Low-Cost Ergonomic Computer Peripheral Device

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My aim was to design an aesthetically pleasing computer peripheral that is both ergonomic and functional as a partial keyboard, while keeping it below the cost of similar products on the market. I took inspiration from existing devices like vertically oriented mice and one-handed gaming keypads. I attempted to combine the two, leading to an inclined keypad used by the left hand, along with LED lighting for aesthetics. I also included a joystick, which is mappable so that it can be used to emulate the cursor or arrow keys. I used libraries supplied by the Arduino framework to read switches and light the LED strip on the device. Using concepts from CSCI 1600, Real-time and Embedded Software, I was able to condense the amount of inputs I needed to read so that a single Arduino Leonardo board can control the entire device. I prototyped the housing for the device out of cardboard, modeled it in a CAD program, and then laser-cut it out of acrylic for the final version. Ultimately, I was successful in my goals, and the device functions well as a peripheral for many different tasks.