

INTRODUCTION TO AFORGE.NET
PENGOLAHAN CITRA
MK401

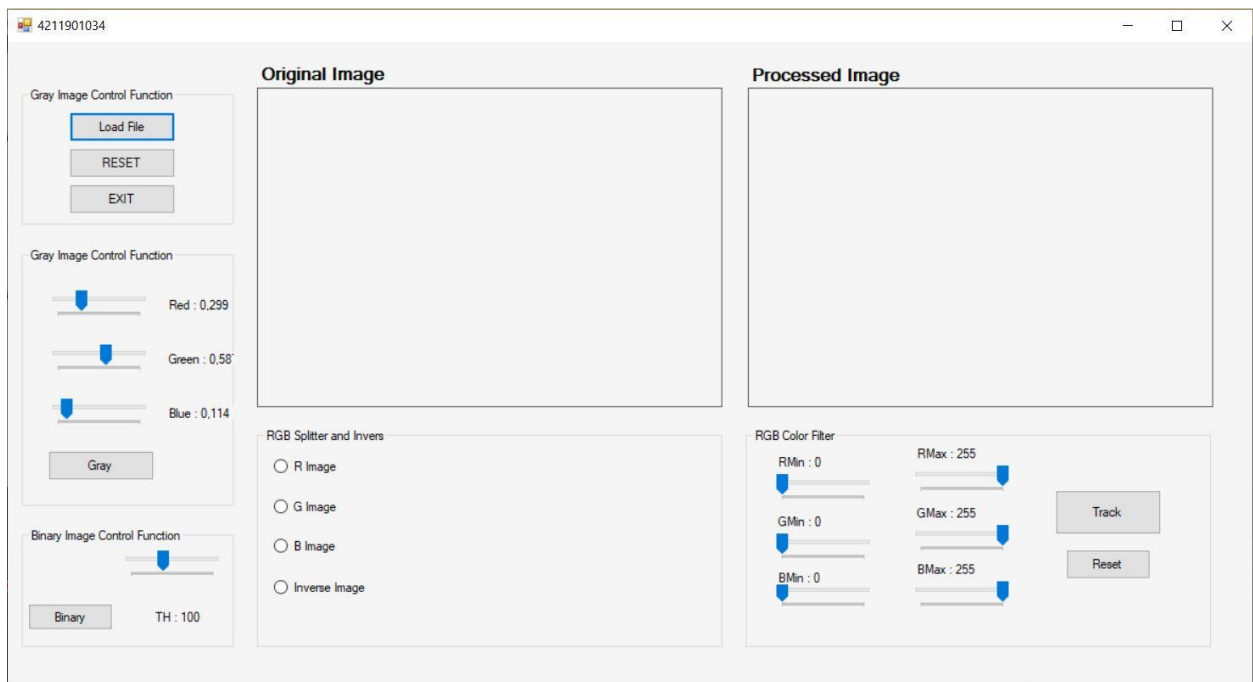


POLITEKNIK NEGERI Batam

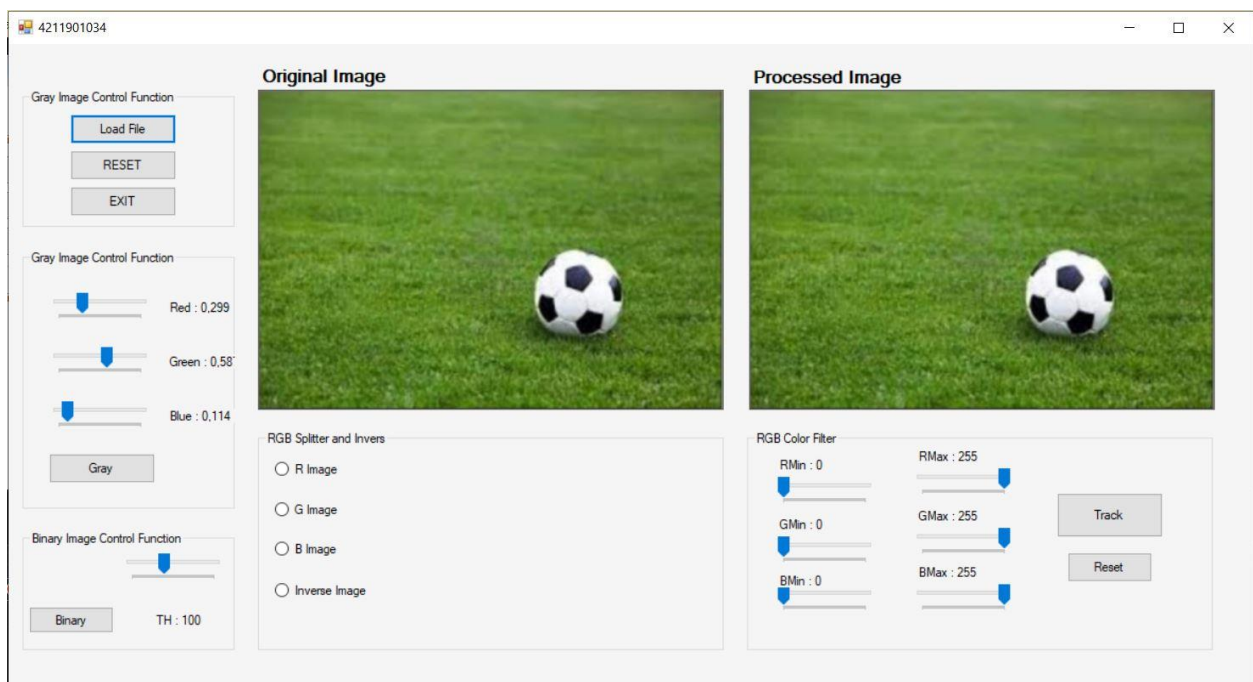
Disusun oleh :
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PROGRAM STUDI TEKNIK MEKATRONIKA
JURUSAN TEKNIK ELEKTRO
POLITEKNIK NEGERI BATAM
2020

