# INTRODUCTION
# TO
# IMAGE PROCESSING

## EEE410

## HOMEWORK 2

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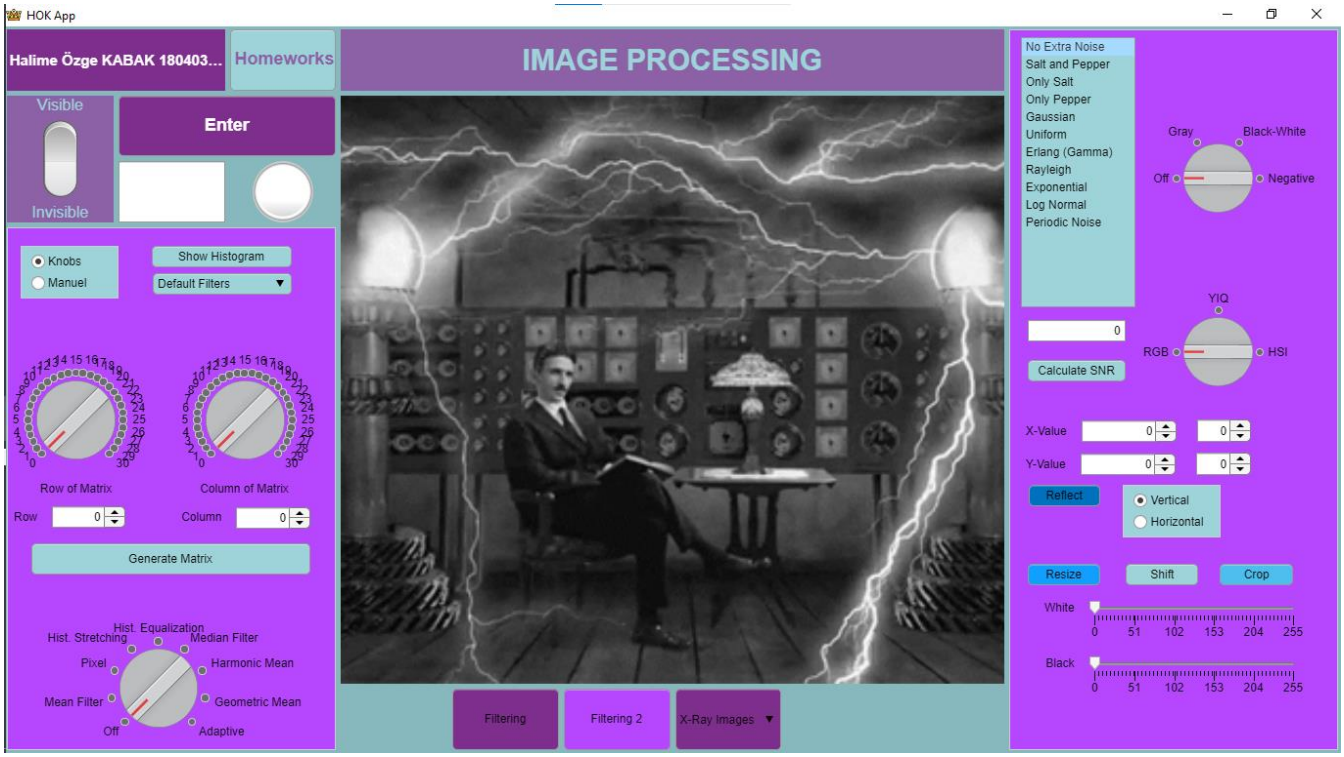
180403001

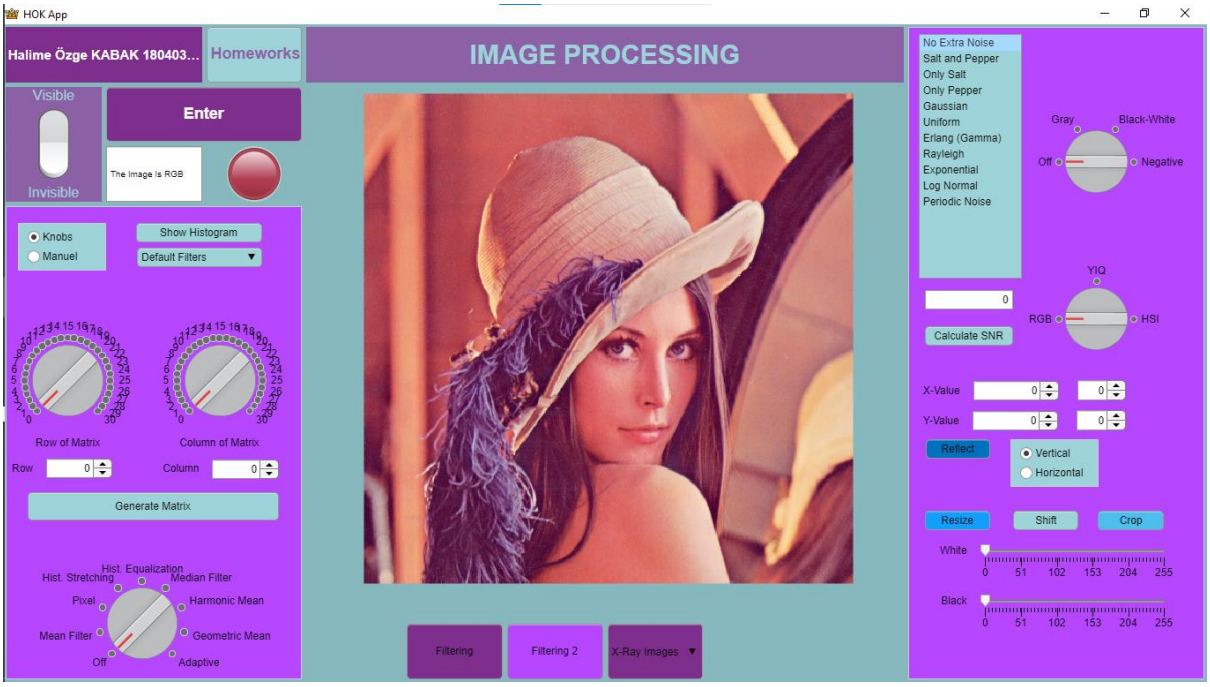
# ♦ MATLAB

❖ This is my graphical user interface in MATLAB.

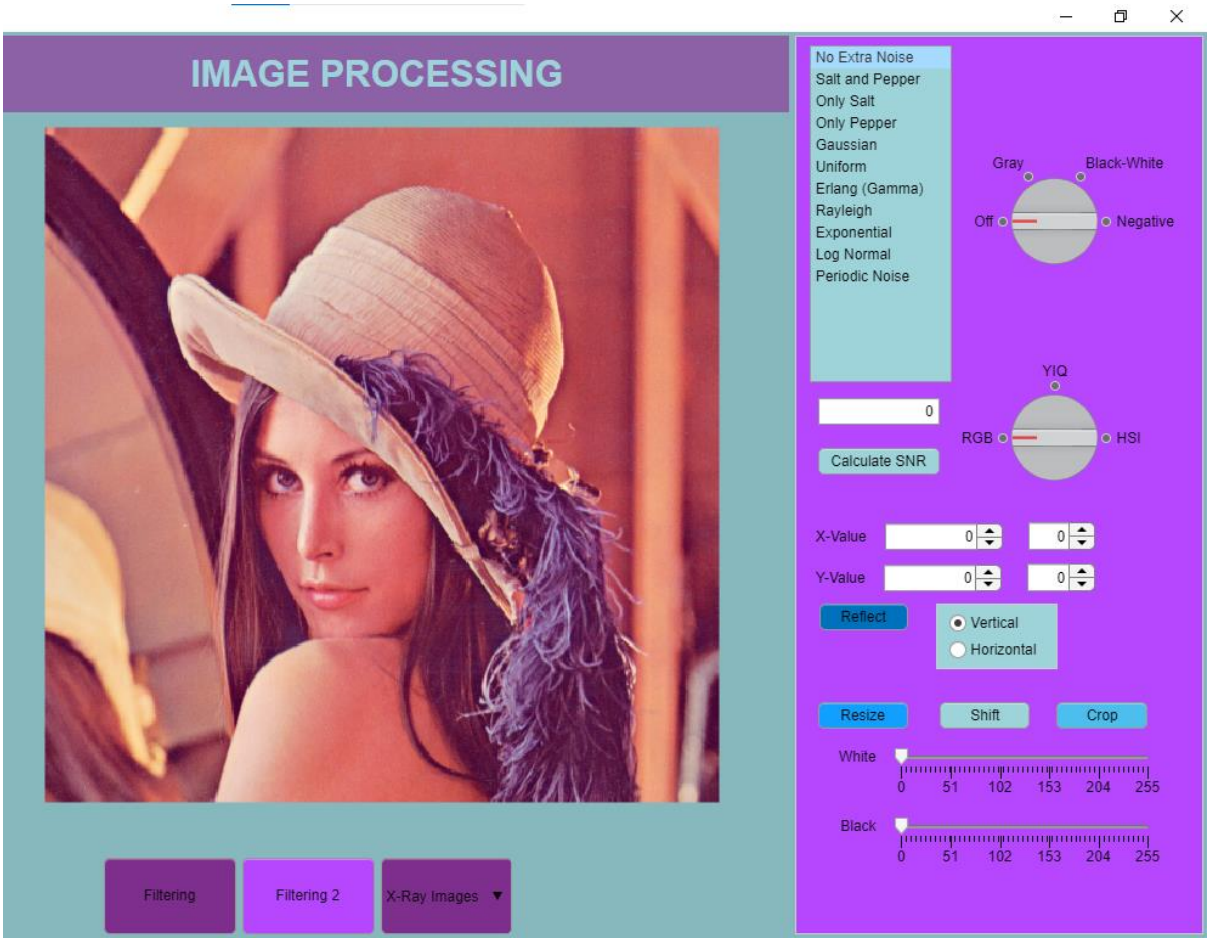



❖ In this assignment, I added buttons for resizing, reflection, shifting and cropping the image. Reflection can be done both vertically and horizontally. Two inputs are required for resizing and shifting. For cropping, 4 inputs must be entered. These operations can be done for both gray and RGB images.

