Computer Input and Therapy for the Physically Impaired

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The purpose of this project was to create a low cost, highly functional, and lightweight computer mouse device that could be used with a large range of physically impaired and disabled persons. My design criteria was that this device must cost less than $50, be functional in moving a computer mouse pointer(and also click if needed), and weigh less than 0.5 pounds. I used a microcontroller (with a loaded program), a logic level converter, and a gyroscope/accelerometer combination to create a device that would be able to detect movement of the head or any appendage and convert that data into movement of a computer mouse pointer on screen. I ended up having to use a different gyroscope/accelerometer than the original one that I planned to use as it could not function as a movement oriented device. After finishing the prototype with the working gyroscope/accelerometer I tested the device in order to find areas that needed to be redesigned. After redesigning the device with any areas that I found weak fixed, I retested the device to make sure it was stable. The device proved to be cost efficient, compact, and lightweight and demonstrated a profound ability to work as a computer mouse and possibly therapy device. My next steps would be to test this device with actual physically impaired and disabled patients and then possibly do clinical trials and marketing.

Awards Won:

Fourth Award of $500