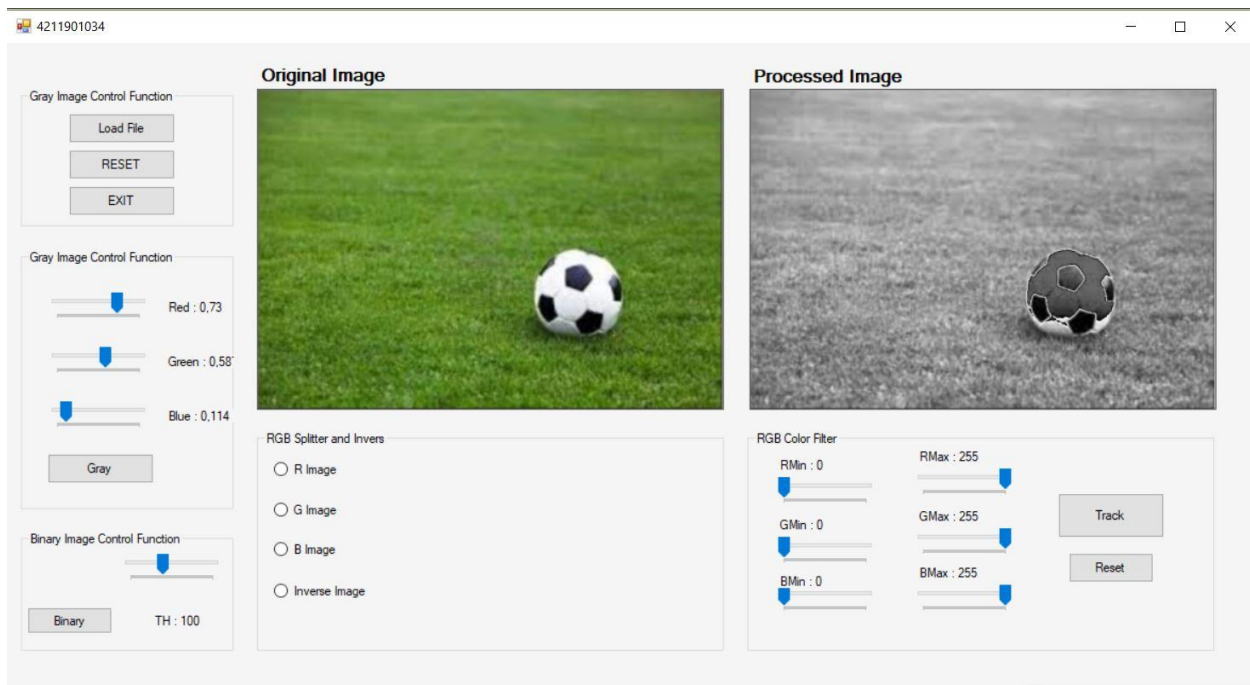
INTRODUCTION TO AForge.NET



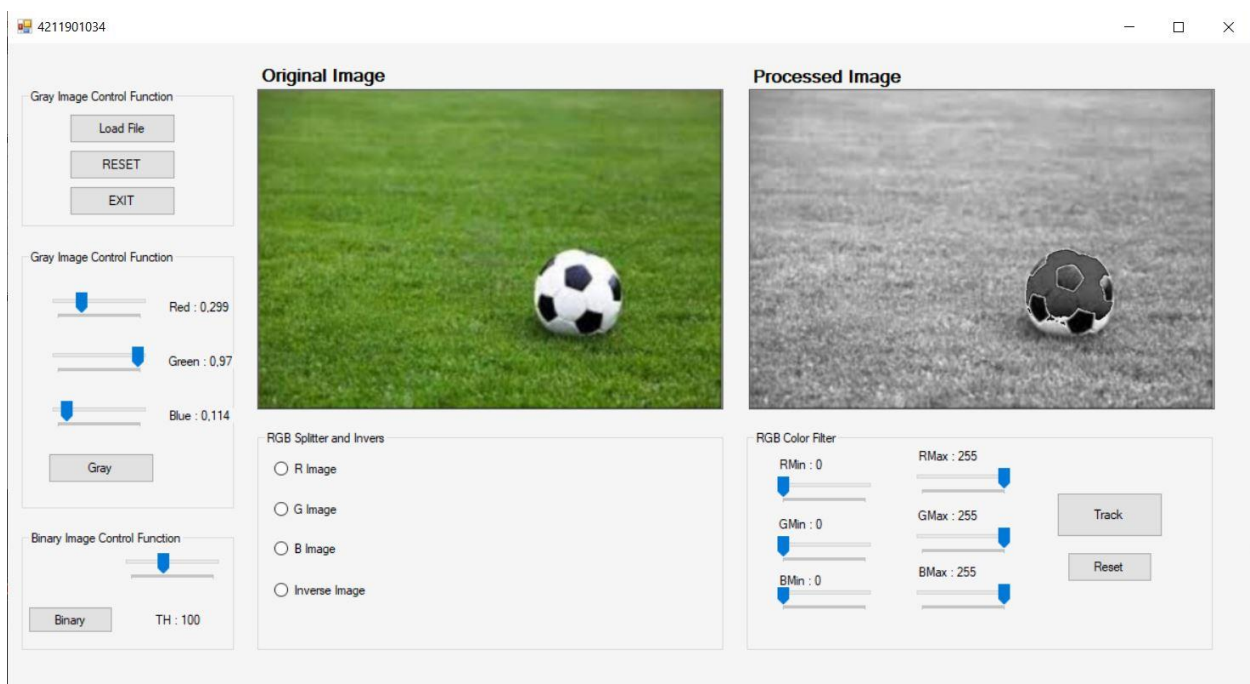
Tampilan awal program



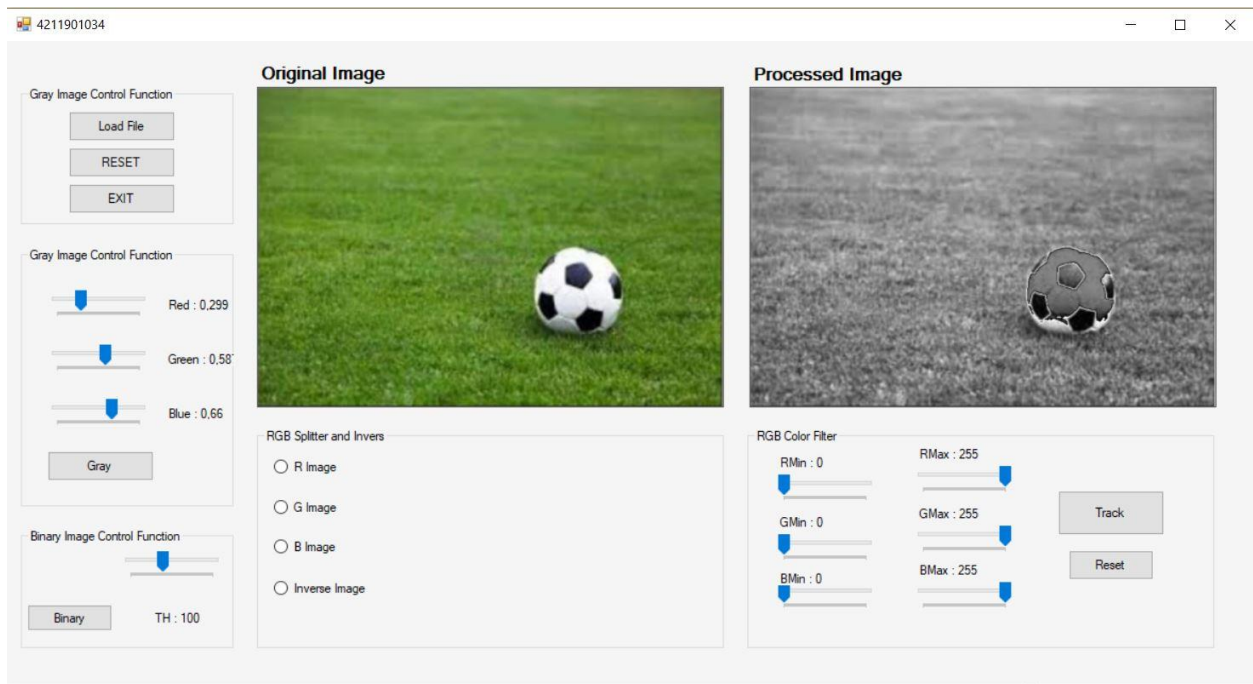
File gambar di upload



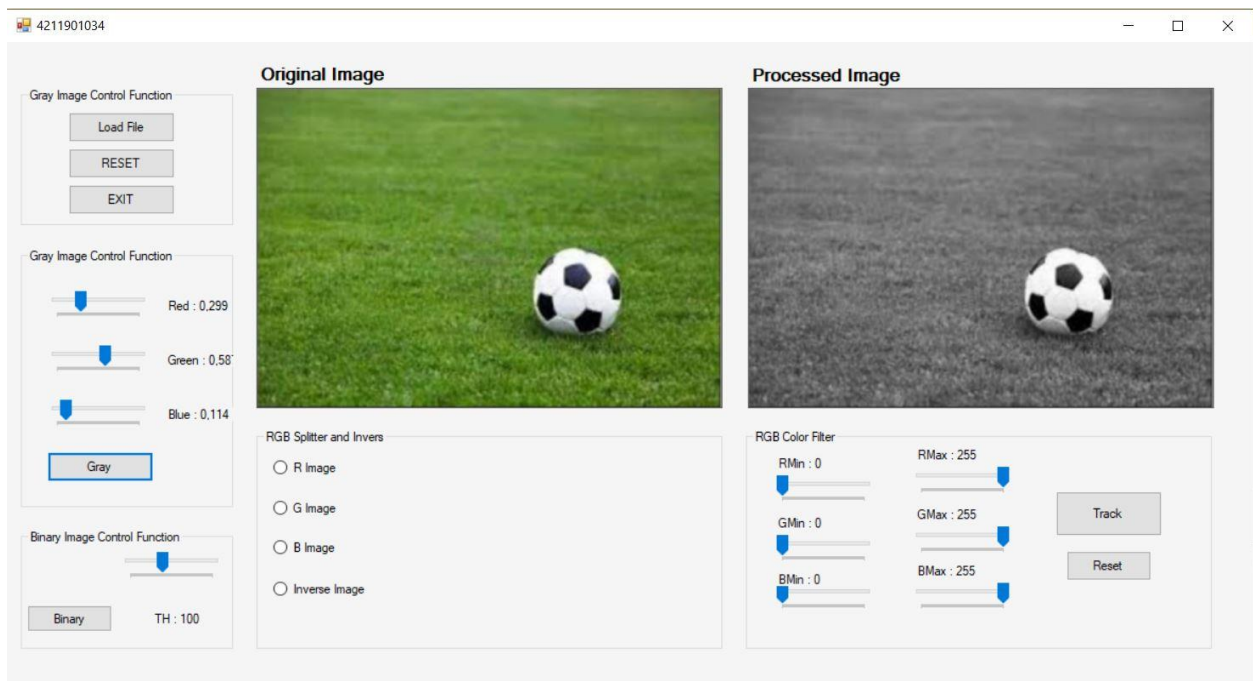
Trackbar Red - Gray Image groupbox



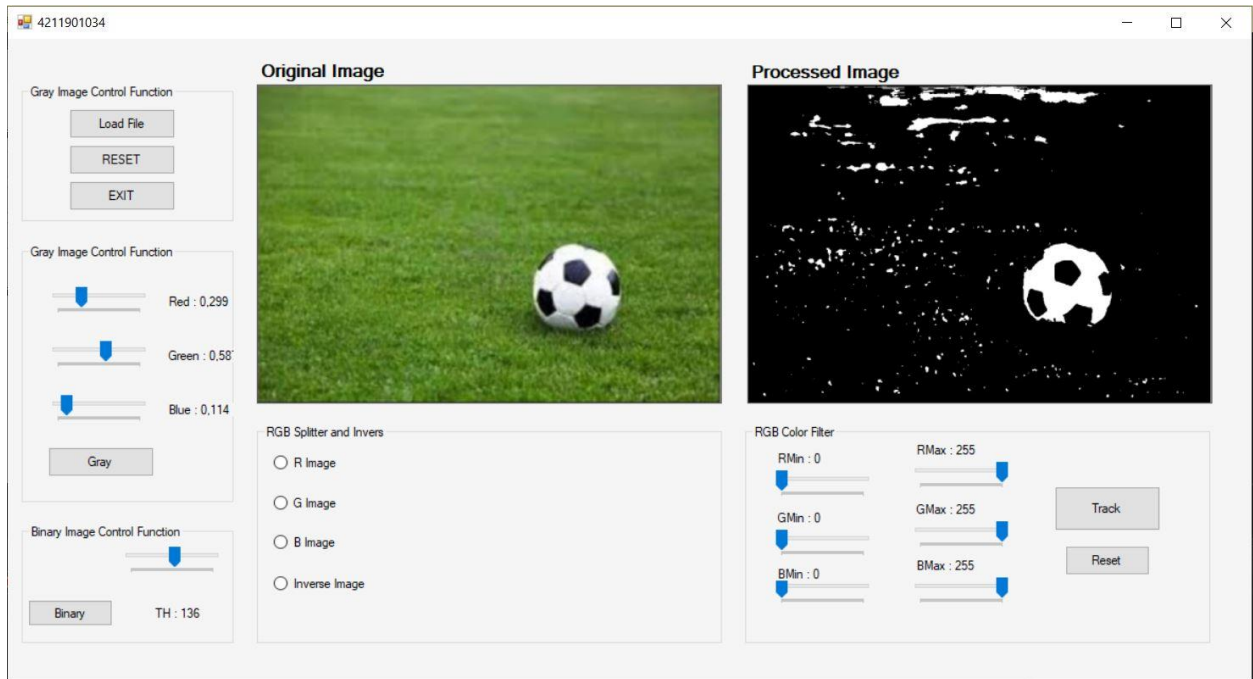
Trackbar Green - Gray Image groupbox



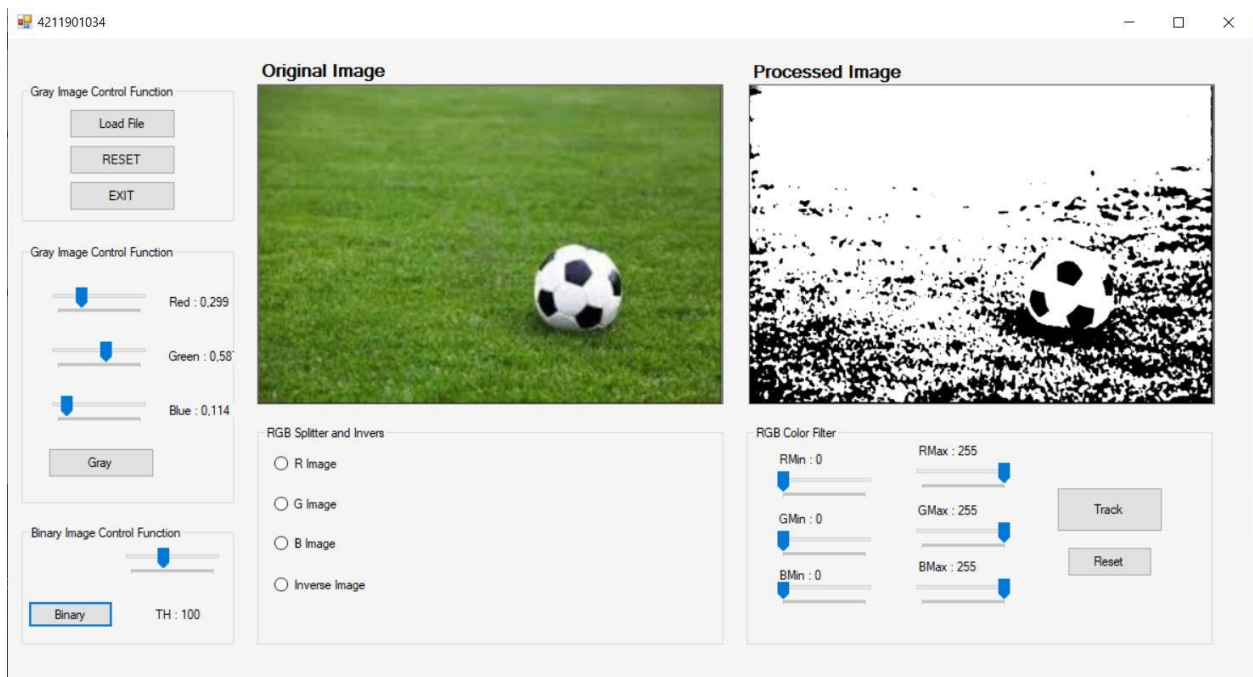
Trackbar Blue - Gray Image groupbox



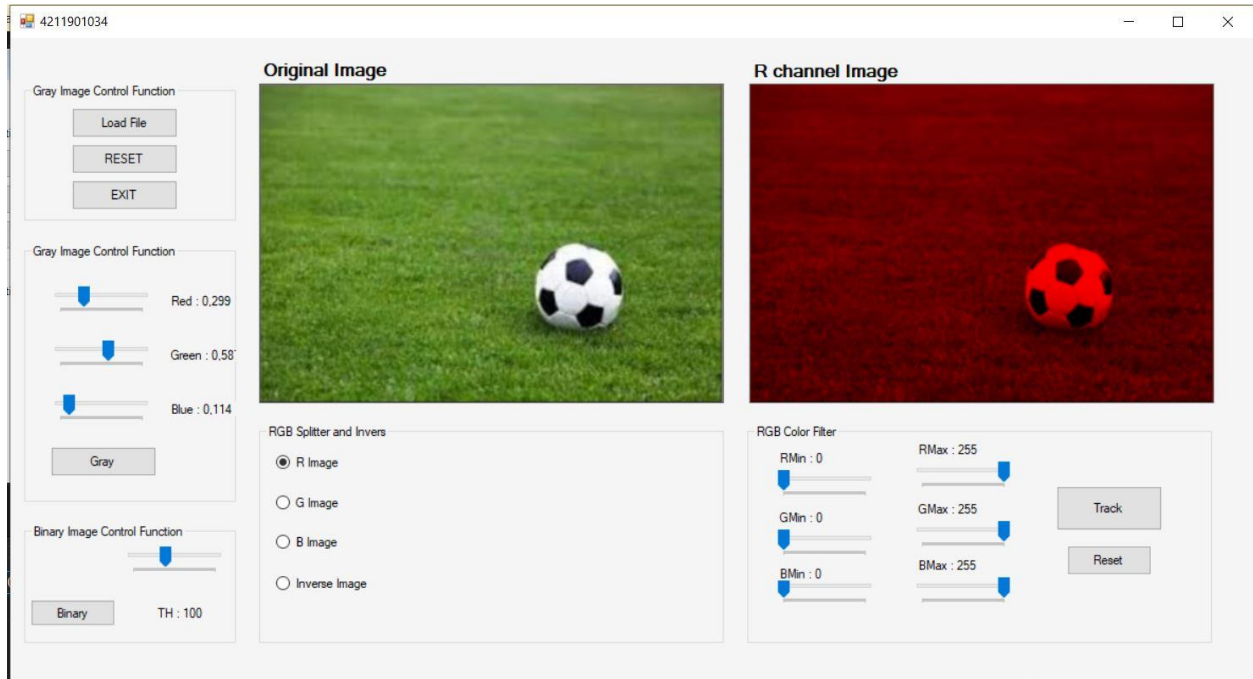
Tampilan Form untuk Gray Image



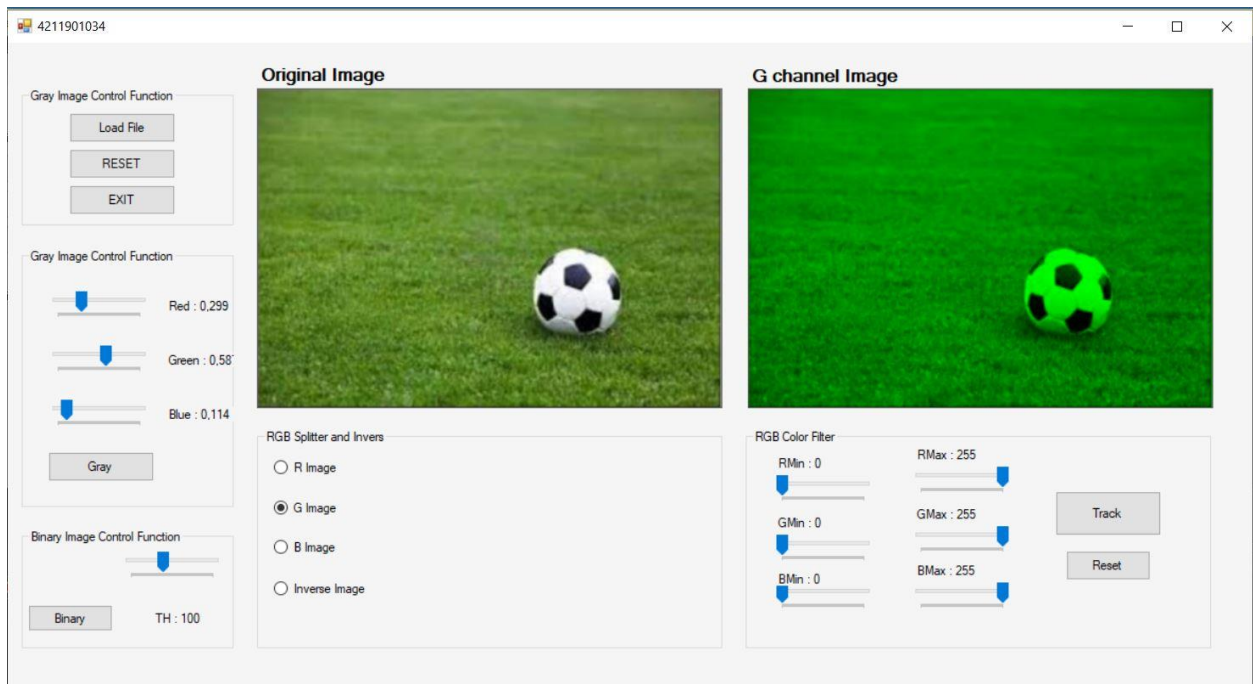
Binary Image dengan Threshold 136



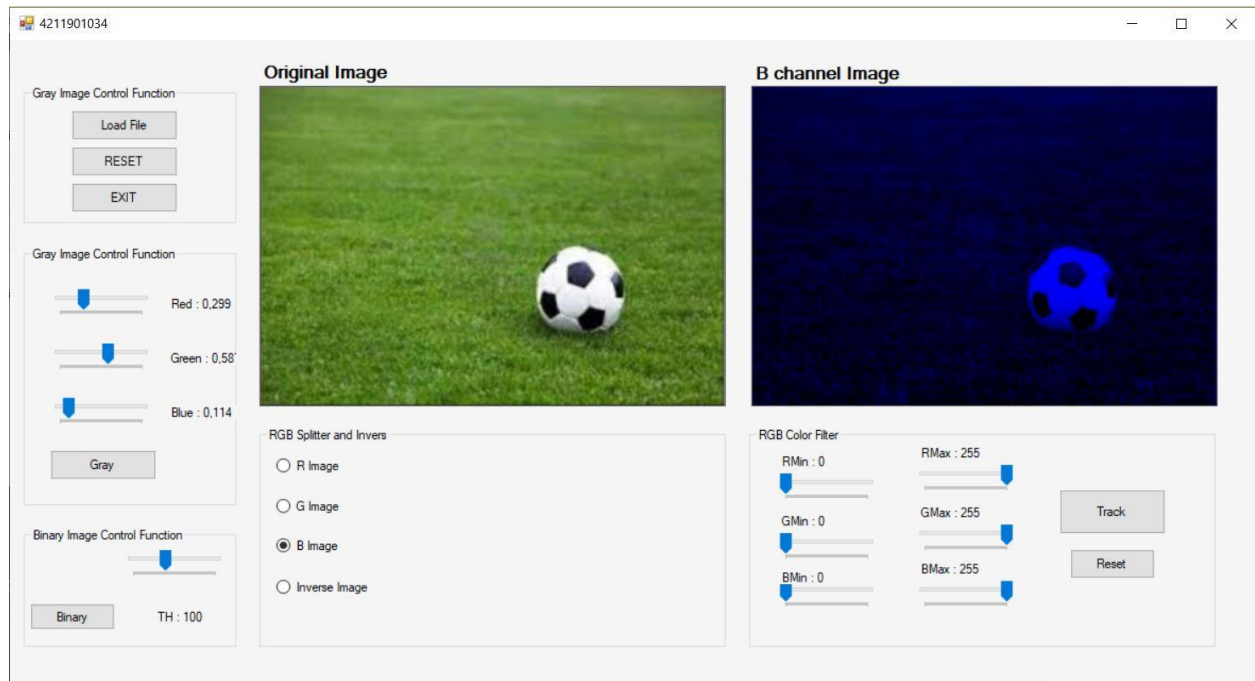
Tampilan Form untuk Binary Image



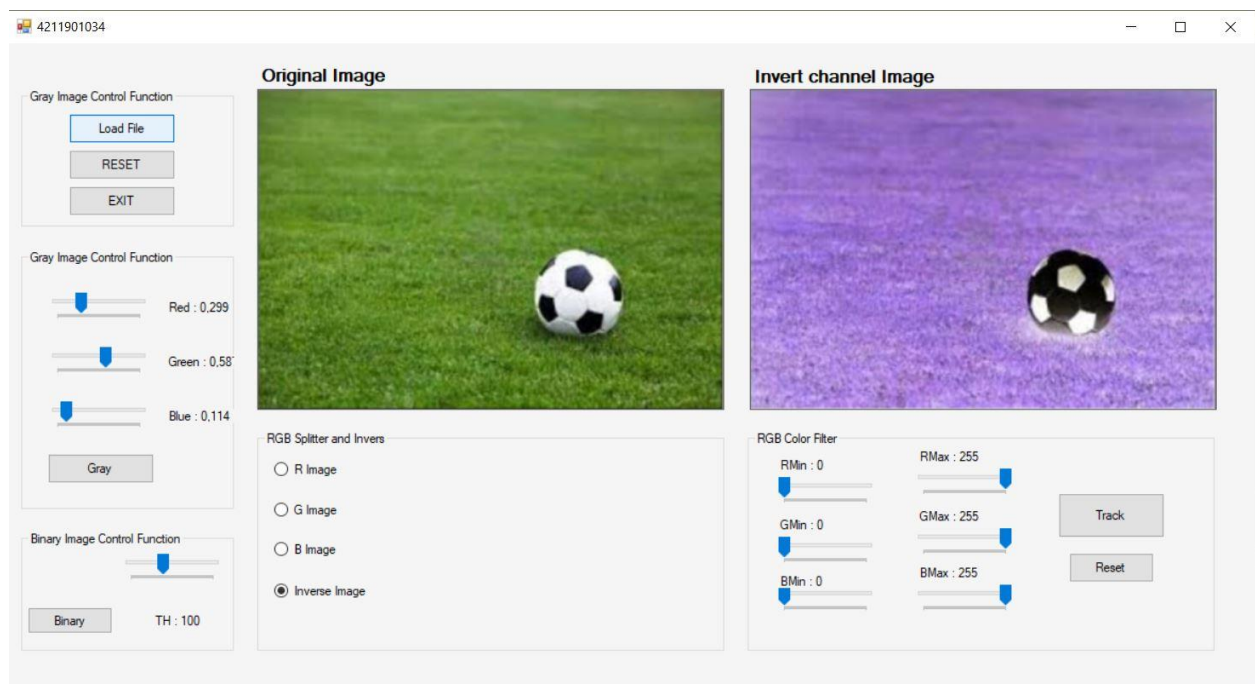
Tampilan Form untuk R Image



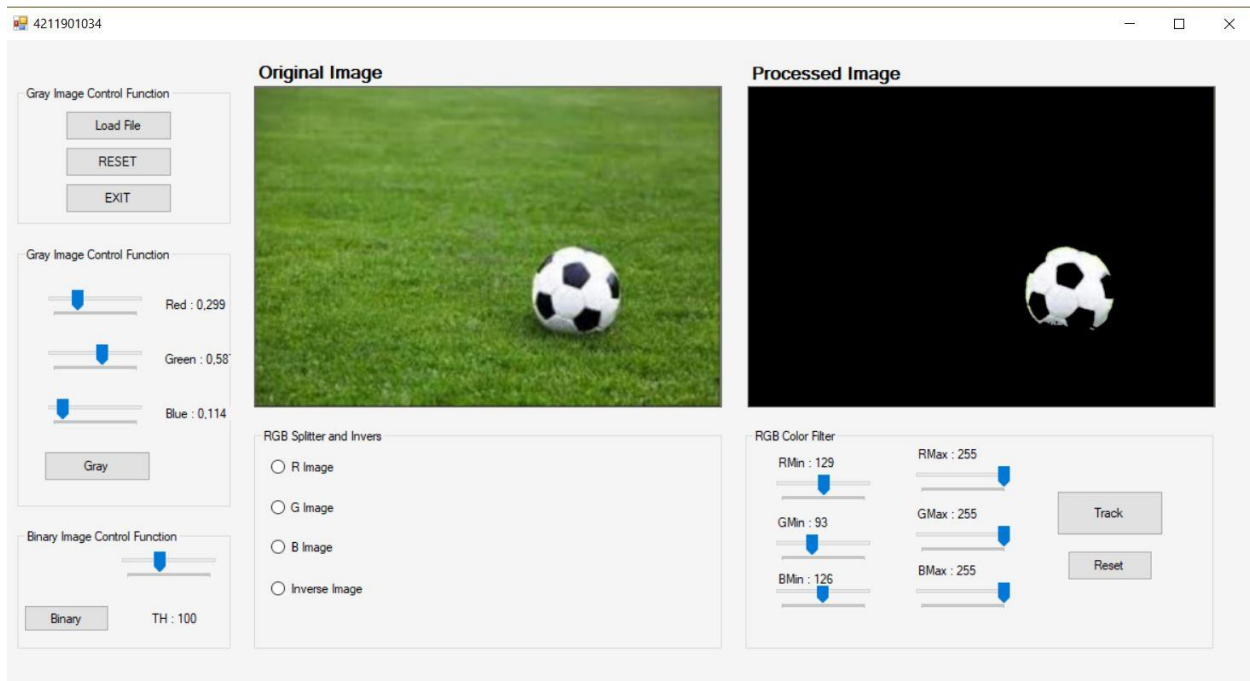
Tampilan Form untuk G Image



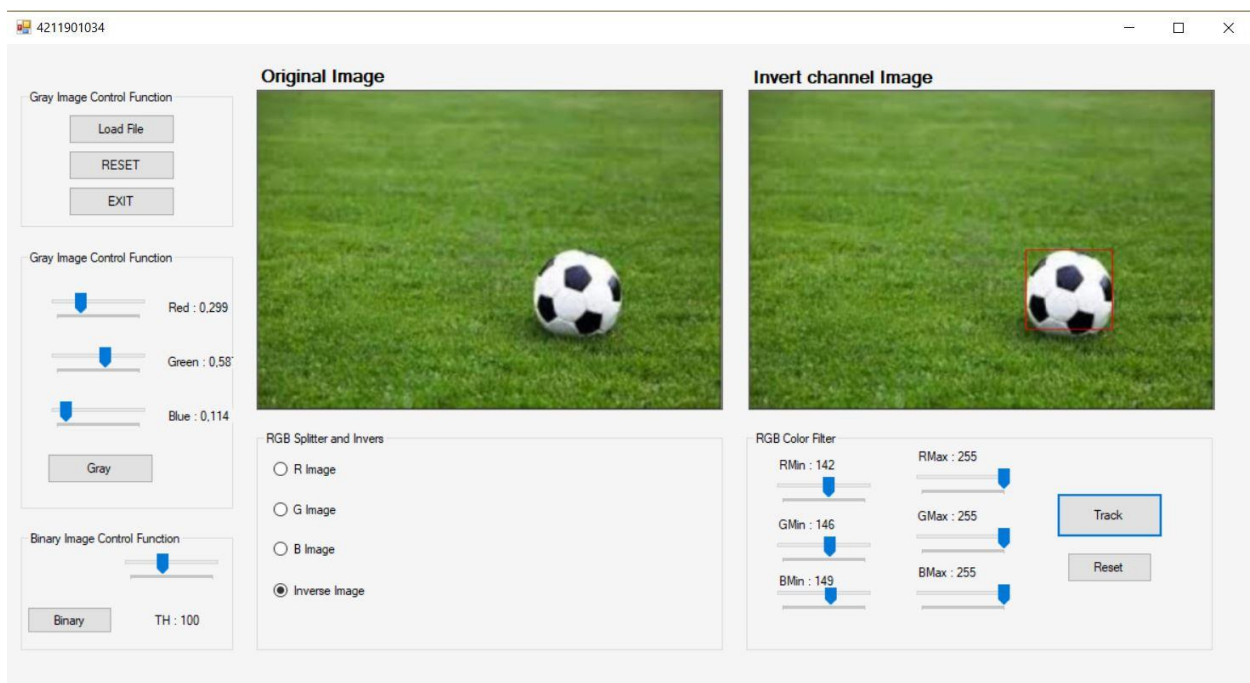
Tampilan Form untuk B Image



Tampilan Form untuk Invers Image



RGB Color Filter Detection



RGB Color Filter Tracking

Source Code

```
421901034.cs [Design]
percoban7_421901034
percoban7_421901034Form1
channelFiltering(int channel)

1 using System;
2 using System.Collections.Generic;
3 using System.ComponentModel;
4 using System.Data;
5 using System.Drawing;
6 using System.Linq;
7 using System.Text;
8 using System.Threading.Tasks;
9 using System.Windows.Forms;
10 using AForge;
11 using AForge.Imaging;
12 using AForge.Imaging.Filters;
13
14 namespace percoban7_421901034
15 {
16     public partial class Form1 : Form
17     {
18         // global variables