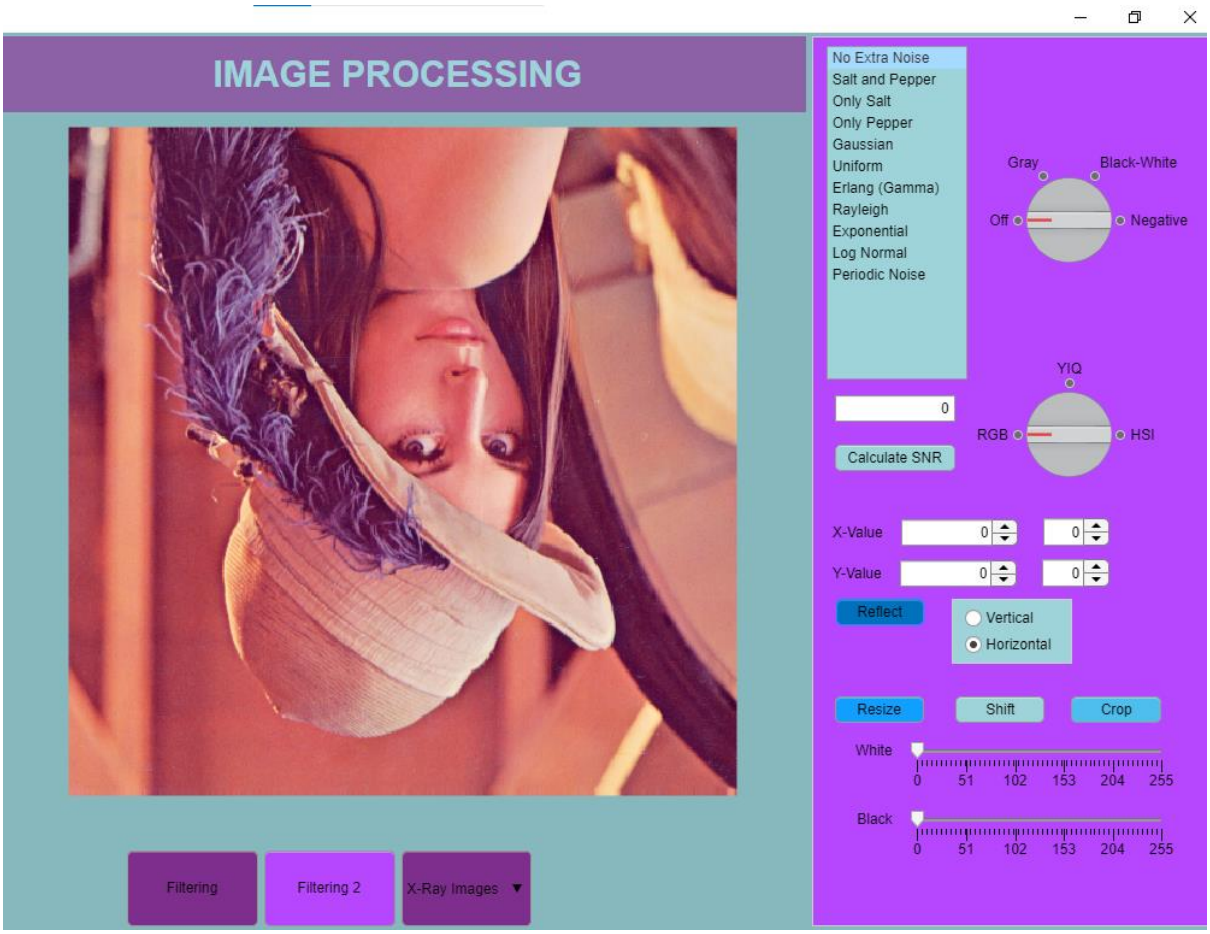
## ➢ Initial Image



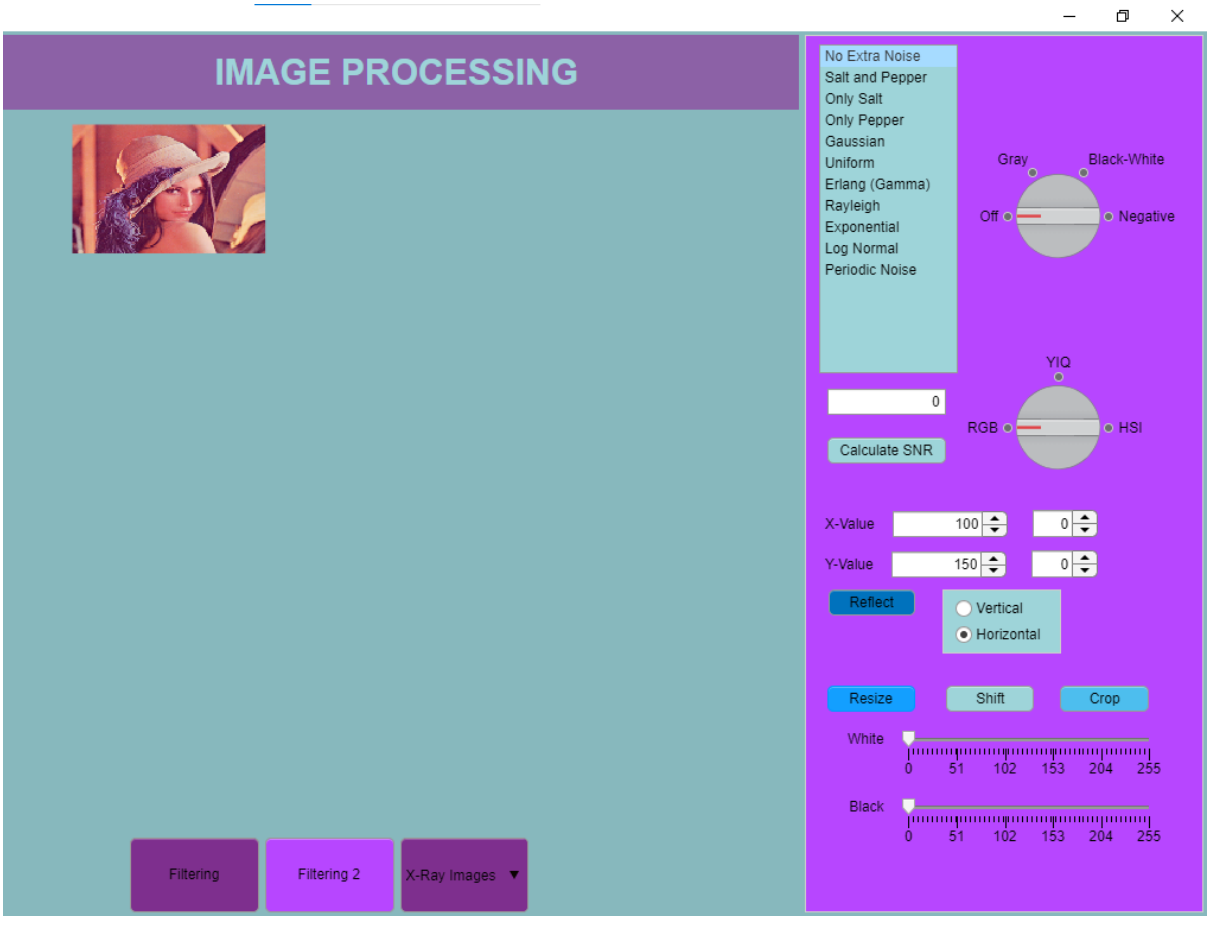
## ➢ Vertical Reflection



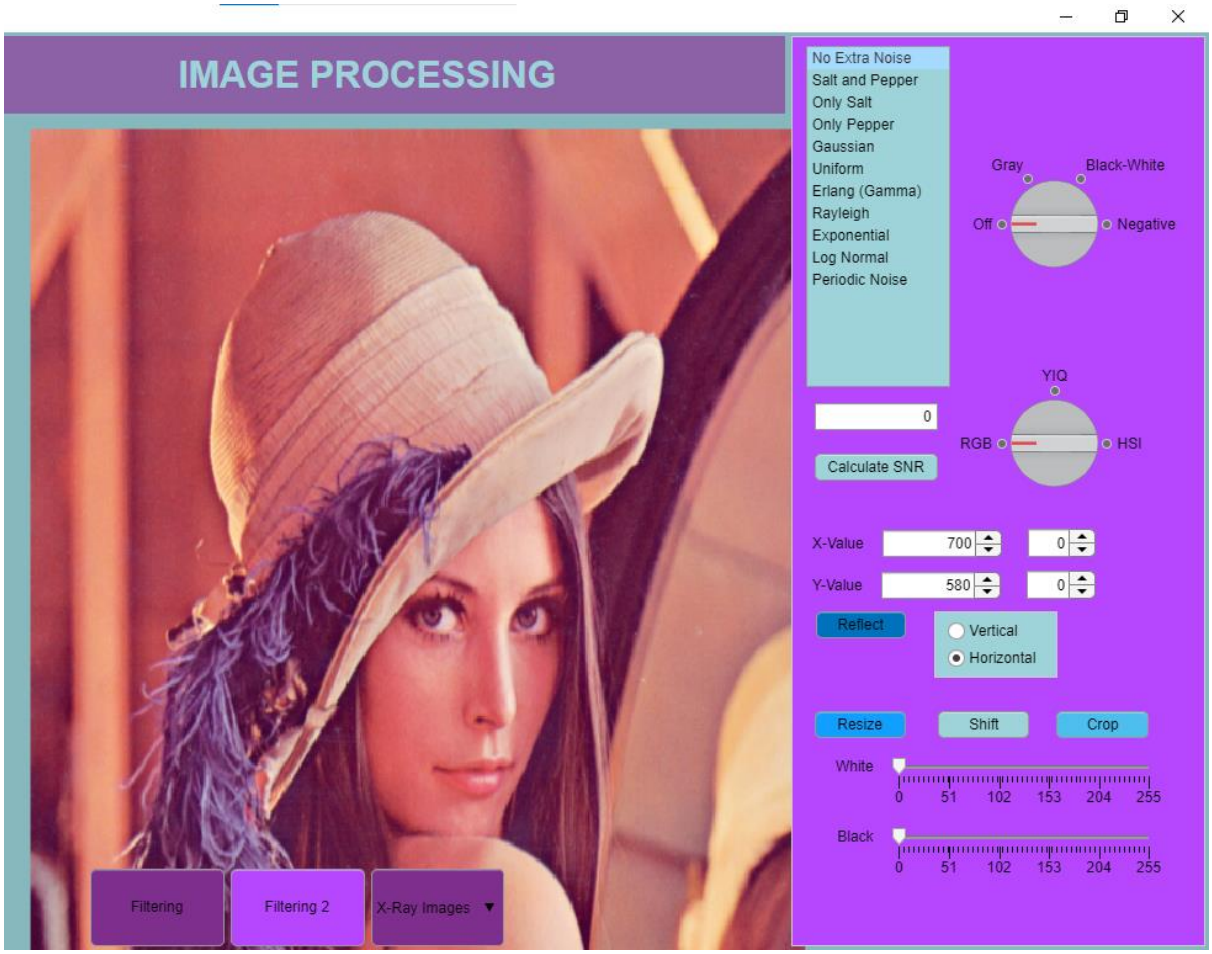
