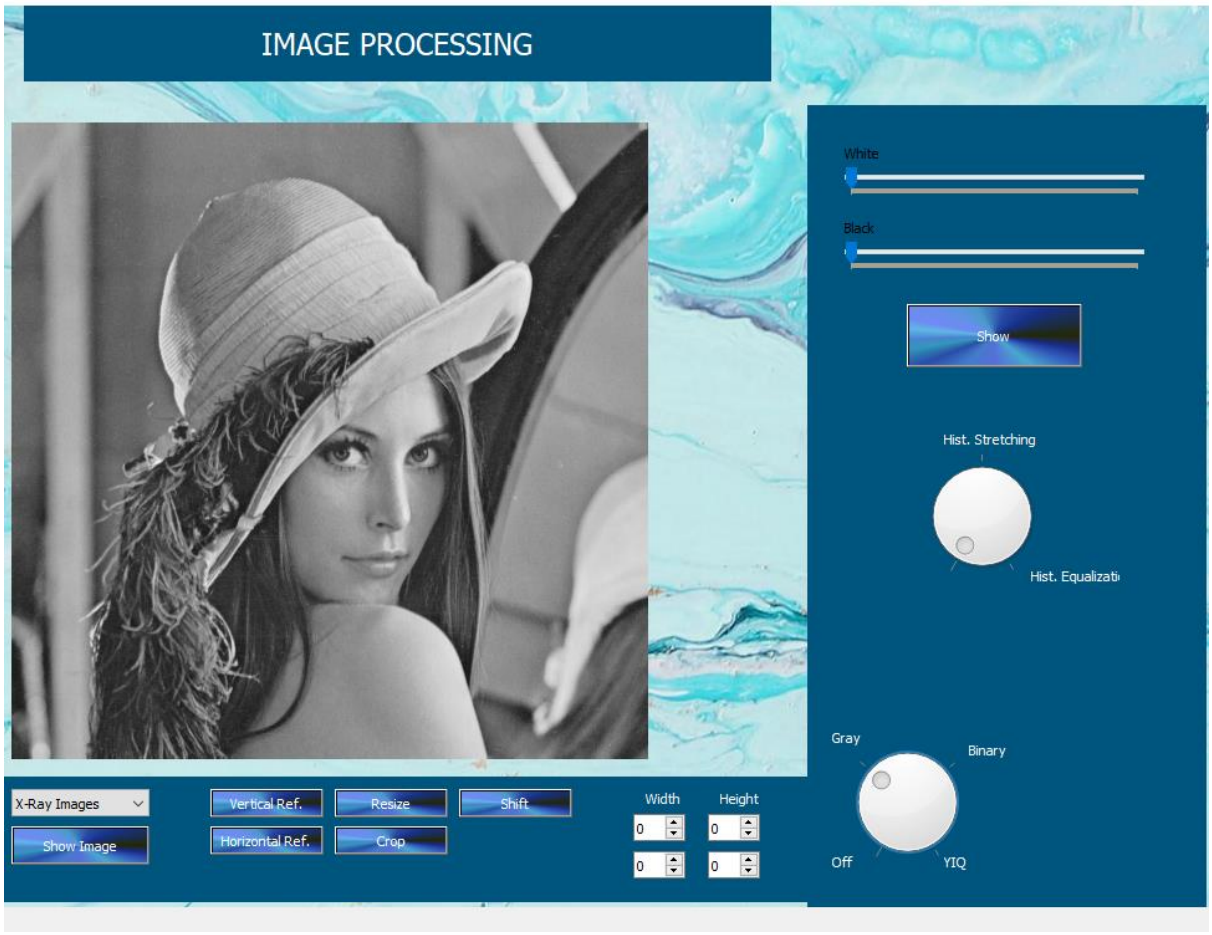
IMAGE PROCESSING
Visible
Invisible
photo.jpg
Enter Image
The image is gray!
Show Histogram
Matrix Row
20
Matrix Column
30
Pixelation
Median Filter
Max Filter
Mean
Filter
Min
Filter
Off
X-Ray Images
Show Image
Vertical Ref.
Horizontal Ref.
Resize
Crop
Shift
Width
0
0

❖ As an extra feature, I added a button that can make colour images gray and binary.