19
20         int threshold = 100; // binar
21         double redvalue = 0.25, greenvalue = 0.587, bluevalue = 0.114; //GPR
22         int RED = 255, GREEN = 255, BLUE = 255; //RGB
23         int Red, Green, Gray, Max, Min, MaxI; //for tracker variable
24         int imageChannel = 1;
25         Bitmap sourceImage;
26         Bitmap redImage;
27         int TRACK_SPACE = 2; //range antar track min 2
28
29         public Form1()
30         {
31             InitializeComponent();
32
33             // reset
34             private void reset()
35             {
36                 // load file button
37                 private void button_Click(object sender, EventArgs e)
38                 {
39                     // reset button
40                     private void button_Click(object sender, EventArgs e)
41                     {
42                         // exit button
43                         private void button_Click(object sender, EventArgs e)
44                         {
45                             // gray image control function
46                             private void trackBar1_Scroll(object sender, EventArgs e)
47                             {
48                                 redvalue = trackBar1.Value;
49                                 redvalue = redvalue / 100;
50                                 Bitmap Image = grayImage();
51                             }
52                         }
53                     }
54                 }
55             }
56         }
57     }
58 }
```

```
421901034.cs [Design]
percoban7_421901034
percoban7_421901034Form1
radioButton_CheckedChanged(object sender, EventArgs e)

116 Bitmap Image = grayImage();
117 pictureBox2.Image = Image;
118 label1.Text = string.Format("Red : {0}", redvalue);
119 } // private void trackBar1_Scroll(object sender, EventArgs e)
120
121 namespace percoban7_421901034
122 {
123     private void trackBar2_Scroll(object sender, EventArgs e)
124     {
125         greenvalue = trackBar2.Value;
126         greenvalue = greenvalue / 100;
127         Bitmap Image = grayImage();
128         pictureBox2.Image = Image;
129         label2.Text = string.Format("Green : {0}", greenvalue);
130     }
131
132     private void trackBar3_Scroll(object sender, EventArgs e)
133     {
134         bluevalue = trackBar3.Value;
135         bluevalue = bluevalue / 100;
136         Bitmap Image = grayImage();
137         pictureBox2.Image = Image;
138         label3.Text = string.Format("Blue : {0}", bluevalue);
139     }
140
141     // button gray
142     private void button_Click(object sender, EventArgs e)
143     {
144         if (sourceImage == null) return;
145         Initialize();
146         Bitmap Image = grayImage();
147         pictureBox2.Image = Image;
148         //gray trackbar init
149         trackBar1.Value = (int)(redvalue * 100);
150         trackBar2.Value = (int)(greenvalue * 100);
151         trackBar3.Value = (int)(bluevalue * 100);
152         //label
153         label1.Text = string.Format("Red : {0}", redvalue);