## ➢ Horizontal Reflection



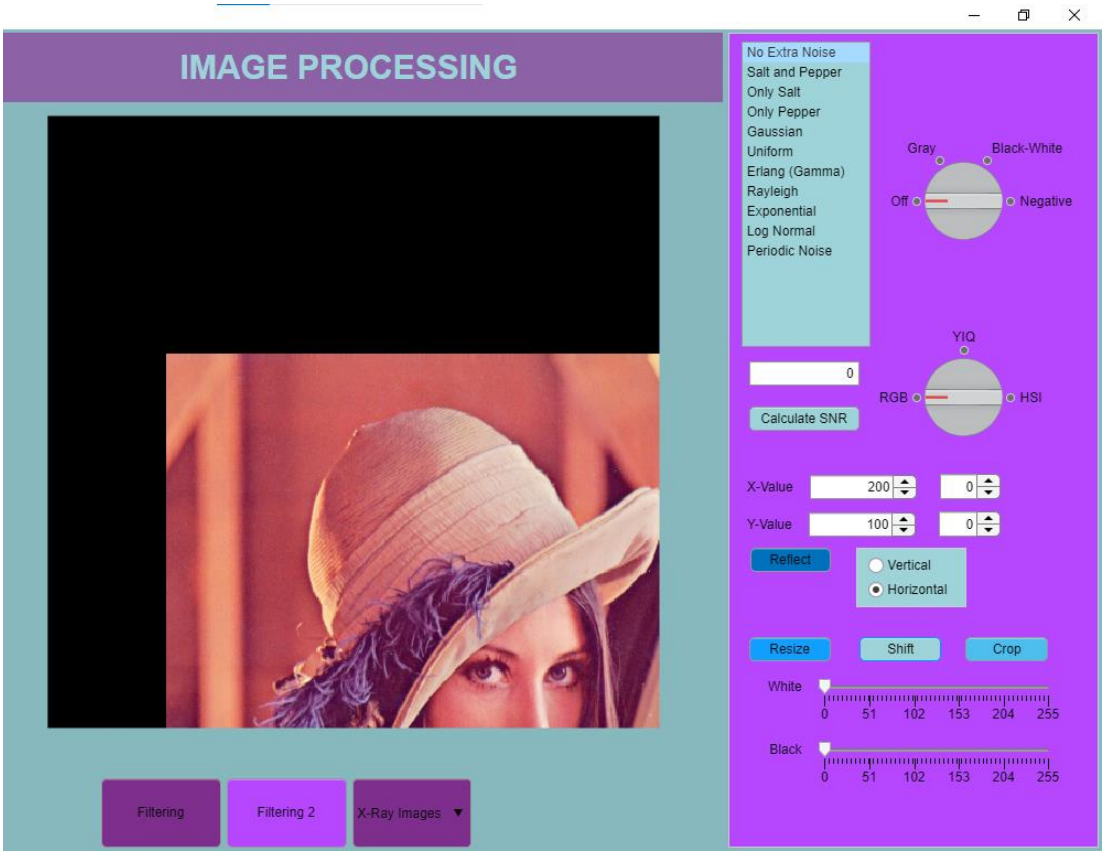

## ➢ Resize (100x150)



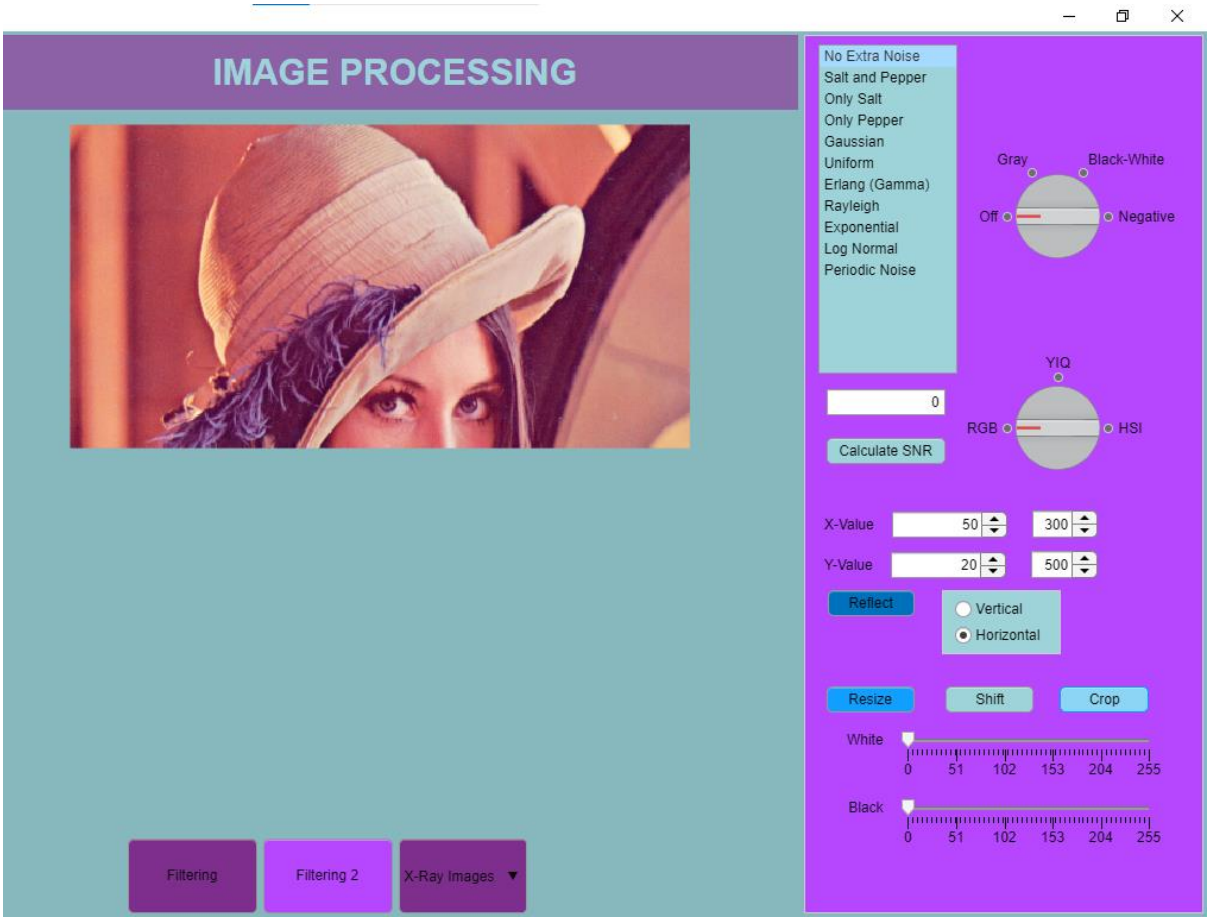
## ➢ Resize (700x580)




