COMPUTER VISION AND IMAGE PROCESSING

Mr. Rahool
(2K18/ELE/85)
Mr. Israr Ahmed Chandio
(2k18/ELE/46)

Class: (BS) Electronics Part-iv

Submitted to: Sir Dr. Sandar Ali Khuwaja

University of Sindh, Jamshoro

Issue 25, 7, 2021

IMAGE BLURRING IN IMAGE PROCESSING WITH JAVA

Rahool (2k18/ELE/85), Israr Ahmed(2k18/ELE/46)

BS Electronics Engineering
University of Sindh, Jamshoro, Sindh , Pakistan

Submitted: 25.07.2021

Abstract:

Image Blurring is done by passing Normal picture as input and obtaining the Blur one at full resolution as output. The technique of blur image has more impact on different fields such as medical imaging, forensic science and astronomy. To enhance an image by using Java programming Language it takes less time complexity. In order to overcome those Image Blurring we proposed CNN algorithm to get better performance by using java Programming language.

INTRODUCTION:

Now-a-days the conversion of Normal image to Blur image is one of the Easy way because, everyone uses smart phone and click pictures everywhere. Sometimes the pictures captured as Bad image or it contain useful information or some time we want to hide something on picture, So image blurring help us to resolve these problems.

In signal processing, changing the Normal picture to a Blur picture typically reduces the problem of useful information of the picture unchanged. In actual cases, the plane rotation of the camera or moving object is Normal. The picture is degraded by a couple of Normal image it is referred to as asymmetric blur picture. The picture is degraded by a couple of Normal image it is referred to as asymmetric blur picture. The excellent method is used to enhance an image, which means that it can completely change into a Blur picture at different resolutions in a pyramid step by step. This is especially true of both optimization based strategies and more recently neural network based methods.

IMPLEMENTATION OF DATA:

Most of the researches has done on image bluring along with that some of them created a realistic datasets by clicking consecutive frames from videos which are taken by handheld camera for getting accurate results. We use Gopro dataset which consists of 3214 Normal image pairs The dataset will be splitted into training and testing data. Training data contains 2103 Normal images at high resolution and testing data contains 1111 Normal images. And they change into Blurry image.

STEPS:

1. Start

First load the input Normal images .

```
File Selecting = new File(Select_image);

        BufferedImage inputimage = ImageIO.read(Selecting);

          BufferedImage outputimage = new BufferedImage();
             inputimage.getWidth(), inputimage.getHeight();
             BufferedImage.TYPE_INT_RGB);
 JOptionPane.showMessageDialog(null, "Please Wait.....");
```

STEP 2:

Then it Change Normal Image to Blurry image Through (INNER NESTED LOOPS)

```
int i = 0;
        int maximum =
400, radius = 10;
        int a1 = 0,
        r1 = 0,
        g1 = 0,
        b1 = 0;
        color = new
Color[maximum];

        int x = 1, y = 1,
x1, y1, ex = 5, d = 0;

        for (x = radius; x
< inputimage.getHeight()
- radius; x++) {
                for (y =
radius; y <
inputimage.getWidth() -
```

STEP 3:

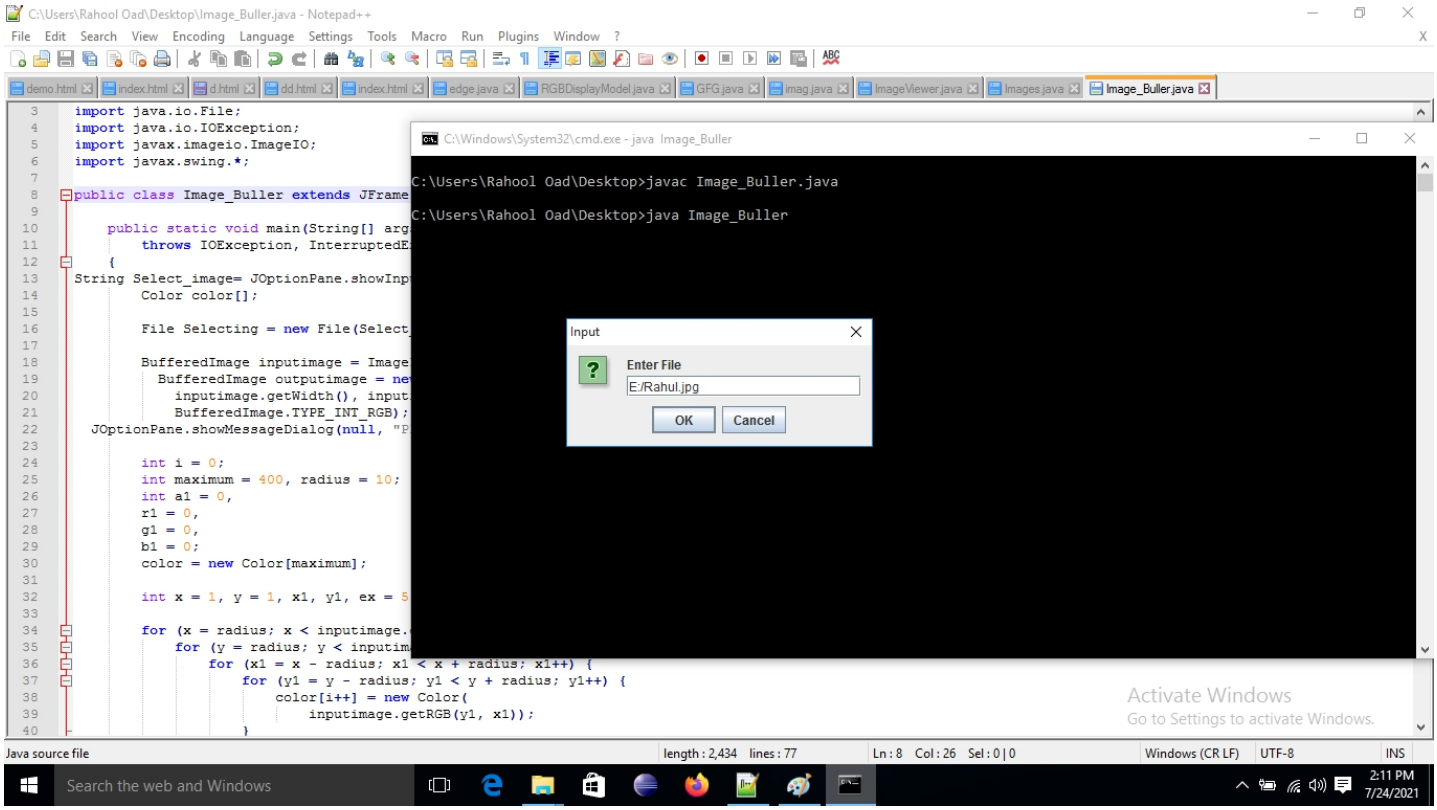
After Changing image from Normal to Blurry It Save On same Driver From I selected :