154         label2.Text = string.Format("Green : {0}", greenvalue);
155         label3.Text = string.Format("Blue : {0}", bluevalue);
156     }
157
158     // auto gray image control function
159
160     // binary control function
161     private Bitmap binaryImage(Bitmap grayImage)
162     {
163         IFilter filter = new Threshold(threshold);
164         Bitmap Image = filter.Apply(grayImage);
165         return Image;
166     }
167
168     private void trackBar4_Scroll(object sender, EventArgs e)
169     {
170         //if the source image is not yet open, don't execute
171     }
172 }
```

```
4211901034.cs 4211901034 [Design] - percbaan7_4211901034.Frm1 - radioButton_CheckedChanged(object sender, EventArgs e)
150 if (sourceImage == null) return;
151 threshold = trackBar5.Value;
152 Bitmap image = grayImage();
153 image = binaryImage(image);
154 pictureBox2.Image = image;
155 //show text
156 label4.Text = string.Format("Th : {0}", threshold);
157 } % private void trackBar5_Scroll(object sender, EventArgs e)
158 {
159     private void button_Click(object sender, EventArgs e)
160     {
161         if (sourceImage == null) return;
162         invertImage();
163         Bitmap image = grayImage();
164         image = binaryImage(image);
165         pictureBox2.Image = image;
166         //show text
167         label4.Text = string.Format("Th : {0}", threshold);
168     }
169     // show binary control function
170     // rgh split and inverts
171     //image