## ➢ Shift (200,100)

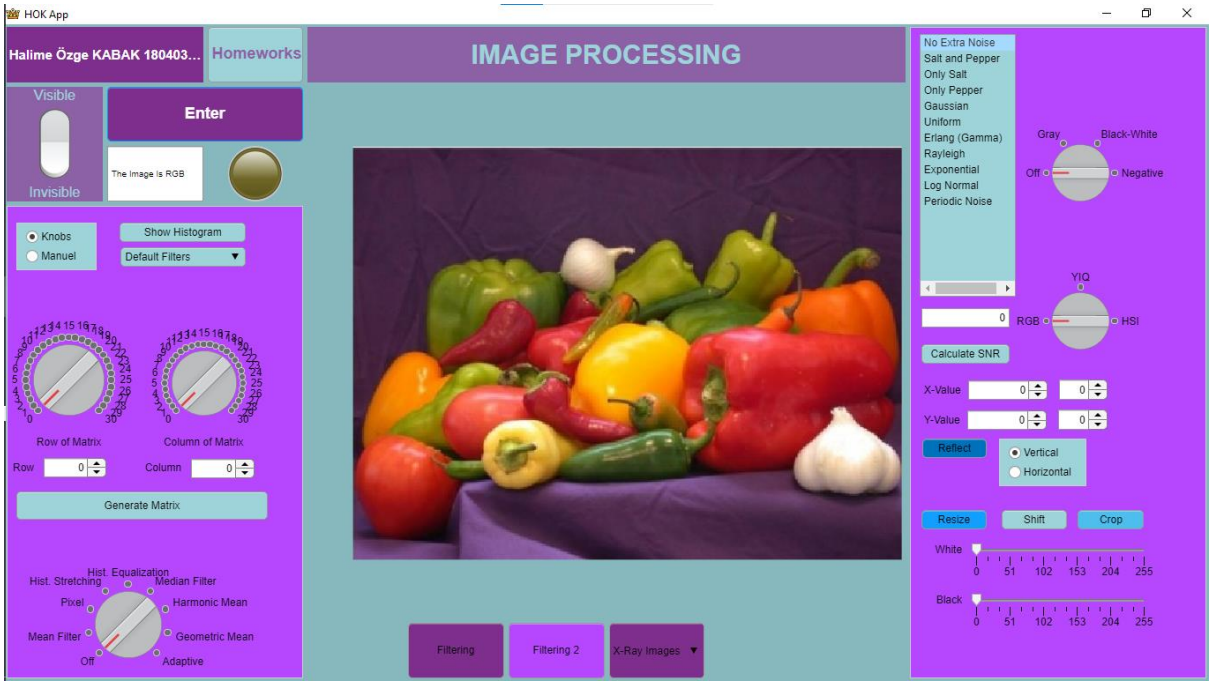


## ➢ Crop (50:300,20:500)




- In the second step I added a knob where different colour transformations can be adjusted. Thanks to this knob, RGB photos can be converted to YIQ and HSI.

### ➢ Initial Image



➢ YIQ

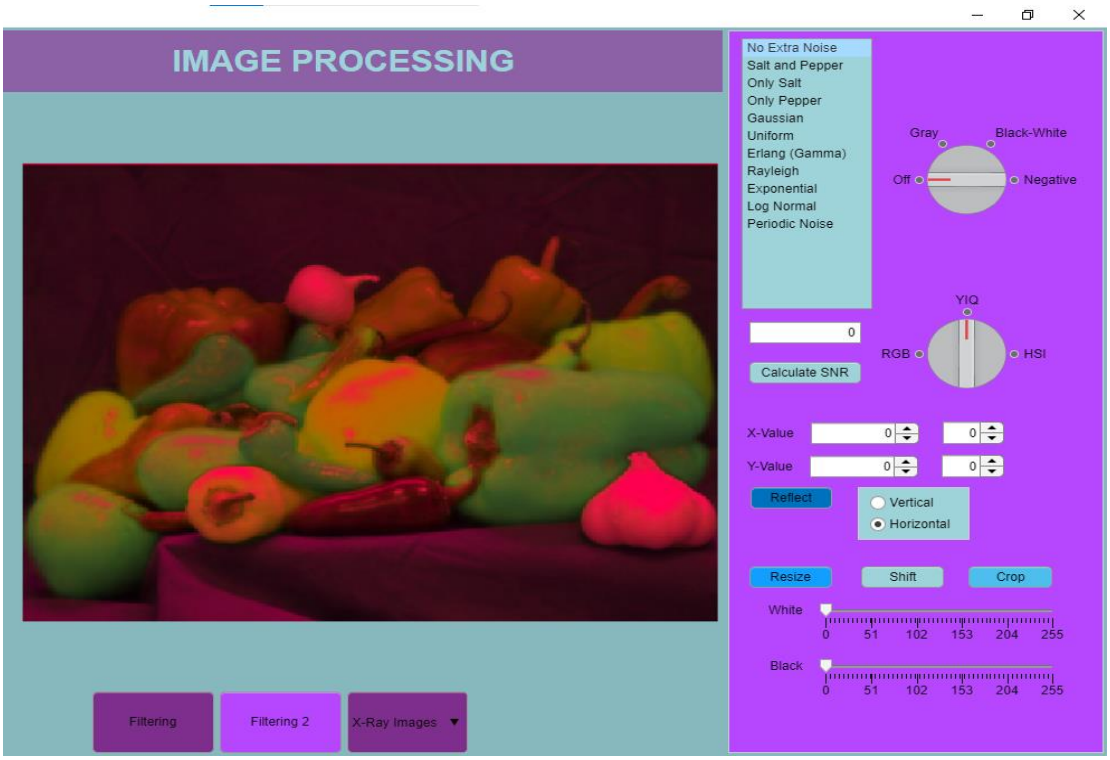


IMAGE PROCESSING
No Extra Noise
Salt and Pepper
Only Salt
Only Pepper
Gaussian
Uniform
Erlang (Gamma)
Rayleigh
Exponential
Log Normal
Periodic Noise
Gray
Black-White
Off
Negative
YIQ
RGB
HSI
Calculate SNR
X-Value
Y-Value
Reflect
Vertical
Horizontal
Resize
Shift
Crop
White
Black
0
51
102
153
204
255
Filtering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

