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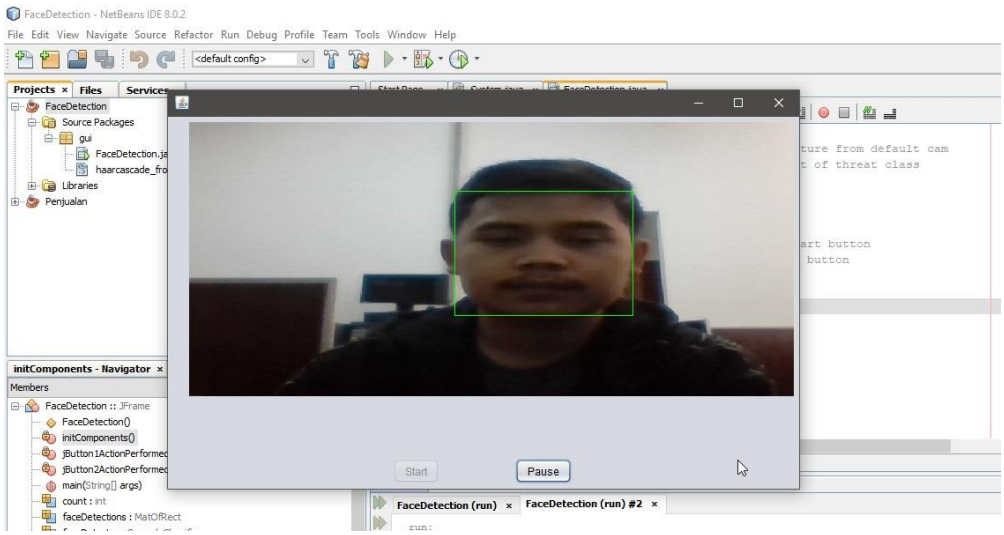
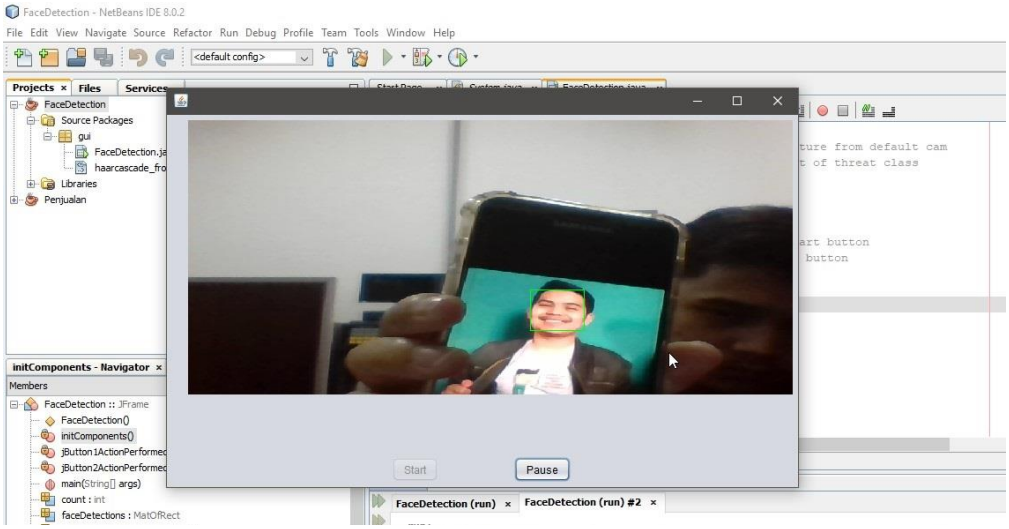
1. Pengetesan real time face detected





2. Coding

```
package gui;


import java.awt.Graphics;
import java.awt.Image;
import java.awt.image.BufferedImage;
import java.io.ByteArrayInputStream;
import javax.imageio.ImageIO;
import org.opencv.core.Core;
import org.opencv.core.Mat;
import org.opencv.core.MatOfByte;
import org.opencv.core.MatOfRect;
import org.opencv.core.Point;
import org.opencv.core.Rect;
import org.opencv.core.Scalar;
import org.opencv.core.Size;
import org.opencv.highgui.Highgui;
import org.opencv.highgui.VideoCapture;
import org.opencv.imgproc.Imgproc;
import org.opencv.objdetect.CascadeClassifier;



public class FaceDetection extends javax.swing.JFrame {
///
   private DaemonThread myThread = null;
   int count = 0;
   VideoCapture webSource = null;
   Mat frame = new Mat();
   MatOfByte mem = new MatOfByte();
   CascadeClassifier faceDetector = new
CascadeClassifier(FaceDetection.class.getResource("haarcascade_frontalface_alt.xml").getP
ath().substring(1));
   MatOfRect faceDetections = new MatOfRect();
```

```
///


   class DaemonThread implements Runnable {


      protected volatile boolean runnable = false;


      @Override
      public void run() {
         synchronized (this) {
            while (runnable) {
               if (webSource.grab()) {
                  try {
                     webSource.retrieve(frame);
                     Graphics g = jPanel1.getGraphics();
                     faceDetector.detectMultiScale(frame, faceDetections);
                     for (Rect rect : faceDetections.toArray()) {
                        // System.out.println("ttt");
                        Core.rectangle(frame, new Point(rect.x, rect.y), new Point(rect.x +
rect.width, rect.y + rect.height),
                              new Scalar(0, 255,0));
                     }
                     Highgui.imencode(".bmp", frame, mem);
                     Image im = ImageIO.read(new ByteArrayInputStream(mem.toArray()));
                     BufferedImage buff = (BufferedImage) im;
                     if (g.drawImage(buff, 0, 0, getWidth(), getHeight()-150 , 0, 0, buff.getWidth(),
buff.getHeight(), null)) {
                        if (runnable == false) {
                           System.out.println("Paused ..... ");
                           this.wait();
                        }
                     }
                  } catch (Exception ex) {
```

```
                    System.out.println("Error!!");
                    ex.printStackTrace();
                }
            }
        }
    }
}
```

/////////

```
public FaceDetection() {
    initComponents();

System.out.println(FaceDetection.class.getResource("haarcascade_frontalface_alt.xml").get
Path().substring(1));
}

@SuppressWarnings("unchecked")
// <editor-fold defaultstate="collapsed" desc="Generated Code">
private void initComponents() {

    jPanel1 = new javax.swing.JPanel();
    jButton1 = new javax.swing.JButton();
    jButton2 = new javax.swing.JButton();

    setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

    javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);
    jPanel1.setLayout(jPanel1Layout);
    jPanel1Layout.setHorizontalGroup(
```

```
        jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGap(0, 0, Short.MAX_VALUE)
    );
    jPanel1Layout.setVerticalGroup(
        jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGap(0, 376, Short.MAX_VALUE)
    );

    jButton1.setText("Start");
