



کاربرگ کلاسی شماره ۱۳

فصل ششم

پردازش تصویر رنگی در سی شارپ

COLOR IMAGE PROCESSING IN C#

Class Worksheet #13

۱ رنگی سازی تصویر

```
private void button1_Click(object sender, EventArgs e)
{
    Bitmap bmp = Grayscale.CommonAlgorithms.BT709.Apply
        (new Bitmap("D:\\Imp\\chapter5\\satellite.jpg"));
    pictureBox1.Image = bmp;
    pictureBox2.Image = coloredimage(bmp,
        new int[] {0,50,100,200,255},
        new Color[] {Color.Green,
                     Color.Red,
                     Color.Blue,
                     Color.YellowGreen,
                     Color.Orange});
}

private Bitmap coloredimage(Bitmap in_image, int[] bounds, Color[] colors)
{
    Bitmap bmp = new Bitmap(in_image.Width, in_image.Height);

    for (int i = 0; i < in_image.Width; i++)
        for (int j = 0; j < in_image.Height; j++)
        {
            for (int k=0; k<bounds.Length-1; k++)
                if ((in_image.GetPixel(i, j).R>bounds[k]) &&
                    (in_image.GetPixel(i, j).R<bounds[k+1]))
                    bmp.SetPixel(i, j, colors[k]);
        }
    return bmp;
}
```



۲ استخراج کانال های یک تصویر رنگی

```
private void button1_Click(object sender, EventArgs e)
{
    Bitmap bmp = new Bitmap("D:\\Imp\\chapter5\\rose.jpg");
    pictureBox1.Image = bmp;
    ExtractChannel ec_filter = new ExtractChannel(RGB.R);
    pictureBox2.Image = ec_filter.Apply(bmp);

    ec_filter = new ExtractChannel(RGB.G);
    pictureBox3.Image = ec_filter.Apply(bmp);

    ec_filter = new ExtractChannel(RGB.B);
    pictureBox4.Image = ec_filter.Apply(bmp);
}
```



۳ دست‌کاری کانال‌های رنگ

```
private void button1_Click(object sender, EventArgs e)
{
    Bitmap bmp = new Bitmap("D:\\Imp\\chapter5\\rose.jpg");
    pictureBox1.Image = bmp;
    Bitmap Rbmp, Gbmp, Bbmp;

    ExtractChannel ec_filter = new ExtractChannel(RGB.R);
    Rbmp = ec_filter.Apply(bmp);
    ec_filter = new ExtractChannel(RGB.G);
    Gbmp = ec_filter.Apply(bmp);
    ec_filter = new ExtractChannel(RGB.B);
    Bbmp = ec_filter.Apply(bmp);

    pictureBox2.Image = Rbmp;
    pictureBox3.Image = Gbmp;
    pictureBox4.Image = Bbmp;

    Sharpen sharp = new Sharpen();

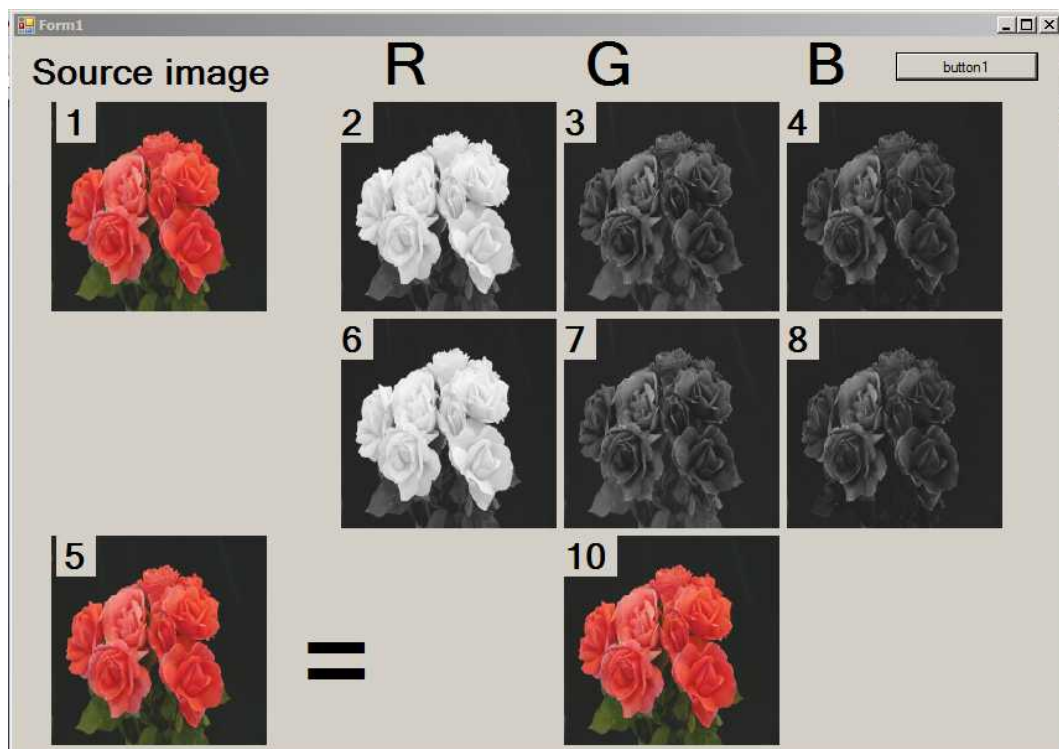
    sharp.ApplyInPlace(Rbmp);
    sharp.ApplyInPlace(Gbmp);
    sharp.ApplyInPlace(Bbmp);

    pictureBox6.Image = Rbmp;
    pictureBox7.Image = Gbmp;
    pictureBox8.Image = Bbmp;

    pictureBox5.Image = sharp.Apply(bmp);

    ReplaceChannel rc = new ReplaceChannel(RGB.R, Rbmp);
    rc.ApplyInPlace(bmp);
    rc = new ReplaceChannel(RGB.G, Gbmp);
    rc.ApplyInPlace(bmp);
    rc = new ReplaceChannel(RGB.B, Bbmp);
    rc.ApplyInPlace(bmp);

    pictureBox10.Image = bmp;
}
```



مراجع

[۱] ح. مقسمی و ب. علی زاده، پردازش تصویر با رویکردی کاربردی، گسترش علوم پایه، ۱۳۹۲.