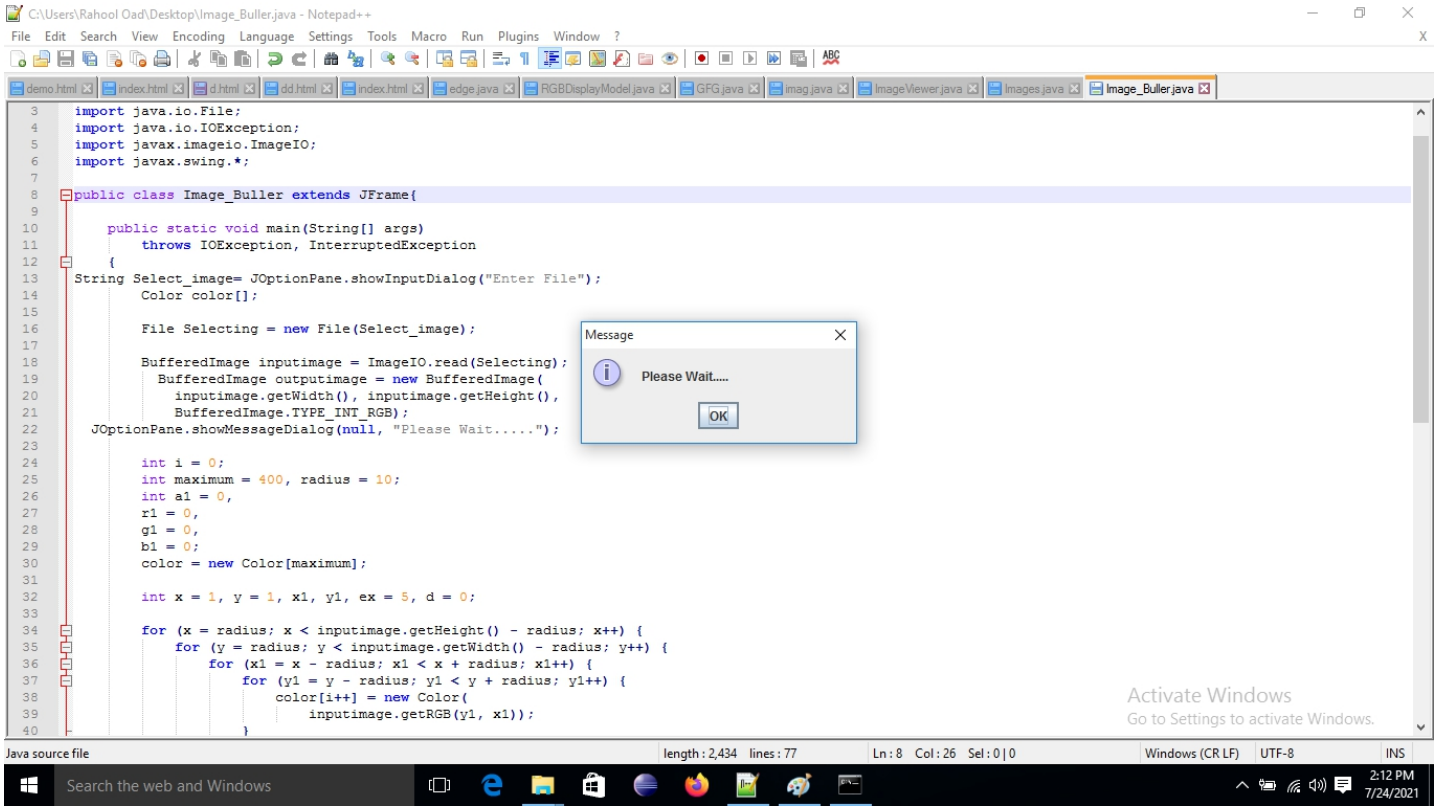
```
ImageIO.write(    outputimage,"jpg";

                    new File("E:/Bullerd_Image2.jpg"));

JOptionPane.showMessageDialog(null,"Blurred Succss
ThankYou...!");
```

Here is Code of My program:

```
import java.awt.*;
    import java.awt.image.BufferedImage;
    import java.io.File;
    import java.io.IOException;
    import javax.imageio.ImageIO;
    import javax.swing.*;

    public class Image_Buller extends JFrame{

  public static void main(String[] args)
      throws IOException, InterruptedException
  {
    String Select_image= JOptionPane.showInputDialog("Enter File");
      Color color[];

       File Selecting = new File(Select_image);

      BufferedImage inputimage = ImageIO.read(Selecting);
        BufferedImage outputimage = new BufferedImage(
            inputimage.getWidth(), inputimage.getHeight(),
            BufferedImage.TYPE_INT_RGB);
 JOptionPane.showMessageDialog(null, "Please Wait.....");

       int i = 0;
         int maximum = 400, radius = 10;
        int a1 = 0,
      r1 = 0,
      g1 = 0,
      b1 = 0;
        color = new Color[maximum];

         int x = 1, y = 1, x1, y1, ex = 5, d = 0;
```

```
        for (x = radius; x < inputimage.getHeight() - radius; x++) {
            for (y = radius; y < inputimage.getWidth() - radius; y++) {
                for (x1 = x - radius; x1 < x + radius; x1++) {
                  for (y1 = y - radius; y1 < y + radius; y1++) {
                      color[i++] = new Color(
                            inputimage.getRGB(y1, x1));
                }
            }
            i = 0;
            for (d = 0; d < maximum; d++) {
                a1 = a1 + color[d].getAlpha();
            }

            a1 = a1 / (maximum);
            for (d = 0; d < maximum; d++) {
                r1 = r1 + color[d].getRed();
            }

            r1 = r1 / (maximum);
            for (d = 0; d < maximum; d++) {
                g1 = g1 + color[d].getGreen();
            }

            g1 = g1 / (maximum);
            for (d = 0; d < maximum; d++) {
                b1 = b1 + color[d].getBlue();
            }

            b1 = b1 / (maximum);
            int sum1 = (a1 << 24) + (r1 << 16)
                        + (g1 << 8) + b1;
            outputimage.setRGB(y, x, (int)(sum1));
        }
     }

      ImageIO.write(
            outputimage, "jpg",
            new File("E:/Bullerd_Image2.jpg"));
    JOptionPane.showMessageDialog(null,"Blurred Succss Thank You...!");

              }
}
```


