Manual

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How to set up the environment:

This system is based on VS 2017 called “Preproc”. Emgucv is used and the related references of emgucv like “Emgu.CV.World”, “System.Drawing” should be added as the assignments of labs.

How to set the parameters:

The five parameters in the code is the optimized one. They can be changed for purpose.

```
///control features/////////////////////////////////////////

/////binary percentage///////

Int32 biper = 20;

/////cluster number///////

int numCentroids = 2;

/////retrieve threshold///

double relimit = 0.96;

/////error fix parameter when retrieve (lower the weight of the white part)////////

double Fixpara =0.0005;

////K-Means cross out parameter/////////////////////////////////////////////

double ratiolimit = 0.90;
```

Fig. 1 Parameters

How to reproduce the results in the report:

```
////////show an example/////////////////////////////////////////////////////////
//String win1 = "Test Window"; //The name of the window
//CvInvoke.NamedWindow(win1); //Create the window using the specific name

//Image<Bgr, Byte> frameex = new Image<Bgr, Byte>("E:\\USYD\\HR\\cracks\\crack1.jpg");

//Image<Gray, Byte> grayimage = turngray(frameex, biper);

//Image<Gray, Byte> image = turnbinary(frameex, biper);

//Image<Gray, Byte> BGRResult2 = reducenoise(image);

//CvInvoke.Imshow(win1, grayimage); //Show the image

//CvInvoke.WaitKey(0);

//CvInvoke.DestroyWindow(win1); //Destory the window

//image.Save("crack1.jpg");


//////////////////////////////////////////////////////////////////////////////
```

Fig. 2 Codes to show the images

There’s a commented part in the code. This is used to show the images after processed. They can be uncommented. What you need to do is to change the image name in the cracks fold. The images used in the report are “crack22.jpg”, “crack4.jpg”, “crack19.jpg”, “crack25.jpg”, “crack21.jpg”, “crack11.jpg” and “crack24.jpg”.