➢ HSI

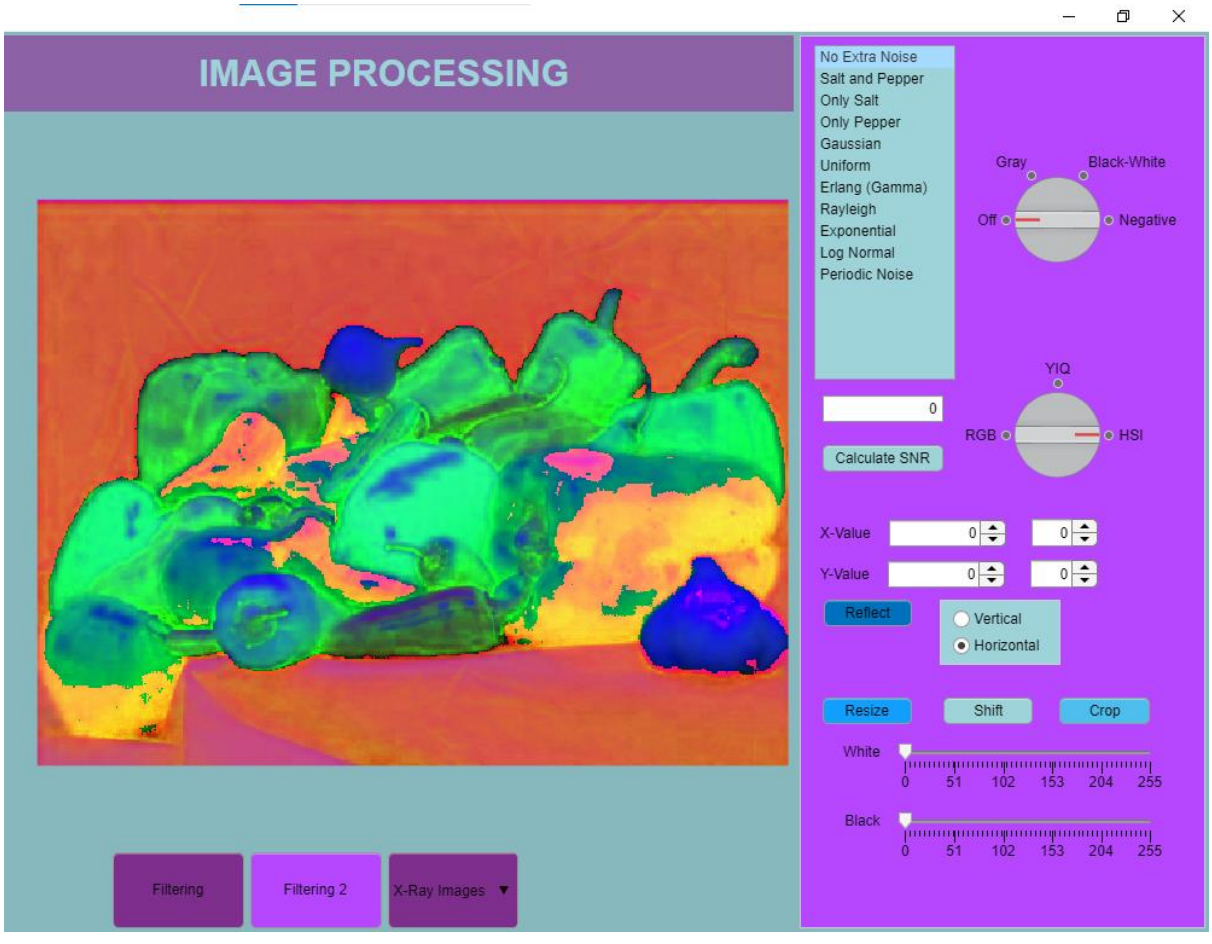
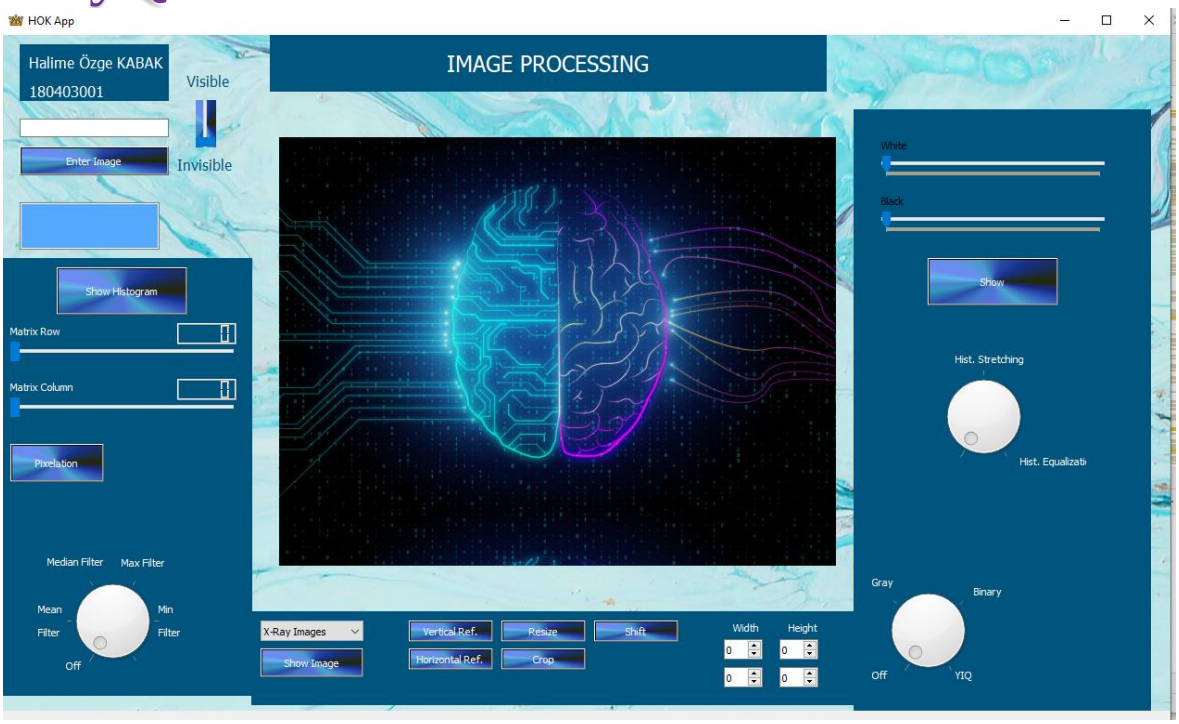


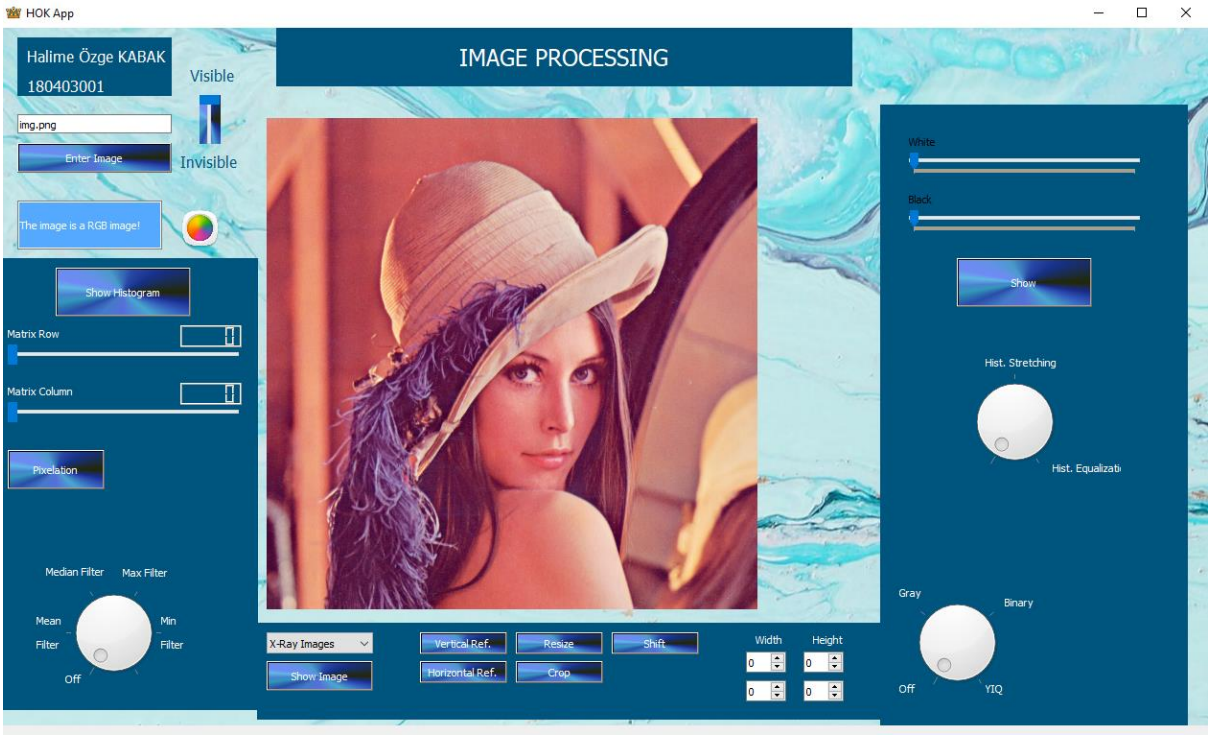
IMAGE PROCESSING
No Extra Noise
Salt and Pepper
Only Salt
Only Pepper
Gaussian
Uniform
Erlang (Gamma)
Rayleigh
Exponential
Log Normal
Periodic Noise
Gray
Black-White
Off
Negative
YIQ
RGB
HSI
Calculate SNR
X-Value
Y-Value
Reflect
Vertical
Horizontal
Resize
Shift
Crop
White
Black
0
51
102
153
204
255
Filtering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