172     private void radioButton_CheckedChanged(object sender, EventArgs e)
173     {
174         //if the source image is not yet open..don't execute
175         if (sourceImage == null) return;
176         setImageChannel(i);
177         Bitmap image = channelFiltering(imageChannel);
178         pictureBox2.Image = image;
179         label12.Text = "a channel image";
180     }
181     //image
182     private void radioButton_CheckedChanged(object sender, EventArgs e)
183     {
184         if (sourceImage == null) return;
185         setImageChannel(i);
186         Bitmap image = channelFiltering(imageChannel);
187         pictureBox2.Image = image;
188         label12.Text = "g channel image";
189     }
190     //image
191     private void radioButton_CheckedChanged(object sender, EventArgs e)
192     {
193         if (sourceImage == null) return;
194         setImageChannel(i);
195         Bitmap image = channelFiltering(imageChannel);
196         pictureBox2.Image = image;
197         label12.Text = "b channel image";
198     }
199     //image
200     private void radioButton_CheckedChanged(object sender, EventArgs e)
201     {
202     }
```

```
4211901034.cs 4211901034 [Design] - percbaan7_4211901034.Frm1 - radioButton_CheckedChanged(object sender, EventArgs e)
201 //if the source image is not yet open..don't execute
202 if (sourceImage == null) return;
203 setImageChannel(i);
204 Bitmap image = channelFiltering(imageChannel);
205 pictureBox2.Image = image;
206 label12.Text = "invert channel image";
