For my final project in cs465, I’m considering making a game controller that can be comfortably used with a single hand. This is, admittedly, designed for a relatively small audience of handicapped people who only have use of one hand (or possibly people who just want one hand free while gaming). The idea of a one handed controller isn’t a new and there have been several variants. The only commercially available design I have seen so far is this one:


Even that one is only available through a handful of online retailers. The most promising design I’ve seen so far comes from the console modification genius Ben Heck:

http://benheck.com/Games/Xbox360/controls/1hand/singlehandcontroller.htm

The problem is that none of them have truly managed to make the one-handed experience as comfortable and natural as the original controller. The commercial one requires one analog stick to be used with the pinky finger, which is incredibly awkward. It also has the thumb controlling the largely useless directional pad, which is a waste of the second-most dexterous finger on the hand. It does have the advantage of being ambidextrous though and it allows the user to set it down instead of holding it, freeing more fingers for pressing buttons. Heck’s design has a much better button layout and is really quite reasonable… except that the right analog stick requires the entire controller to be moved and pressed against the leg.

My goal is to build a controller that exploits the natural constraints of the average controller layout. PS2, PS3, Xbox, Xbox 360, and many PC pads follow almost identical layouts that use only the thumb and forefinger of each hand (the remaining fingers are only used to grasp the controller). Additionally, those controller designs never require the right analog stick to be used at the same time as the main four buttons (triangle, circle, square, X for Playstation, ABXY for Xbox) because they are controlled by the same finger. The same goes for the left analog stick and the directional pad. I have two possible designs in mind that could take advantage of those constraints to produce a more natural one-handed button layout.

I am reasonably skilled at wiring, soldering, dremeling (if that isn’t a word by now, it should be) and other myriad tasks that modding projects like this require. I hope that I can get the help of a classmate that knows a little more about circuit board layout and the USB interface than I do. Starting with a USB PC game controller seems like a good choice because I plan to use a specific USB gamepad as the base for my design.