C:\Users\Rahool Oad\Desktop\Image_Buller.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
demo.html index.html d.html dd.html index.html edge.java RGBDisplayModel.java GFG.java imag.java ImageViewer.java Images.java Image_Buller.java
import java.io.File;
import java.io.IOException;
import javax.imageio.ImageIO;
import javax.swing.*;
public class Image_Buller extends JFrame
public static void main(String[] arg
throws IOException, InterruptedE
{
String Select_image= JOptionPane.showInp
Color color[];
File Selecting = new File(Select
BufferedImage inputimage = Image
BufferedImage outputimage = ne
inputimage.getWidth(), input
BufferedImage.TYPE_INT_RGB);
JOptionPane.showMessageDialog(null, "P
int i = 0;
int maximum = 400, radius = 10;
int a1 = 0,
r1 = 0,
g1 = 0,
b1 = 0;
color = new Color[maximum];
int x = 1, y = 1, x1, y1, ex = 5
for (x = radius; x < inputimage.
for (y = radius; y < inputim
for (x1 = x - radius; x1 < x + radius; x1++) {
for (y1 = y - radius; y1 < y + radius; y1++) {
color[i++] = new Color(
inputimage.getRGB(y1, x1));
C:\Windows\System32\cmd.exe - java Image_Buller
C:\Users\Rahool Oad\Desktop>javac Image_Buller.java
C:\Users\Rahool Oad\Desktop>java Image_Buller
Input
Enter File
E:/Rahul.jpg
OK
Cancel
Activate Windows
Go to Settings to activate Windows.
Java source file
length : 2,434 lines : 77
Ln : 8 Col : 26 Sel : 0 | 0
Windows (CR LF)
UTF-8
INS
Search the web and Windows
2:11 PM
7/24/2021


C:\Users\Rahool Oad\Desktop\Image_Buller.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
demo.html index.html d.html dd.html index.html edge.java RGBDisplayModel.java GFG.java imag.java ImageViewer.java Images.java Image_Buller.java
import java.io.File;
import java.io.IOException;
import javax.imageio.ImageIO;
import javax.swing.*;
public class Image_Buller extends JFrame{
public static void main(String[] args)
throws IOException, InterruptedException
{
String Select_image= JOptionPane.showInputDialog("Enter File");
Color color[];
File Selecting = new File(Select_image);
BufferedImage inputimage = ImageIO.read(Selecting);
BufferedImage outputimage = new BufferedImage(
inputimage.getWidth(), inputimage.getHeight(),
BufferedImage.TYPE_INT_RGB);
JOptionPane.showMessageDialog(null, "Please Wait.....");
int i = 0;
int maximum = 400, radius = 10;
int a1 = 0,
r1 = 0,
g1 = 0,
b1 = 0;
color = new Color[maximum];
int x = 1, y = 1, x1, y1, ex = 5, d = 0;
for (x = radius; x < inputimage.getHeight() - radius; x++) {
for (y = radius; y < inputimage.getWidth() - radius; y++) {
for (x1 = x - radius; x1 < x + radius; x1++) {
for (y1 = y - radius; y1 < y + radius; y1++) {
color[i++] = new Color(
inputimage.getRGB(y1, x1));
Message
Please Wait.....
OK
Activate Windows
Go to Settings to activate Windows.
Java source file
length : 2,434 lines : 77
Ln : 8 Col : 26 Sel : 0 | 0
Windows (CR LF)
UTF-8
INS
Search the web and Windows
2:12 PM
7/24/2021

```
import java.io.File;
import java.io.IOException;
import javax.imageio.ImageIO;
import javax.swing.*;

public class Image_Buller extends JFrame{

    public static void main(String[] args)
        throws IOException, InterruptedException
    {
String Select_image= JOptionPane.showInputDialog("Enter File");
        Color color[];

        File Selecting = new File(Select_image);

        BufferedImage inputimage = ImageIO.read(Selecti
          BufferedImage outputimage = new BufferedImage
            inputimage.getWidth(), inputimage.getHeight
            BufferedImage.TYPE_INT_RGB);
   JOptionPane.showMessageDialog(null, "Please Wait.....

        int i = 0;
        int maximum = 400, radius = 10;
        int a1 = 0,
        r1 = 0,
        g1 = 0,
        b1 = 0;
        color = new Color[maximum];

        int x = 1, y = 1, x1, y1, ex = 5, d = 0;

        for (x = radius; x < inputimage.getHeight() -
            for (y = radius; y < inputimage.getWidth()
                for (x1 = x - radius; x1 < x + radius;
                    for (y1 = y - radius; y1 < y + radius; y1++) {
                        color[i++] = new Color(
                            inputimage.getRGB(y1, x1));
                    }
```