    jButton1.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            jButton1ActionPerformed(evt);
        }
    });

    jButton2.setText("Pause");
    jButton2.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            jButton2ActionPerformed(evt);
        }
    });

    javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
    getContentPane().setLayout(layout);
    layout.setHorizontalGroup(
        layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(layout.createSequentialGroup()
            .addGap(24, 24, 24)
            .addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addContainerGap())
```

```
            .addGroup(layout.createSequentialGroup()
                .addGap(255, 255, 255)
                .addComponent(jButton1)
                .addGap(86, 86, 86)
                .addComponent(jButton2)
                .addContainerGap(258, Short.MAX_VALUE))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addContainerGap()
                .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jButton1)
                    .addComponent(jButton2))
                .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
        );

        pack();
    }// </editor-fold>

    private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
        myThread.runnable = false;          // stop thread
        jButton2.setEnabled(false);   // activate start button
        jButton1.setEnabled(true);    // deactivate stop button

        webSource.release();  // stop caturing fron cam
```

```
    }

    private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {

        webSource = new VideoCapture(0); // video capture from default cam
        myThread = new DaemonThread(); //create object of threat class
        Thread t = new Thread(myThread);
        t.setDaemon(true);
        myThread.runnable = true;
        t.start();              //start thrad
        jButton1.setEnabled(false);  // deactivate start button
        jButton2.setEnabled(true);  //  activate stop button


    }

    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        System.loadLibrary(Core.NATIVE_LIBRARY_NAME);
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
        /* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and
feel.
         * For details see
http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info :
javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Nimbus".equals(info.getName())) {
```

```
                javax.swing.UIManager.setLookAndFeel(info.getClassName());
                break;
            }
        }
    } catch (ClassNotFoundException ex) {
java.util.logging.Logger.getLogger(FaceDetection.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (InstantiationException ex) {
java.util.logging.Logger.getLogger(FaceDetection.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (IllegalAccessException ex) {
java.util.logging.Logger.getLogger(FaceDetection.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (javax.swing.UnsupportedLookAndFeelException ex) {
java.util.logging.Logger.getLogger(FaceDetection.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    }
    //</editor-fold>

    /* Create and display the form */
    java.awt.EventQueue.invokeLater(new Runnable() {
        public void run() {
            new FaceDetection().setVisible(true);
        }
    });
}
// Variables declaration - do not modify
private javax.swing.JButton jButton1;
private javax.swing.JButton jButton2;
private javax.swing.JPanel jPanel1;
```

```
    // End of variables declaration
}
```