# ♦ PyQT

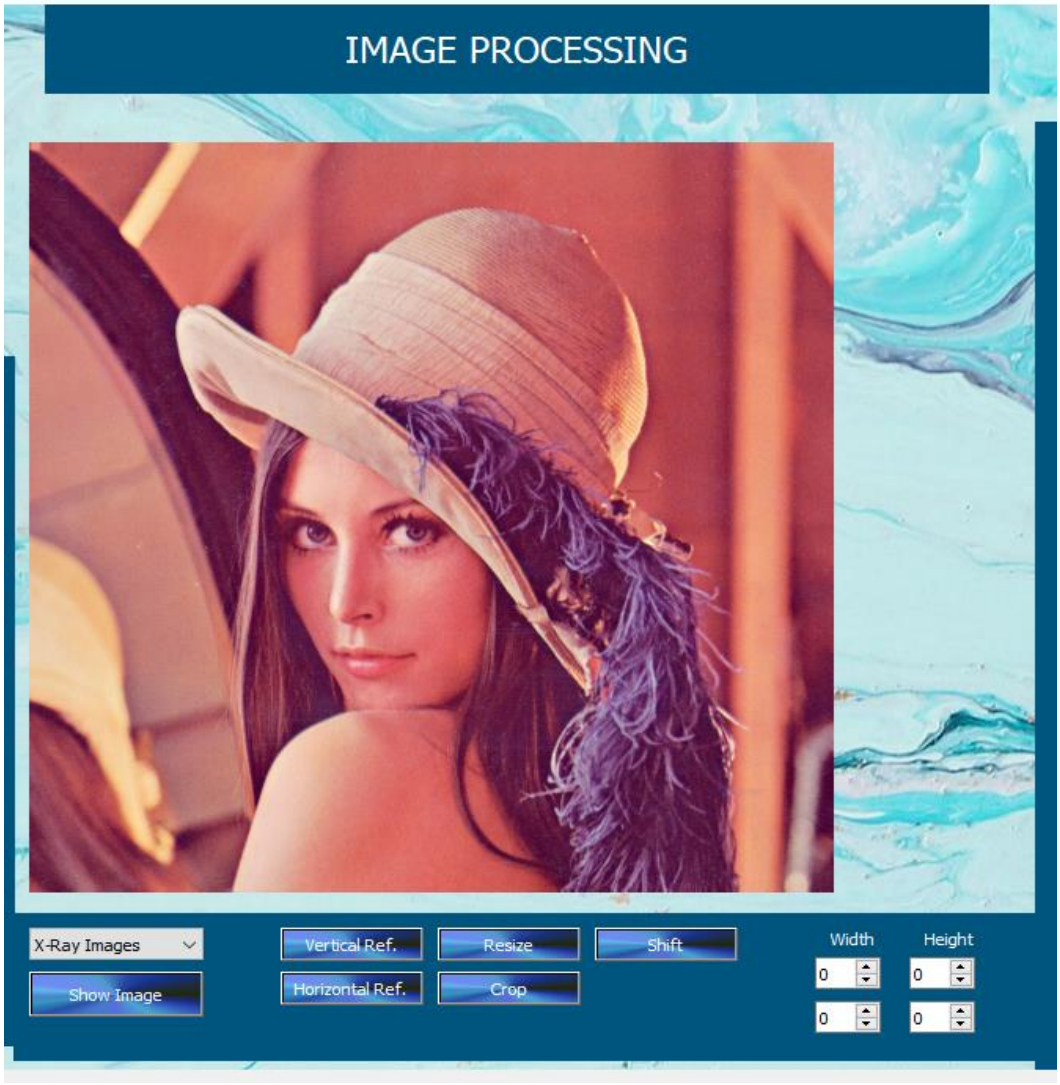



❖ In this assignment, I added buttons for resizing, reflection, shifting and cropping the image. Reflection can be done both vertically and horizontally. Two inputs are required for resizing and shifting. For cropping, 4 inputs must be entered. These operations can be done for both gray and RGB images.