C:\Windows\System32\cmd.exe - java Image_Buller

```
C:\Users\Rahool Oad\Desktop>javac Image_Buller.java

C:\Users\Rahool Oad\Desktop>java Image_Buller
```

Message

Blurred Succss Thank You...!

OK

Activate Windows
Go to Settings to activate Windows.

Java source file | length : 2,434 lines : 77 | Ln : 8 Col : 14 Sel : 12 | 1 | Windows (CR LF) | UTF-8 | INS

Search the web and Windows

2:24 PM
7/24/2021

RESULT ANALYSIS:

BEFORE

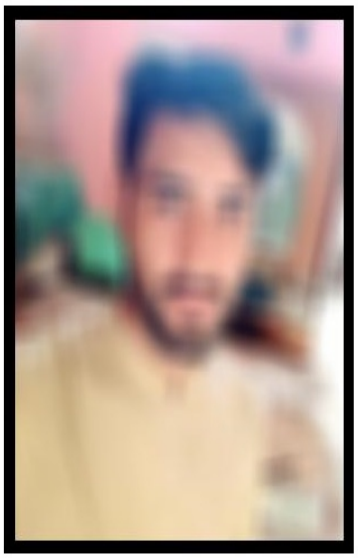
AFTER

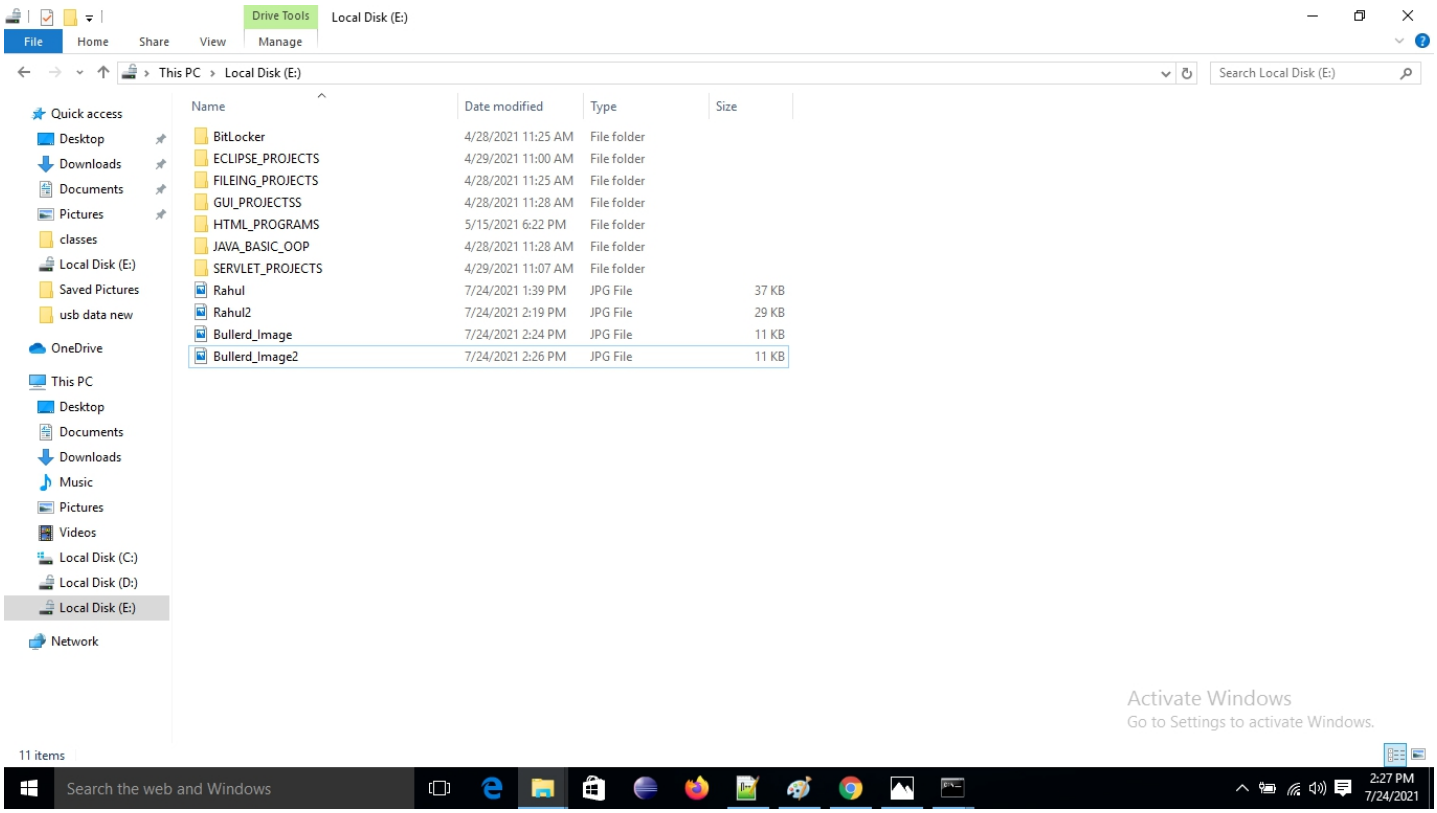
BEFORE

AFTER

BEFORE

AFTER




Drive Tools
Local Disk (E:)
File
Home
Share
View
Manage
This PC › Local Disk (E:)
Search Local Disk (E:)
Quick access
Desktop
Downloads
Documents
Pictures
classes
Local Disk (E:)
Saved Pictures
usb data new
OneDrive
This PC
Desktop
Documents
Downloads
Music
Pictures
Videos
Local Disk (C:)
Local Disk (D:)
Local Disk (E:)
Network
Name
Date modified
Type
Size
BitLocker 4/28/2021 11:25 AM File folder
ECLIPSE_PROJECTS 4/29/2021 11:00 AM File folder
FILEING_PROJECTS 4/28/2021 11:25 AM File folder
GUI_PROJECTSS 4/28/2021 11:28 AM File folder
HTML_PROGRAMS 5/15/2021 6:22 PM File folder
JAVA_BASIC_OOP 4/28/2021 11:28 AM File folder
SERVLET_PROJECTS 4/29/2021 11:07 AM File folder
Rahul 7/24/2021 1:39 PM JPG File 37 KB
Rahul2 7/24/2021 2:19 PM JPG File 29 KB
Bullerd_Image 7/24/2021 2:24 PM JPG File 11 KB
Bullerd_Image2 7/24/2021 2:26 PM JPG File 11 KB
Activate Windows
Go to Settings to activate Windows.
11 items
Search the web and Windows
2:27 PM
7/24/2021

TESTED RESULTS IN VARIOUS IMAGES:

Some of the testing is done on the images with our model. By passing different blur images as input and obtain sharp image as output.

CONCLUSION:

We Can easily now convert normal image to blurr image to hide our important information of the image
The results obtained from the beginning our model is looking realistic as compared to the existing works. Thus, the model constructed using convolutional neural networks is performing satisfactorily as well as it increases the efficiency of sharpening the blur image and reduced the training time of the model as compared to the developed models like lstm, gru, etc. The proposed model takes sequence of blurry images in different resolutions and down sampled at encoder then generates latent sharp image at each layer and provides the sharp image at full resolution by converting back into the original format at decoder.Thus, it reduces the time complexity and gives stable results.