207 } % private void radioButton_CheckedChanged(object sender, EventArgs e)
208 {
209     // show rgh split and inverts
210     // rgh color filter
211     // track
212     private void trackBar4_Scroll(object sender, EventArgs e)
213     {
214         if (trackBar4.Value - trackBar4.Value < TRACK_SPACE)
215             trackBar4.Value = trackBar4.Value - TRACK_SPACE;
216         min = trackBar4.Value;
217         label8.Text = string.Format("min : {0}", min);
218         RGBFiltering();
219     }
220     // track
221     private void trackBar4_Scroll(object sender, EventArgs e)
222     {
223         //trackBar7 - 10 : trackBar 8 max
224         //trackBar4 - 0 : trackBar 8 min
225         if (trackBar4.Value - trackBar4.Value < TRACK_SPACE)
226             trackBar4.Value = trackBar4.Value + TRACK_SPACE;
227         max = trackBar4.Value;
228         label10.Text = string.Format("max : {0}", max);
229         RGBFiltering();
230     }
231     // Gain
232     private void trackBar4_Scroll(object sender, EventArgs e)
233     {
234         if (trackBar4.Value - trackBar4.Value < TRACK_SPACE)
235             trackBar4.Value = trackBar4.Value - TRACK_SPACE;
236         gain = trackBar4.Value;
237         label6.Text = string.Format("gain : {0}", gain);
238         RGBFiltering();
239     }
240     // Gain
241     private void trackBar4_Scroll(object sender, EventArgs e)
242     {
243         if (trackBar4.Value - trackBar4.Value < TRACK_SPACE)
244             trackBar4.Value = trackBar4.Value + TRACK_SPACE;