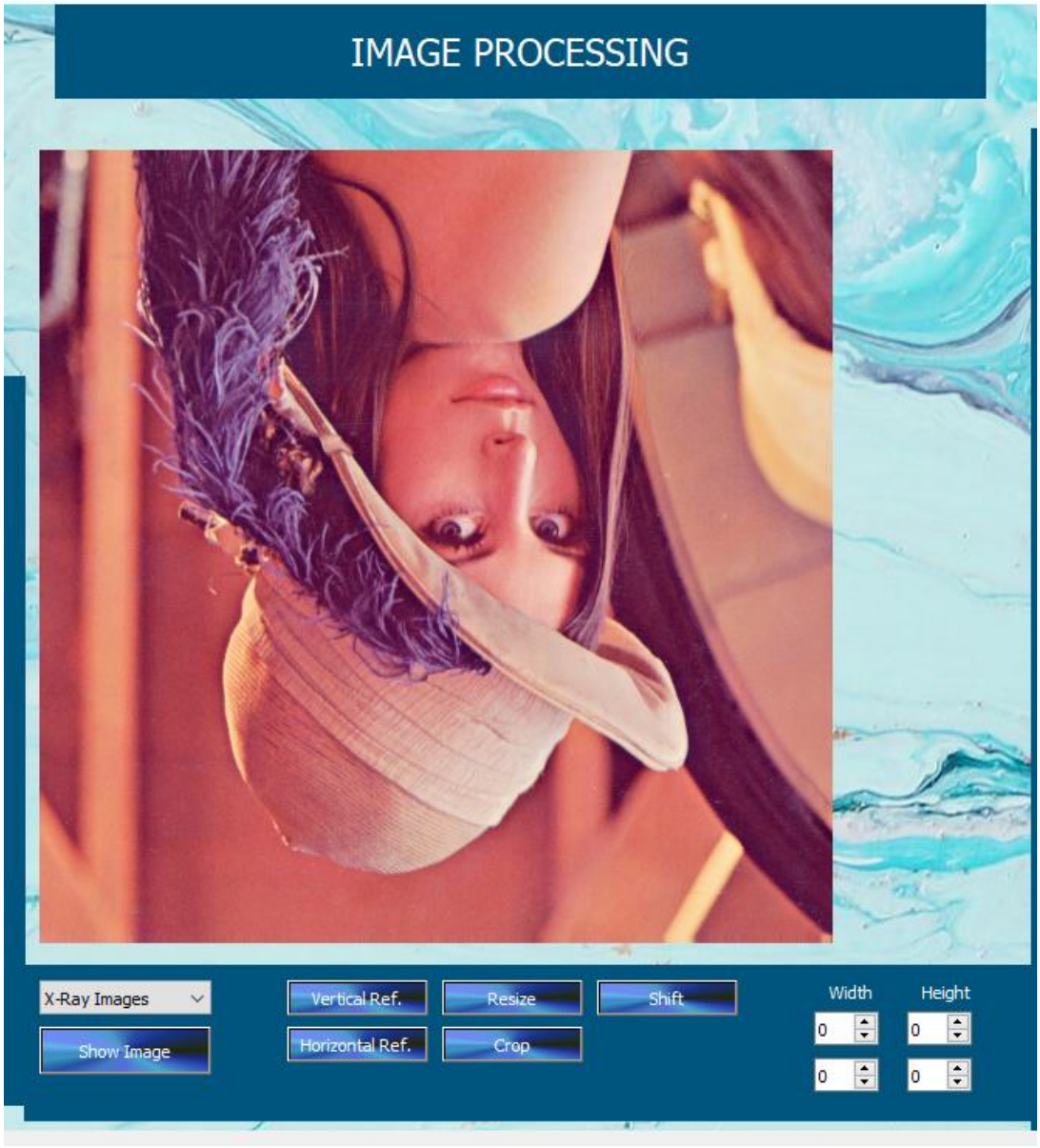
## ➢ Initial Image



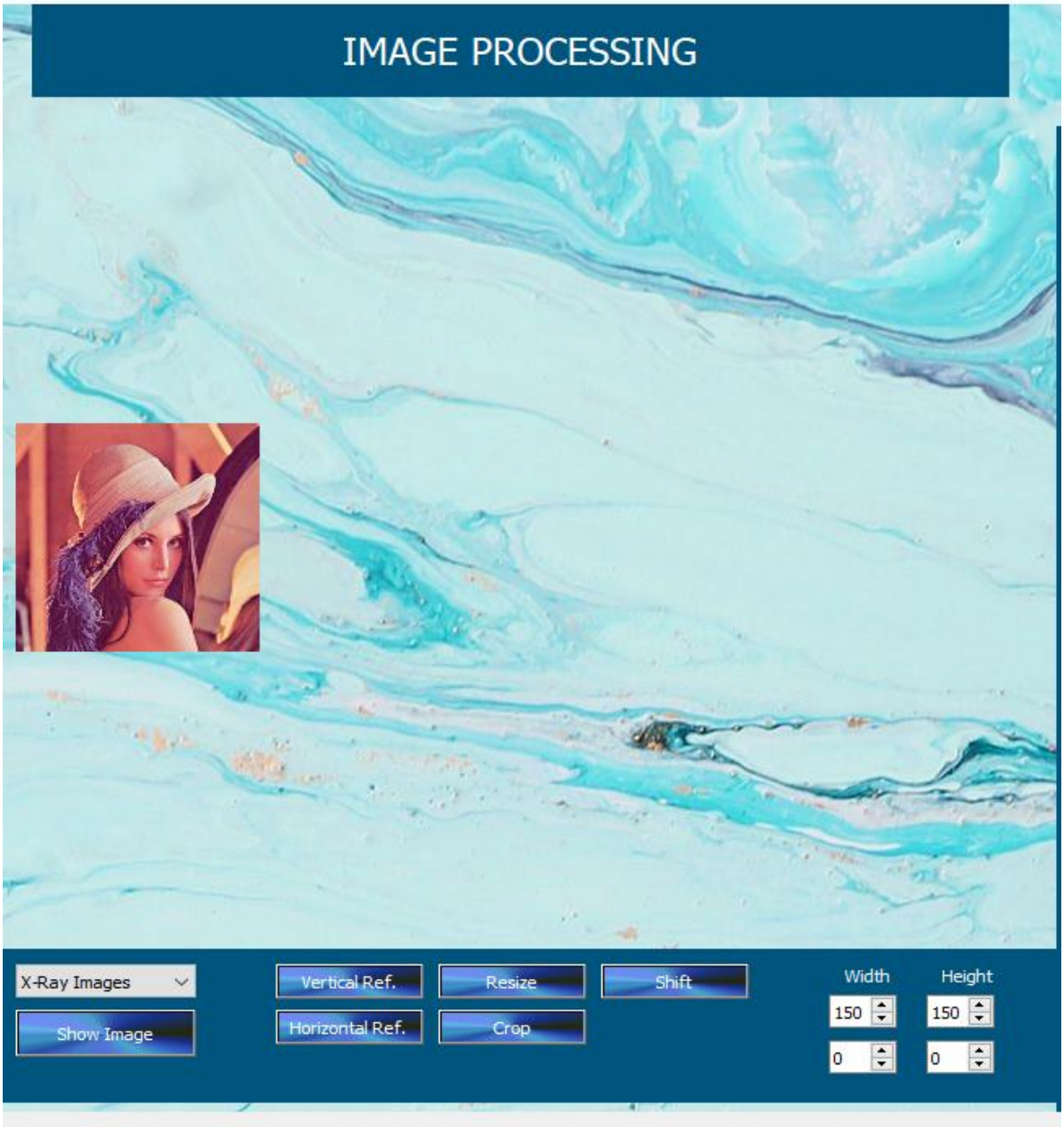
## ➢ Vertical Reflection



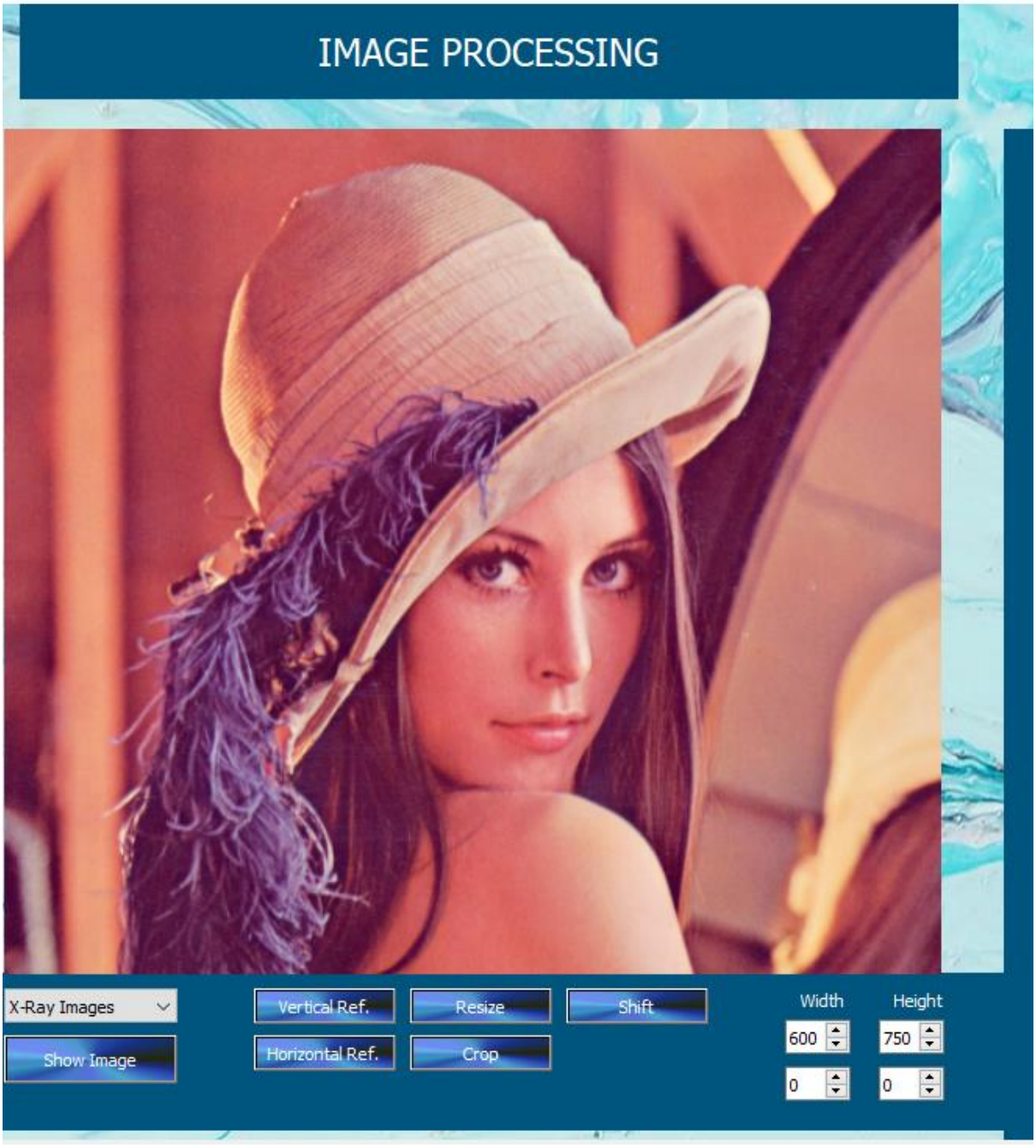
## ➢ Horizontal Reflection



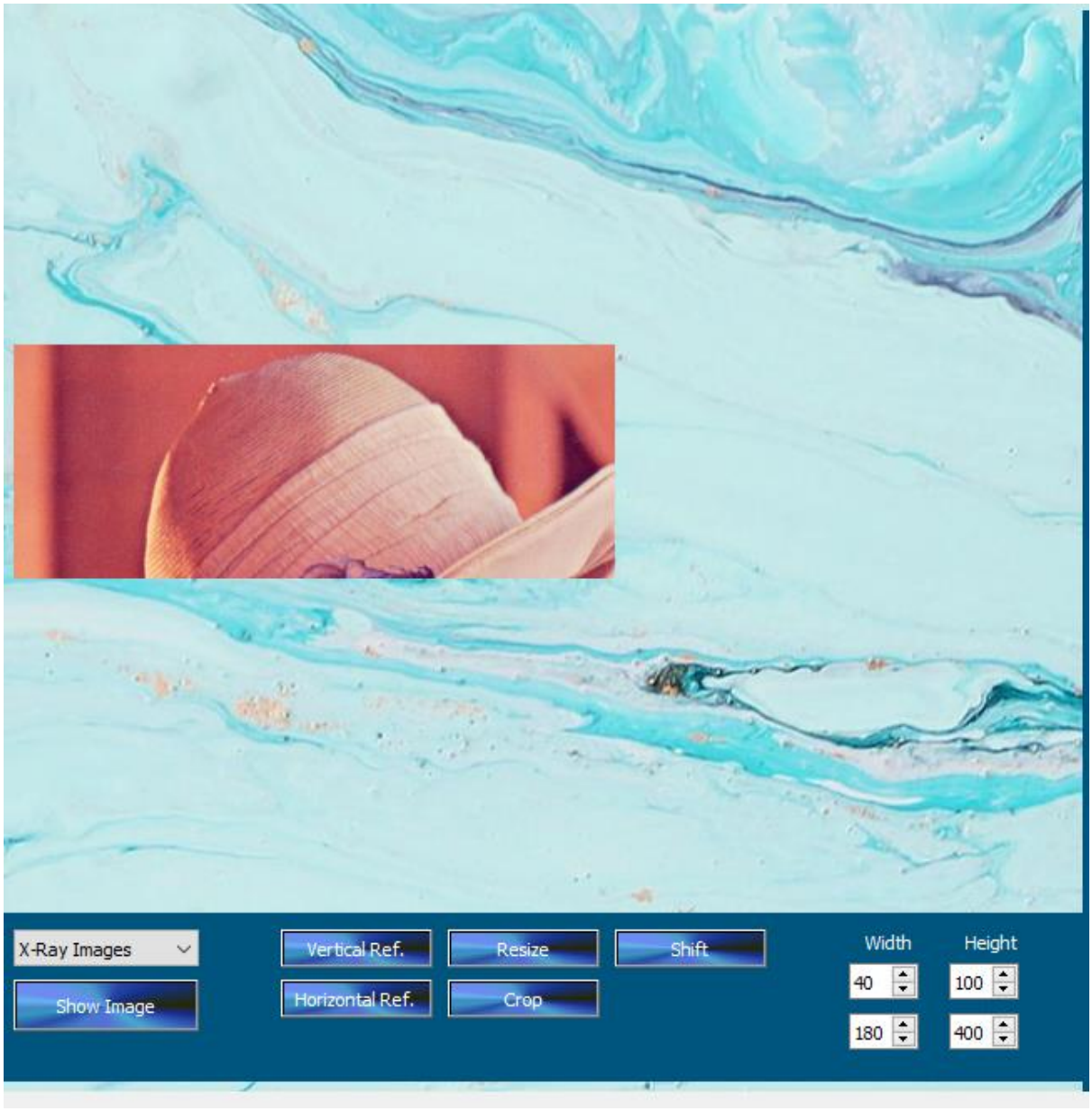
- **Resize (150x150)**



- **Resize (600x750)**



- **Crop (40:180,100:400)**



- **Shift (170,80)**

