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Orally Controlled Unit

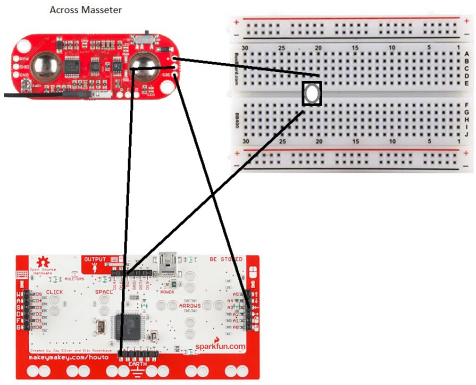
Biomedical Practicum

Clinical Problem

Over three million people in the US alone have a disability in their hands or forearms. This includes paralyzation, orthopedic impairments and injury related disabilities. There are approximately 50,000 new hand amputees every year. This is a large population of people. The technology that people with hand impediments is relatively limited. The aim for the Orally Controlled Unit (name subject to change) is to allow people with these impediments to control their computer interfaces in a more fluid manner. This would be the starting point of the scope of the Orally Controlled Unit (OCU). Eventually, the goal would be to provide the general population a novel form of handsfree computer interfacing.

Medical Device Solution

This device will use inputs from the MyoWare EMG sensors tracking the left and right. This will control left and right motion of the mouse. The mouse will move in a uniform speed regardless of the signal strength of the signal. The way that the motion of the mouse will be decided is requiring an atypically high amount of muscle contraction. This way, inputs are guaranteed to be purposeful. This EMG signal will be converted to a voltage source that will then go through a continuous press button switch on a bread board. This button will be pressed between the subject's teeth to ensure the system is only active when desired. If the button is pressed the signal will be transmitted to the MaKey MaKey Arduino chip which will broadcast it to the computer, generating a mouse input. The code that will be used for the Arduino has already been established in literature.



Market Analysis

While the main market for this product is people who don't have properly functioning hands. This is not a limited market. The number of people with hand disabilities in the United States is three million people. If the system designed is fast enough and smooth enough, a market share of 10% could be possible in the future. If the product costs about $150, this would make this product worth nearly $450,000,000. If amount of people with disabilities continues to grow and people without hand disabilities adopt the OCU as a more novel computer control method. Growth should be able to be sustained.

Needs Statement:

An improved handsfree computer navigation system will help everyone, especially people with hand disabilities.