245         gain = trackBar4.Value;
246         label6.Text = string.Format("gain : {0}", gain);
247         RGBFiltering();
248     }
249     // Gain
250     private void trackBar4_Scroll(object sender, EventArgs e)
251     {
252     }
```



```
4211901034.cs 4211901034 [Design] percohan7_4211901034 Form1 radioButton_CheckedChanged(object sender, EventArgs e)
402 BlobCounter bc = new BlobCounter();
403 bc.MinHeight = 5;
404 bc.MinWidth = 5;
405 bc.FilterIndex = 1;
406 bc.ObjectOrder = ObjectOrder.Area;
407 bc.ProcessImage(image);
408 Rectangles rects = bc.GetObjectRectangles();
409 foreach (Rectangle rect in rects)
410 {
411     if (rects.Length > 0)
412     {
413         Rectangle objectRect = rect; // rect
414         Graphics graph = Graphics.FromImage(bitmap);
415         using (Pen pen = new Pen(Color.FromRgb(255, 0, 0), 2))
416         {
417             graph.DrawRectangle(pen, objectRect);
418         }
419         graph.Dispose();
420     }
421 } // private void objectCounting(Bitmap image)
422
423 // private void groupBox1_Enter(object sender, EventArgs e)
424 {
425 }
426
427 // tracking button
428 // private void button_Click(object sender, EventArgs e)
429 {
430     if (pictureBox1.Image == null) return;
431     objectCounting(pictureBox1.Image);
432 }
433
434 // reset tracking button
435 // private void button_Click(object sender, EventArgs e)
436 {
437     reset();
438 }
439 } // public partial class Form1 : Form
440
441 } // namespace percohan7_4211901034
```