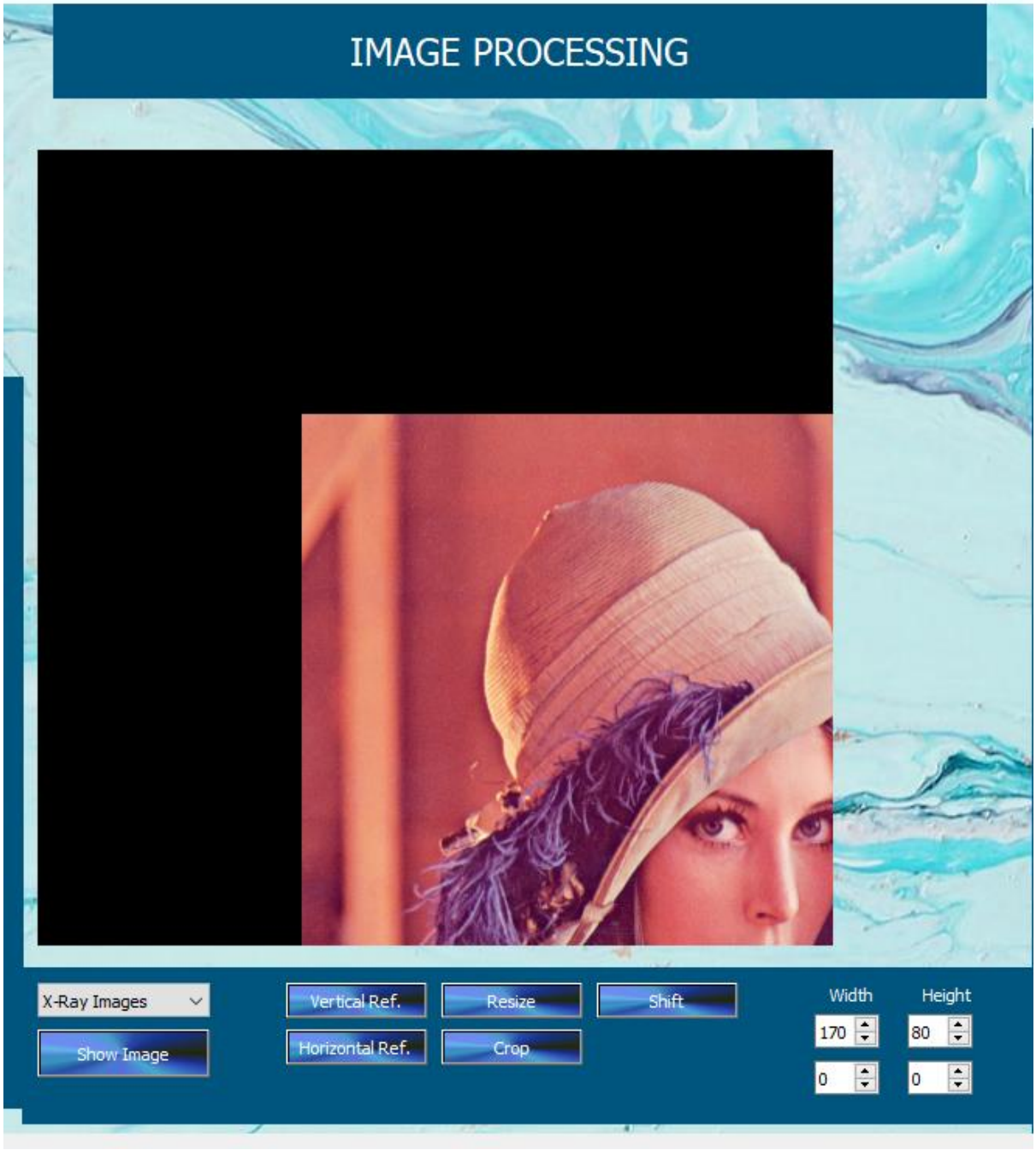
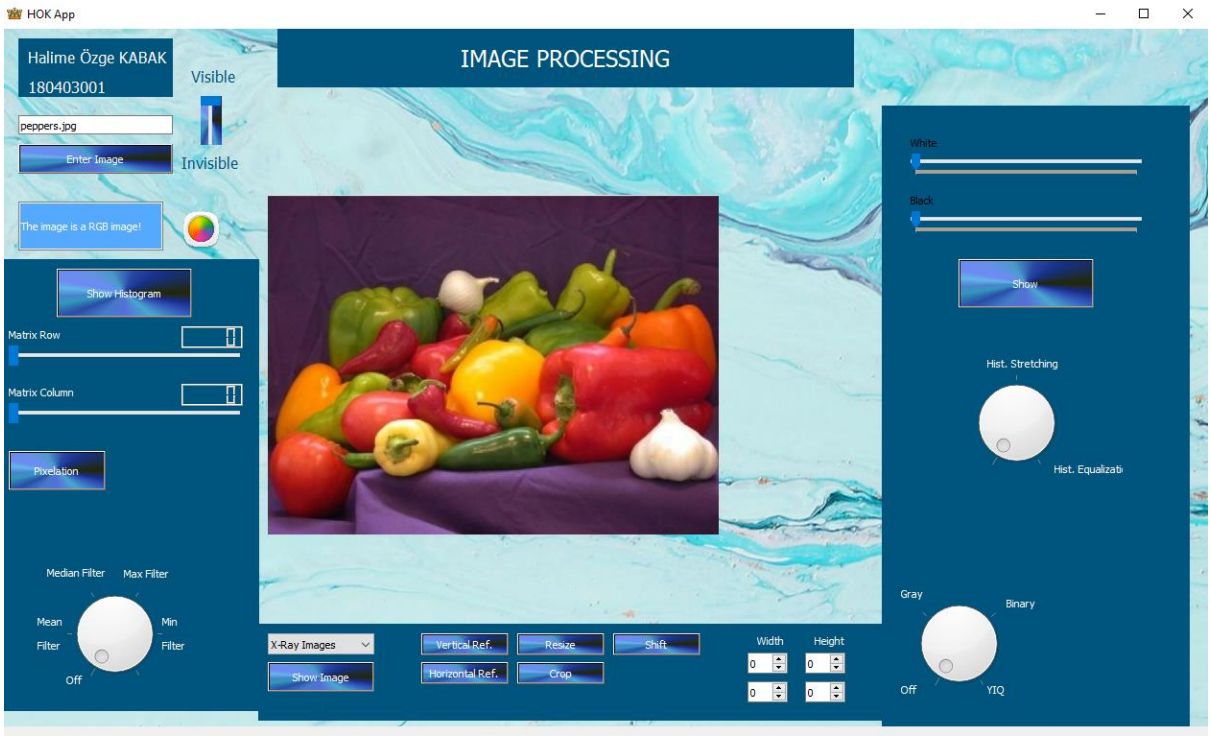


IMAGE PROCESSING
X-Ray Images
Show Image
Vertical Ref.
Horizontal Ref.
Resize
Crop
Shift
Width
Height
170
80
0
0

- In the second step I added a feature where different colour transformation can be done. Thanks to this feature, RGB photos can be converted to YIQ.

## ➢ Initial Image




## ➢ YIQ