

Ski Controller

Maryam Jafar and Victor Dysayon
IMD3005

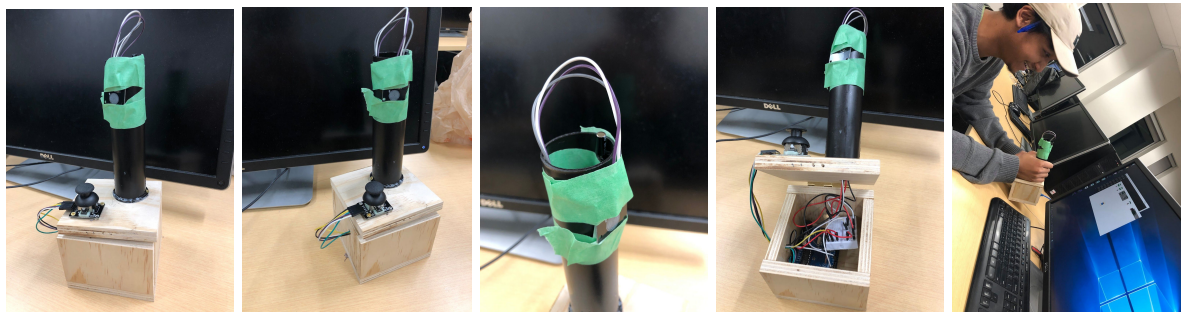
What We Did

The Controller

At first, we wanted to make a watch controller that was going to track hand motion, as well as have force sensors. This would have required an accelerometer, which we couldn't get to work. After restarting our whole idea, we decided to make a stretch controller, for playing a catapult game. The stretch controller that we had was not the greatest, and as a result we couldn't get it to work. At last, we settled on making an arcade-style skiing game. We planned on designing the controller so that the tilt is easy and doesn't break the controller. Our first idea was to use an 'Air Hogs' toy, but because the joystick did not fit, we decided to assemble our own.

the box and the breadboard into the wooden box, and the cylinder is used as a handle, so that it is easier to tilt. Because of that, we also decided to add the touch sensor on the cylinder, so that the user doesn't have to move their hands far. The positioning of the joystick to the side of the tilt, allows the controller to be used with both hands. After all the initial pitfalls, we were able to finally create our controller, the arduino part was not hard and we didn't face any challenges. Building the controller was not hard, we just went through several iterations using various materials.

We are glad we were able to get some user feedback, which can be found in the next section. This allows us to see how users that never seen it before interacting with it. We did it towards the final version, when almost everything was working. This way we were also able to improve things before submission.



The Game

The skiing game incorporates a third person view, and shows the background moving (treadmill style). There are a variety of obstacles on the slopes, in front of the skier such as: a red barrier, trees, fallen trees. The user has to duck under the barrier, avoid trees, and jump over fallen trees. To duck, the user has to tilt the controller in any direction (preferably forward or backward because that feels more intuitive). The jumping works by touching the touch sensor on the cylinder part of the controller. The navigation (left, right, forward and backward) works by moving the joystick left, right, forward and backward. We set a constraint in the game so that the person can not move back beyond the screen, or move forward more than 1/3rd of the screen. We faced some issues with level design involving randomization of the obstacles, and the responsiveness of the controller to the game. The ducking happens slower than the tilt. We even put the tilt at the top of the cylinder on the controller, to make it more sensitive to motion. Overall the tilt does not work great, but it does work. The rest of the game went pretty well.

User Testing

Users tested 2: Austin, and Vickey.

Austin thought that the controller is good but the visuals are not very responsive. He liked the idea of the game and said the controller is pretty intuitive because it 'makes sense'. He was kind of surprised that the tilt was actually working, because when the skier ducks under them, the image of him ducking appears after he passed the barrier. After some research, we came to a conclusion that it happens because of the time it takes for the mercury to move in the sensor.

Vickey liked the graphics, and said that when the game works [responds], it works great. She thought the controls are very intuitive, and the concept is good as well.

Conclusion

Overall, we think we did well. We went through 3 major iterations, and finally settled on one that works. It has some issues, but those can be fixed by re-running the game, and they are not very big issues.