G54MRT Coursework 2 Proposal

Title: TennisSense

Student ID:
Date:

Summary

A system for detecting what shots are being played in tennis. It will detect when the racket is being swung, what type of swing it is (forehand, backhand or overhead), and when the ball hits the racket.

Technologies and sensor data

I will use the accelerometer to detect the swinging of the racket, and a sound sensor to detect the ball hitting the strings of the racket..

Project plan

I will strap a grovepi and sensors to a racket using gaffa tape, and manually log which shots I have done and compare this against the program output.

I'm aiming to finish this development and testing in the 4 weeks before Easter and then write up over Easter. If I find I need to run any more tests, I'll do those in the last lab.

Week 1 Recording sensor data	I will write a list of shots and hits, and then perform that list whilst recording sensor data to a file. I will do this for 3 files – one with just swings, one with just dropping the ball on the racket, and one with both at the same time.
Week 2 Swing detection	Using data recording in part 1, I will develop an algorithm to take the sensor data and detect swing events. These events will be logged to a text file with time stamps.
Week 3 Ball hit detection.	Using data recorded in week 1, I'll develop algorithm to detect ball hits..
Week 4 Testing	I will record a new set of swings, hits and shots, and see how well my algorithm works. I'll create descriptive statistics for each of these tests.

	I will also log the raw sensor data so that I can see what is going wrong when it fails.
Week 5 (and over Easter) Write-up report	
Week of 15/May	Any last minute testing for report.

Skills and competencies

I have good python knowledge, and understand how to work with log files, I think I should be fine doing this.