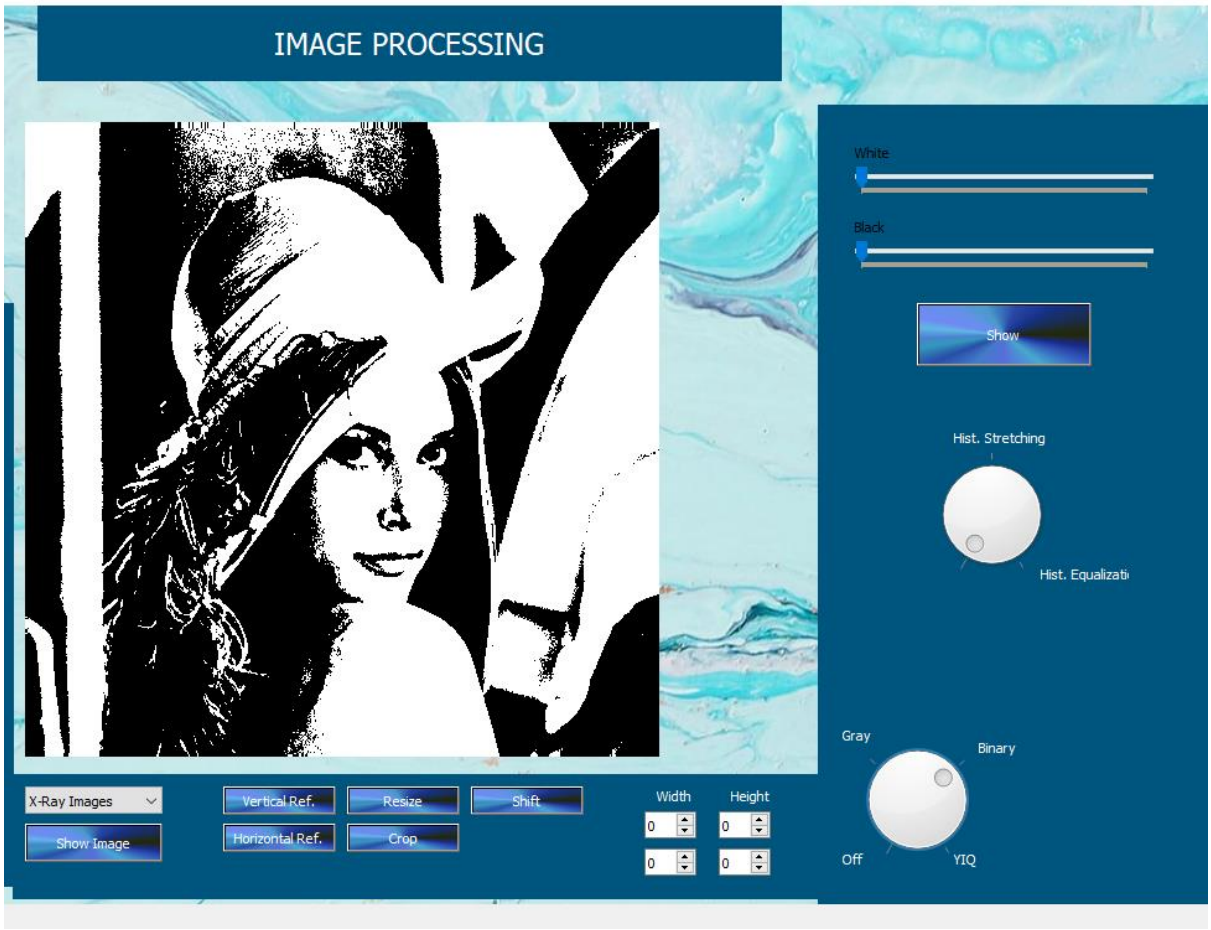


IMAGE PROCESSING
White
Black
Show
Hist. Stretching
Hist. Equalizati
Gray
Binary
Off
YIQ
X-Ray Images
Show Image
Vertical Ref.
Horizontal Ref.
Resize
Crop
Shift
Width
Height
0
0
0
0