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ECEN 3000 Final Project Proposal

Project Proposal: Virtual Mouse

Executive Summary
          For our final project in this course, we propose to create a virtual mouse that will provide both immersive interactions for the user, as well as an interesting design problem for us as programmers to implement. The idea is to use sensors connected to the hand and/or arm (or even scalp if we can implement it properly with enough time) to manipulate an interface with accurracy and efficiency. We will begin by setting up a basic button interface that we can test basic controls with. This includes but is not limited to the usage of the built in accelerometer of the sensors and the muscle intensity sensors. We will then work to reduce response time and power consumption. Once the virtual controls have met our standards, we plan to improve the interface app, perhaps make the virtual mouse work with websites, forums, or with any luck the entire android environment (the ability to use our virtual mouse on all android functions). The project is flexible, it has room to grow or shrink depending on time (which is something that sometimes slips away in projects such as this), but with any luck we will have a nicely polished final product.

Background
          For this project we will require basic EEG/EMG sensor equipment to measure signals provided by the body to create our virtual mouse. We will use these sensors along with the android programming environment.

Proposed Solution
          Using the sensors provided, we plan to make a virtual interactive controller. This controller can be connected to the hand, fingers, or even scalp depending on the sensors used (EMG, EMG, and EEG respectively). The goal is to create an efficient and immersive way to control applications in an android device.

Timeline:
 Below is a rough draft timeline for what we hope to accomplish and when:

Checkpoint One: Compose simple test interface, familiarize with sensors
Checkpoint Two: Have rough functioning interactive controls
Checkpoint Three: Refine controls, reduce response time & power consumption
Checkpoint Four: Further refinement of controls, improve test interface
Checkpoint Five: Make virtual controls work on different medium (websites, forums, music etc).

While it is still early to say, we think these checkpoints can be reached between 5~7 days each depending on the process being worked on.