Test Plan for Multiple Subjects

Team SHAF

Pre-reqs:

* Using the Intel Atom development board given, create a method to output raw test data in a format that allows for easy testing of different processing algorithms.
* Create at least two different wearable electrode garments that measure the EMG activity in a test subject’s left and right biceps.

Data format:

* Each set of reps will produce a CSV file.
* The CSV files will be named S#{L|R}#.csv, where S is followed by the test subject number, then L or R for left or right bicep, then the set number for that bicep. So the file created for Test Subject #1, Left Bicep, Set #1 would be named S1L1.csv.
* The first row of the CSV file will be a header with the following entries:

*Time, Voltage, Date, Age, Gender, ExerciseRegularly?*

NOTE: “Time” and “Voltage” will be text in Row 1 and values for all subsequent rows

* The second row of the CSV file is the beginning of the data and each row represents a sample and will have values in the “Time” and “Voltage” columns.
* The output files will all reside in the same directory to make batch processing easier.
* Each subject should generate four CSV files: 2 sets of bicep curl repetitions until exhaustion for both the left and right biceps.

Equipment Required:

1. Custom-made wearable electrode garment
2. A selection of resistance bands
3. Power supply capable of +/- 5 VDC, >= 200mA
4. Muscle Sensor V3 board
5. MinnowBoard MAX development board
6. A laptop capable of controlling and communicating with the MinnowBoard
7. (Maybe) An ADC between the Muscle Sensor and the MinnowBoard
8. (Optional) A portable oscilloscope

Testing Methodology:

1. Ask the test subject their age, gender, and whether or not they regularly train their biceps with resistance.
2. Ask the test subject to select a resistance band to perform their bicep curls with. Inform the subject that they should be able to do 10 to 20 reps for each set. The band chosen should be the same for all four sets.
3. Ask the subject to don the wearable. Confirm that the ground electrode is making contact with the subject’s elbow and the other two electrodes are making contact with the middle of the bicep muscle.
4. Have the subject perform one curl. *(First set only: Verify that the resistance band chosen is appropriate. Change the band if necessary).* Verify that EMG activity was detected for the curl.
5. Create a test output file and input the subject’s answers to questions asked in Step 1.
6. Begin sampling voltage data from the wearable.
7. Instruct the subject to begin the current set (Left or Right, 1 or 2). Instruct the subject to perform bicep curls until they cannot perform another one.
8. Stop sampling once the subject says they cannot perform another curl.
9. Save and output the CSV containing the sampled data.
10. Repeat Steps 3 through 9 for the opposite bicep.
11. Repeat Steps 3 through 10 to generate two more sets of data for the subject.