Gaze Data Generator

FUNCTIONALITY

* Generator creates csv file of gaze data with fixations and saccades according to the given parameters and parameters of the generator can be changed from the “Main” function, as shown below:

static void Main(string[] args)  
        {  
            // Create Generator with following parameters  
            //duration of tracking  
            // minimum fixation time  
            // maximum fixation time  
            // minimum saccade angle  
            // maximum saccade angle  
            // Rate/ frequency   
            // screen resolution horizontal in pixels  
            // screen resolution vertical in pixels  
            // distance between participant and screen  
            // display size in cm  
            Generator SampleDataGenerator = new Generator(3,100,250,300,500,50,1024,768,60,53.34f);  
            string filename = SampleDataGenerator.GenerateSampleData();// this will generate csv  
            Console.Write("File: "+ filename+" created.");  
        }

* File named “SampleData.csv” will be generated in the project folder.

USAGE:

* Generator script is written in C#
* Use Visual studio or online C# compiler(<https://www.onlinegdb.com/online_csharp_compiler>) to run the code.
* For Visual Studio open the .sln file and run it.
* For online compiler copy and paste the code in “Program.cs” on to the online compiler and run it.

**Using the algorithm from part 1, how would you now detect the events in your sample data file?**

In csv file we have coordinates and timestamp of gaze data. We can easily find velocity between two consecutive points with following formula

Point 1 => X1 = 39.19026, Y1 = 46.2478, T1 = 412.389  
Point 2 => X2 = 73.44367, Y2 = 88.20588, T2 = 434.82

Distance = SquareRoot(Square(X2-X1)+Square(Y2-Y1))

Time = T2-T1

Velocity = Distance / Time

And with velocity thresholding we can easily identify where fixation is ending, and saccade is starting. After finding fixations and saccades on the basis of velocity threshold, we can group the consecutive fixations. And by finding mean of each group we can get the centroid of fixation groups.