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A/V Project : Crowd Detection

Application Description:

Created an app that determined the density of a crowd. Use the camera coupled with face detection to determine the density of a crowd based on a rough count of the faces photographed.

How the application works:

The user starts from a screen that describes the application, and instruction on how to use it. Once the user clicks the “open camera” button a new intent is made and the camera is activated. The image is then processed by making it a CameraBitmap Variable.

cameraBitmap = (Bitmap)intent.Extras.Get("data");

imageView.SetImageBitmap(cameraBitmap);

One piece of information is also needed to complete the bitmap, different phones create different sized images. The most important thing to note that if face detection is to work properly, then the bitmap has to have a width size that is even. The phone I have creates an odd bitmapped image, so I had to find a work around. The following code does two things:

cameraBitmap = Bitmap.createScaledBitmap(cameraBitmap, (cameraBitmap.getWidth()+1)\*4,

cameraBitmap.getHeight()\*4, false);

I remake the bitmap by simply adding 1 to the width, but I also multiply the entire width and height by 4. I found this out through trial and error, but the multiplication of these two variables by 4 make the face detection much more efficient as the quality of the image is improved significantly.

Once the image is set detectFaces() is called. The FaceDetector and a canvas with the made bitmap is also created. Then .findFaces is called.

int facesFound = detector.findFaces(bitmap, faces);

If faces are found then an array is created with information pertaining to each individual. Then a loop takes care of each rectangle to draw on the individual. The loop works as follows:

For each face in the array{

Get the midpoint of each face

Get the Eye Distances

Get the Confidence Level

Display, as a Toast, how many faces were found

Draw a square using the eye distance information

}

The user is notified by the application, whether or not there is a crowd. If the application find less than 4 individuals then the application displays “Number of faces found: #”

If the application finds 5 or more then "Number of faces in crowd: #” displays.

