Assignment 1:

INFR 3380U - Industrial Design for Game Hardware

Colin Charleson
Hopeful Goats Studios
colin.charleson@ontariotechu.net

Mark Toufic
Hopeful Goats Studios
mark.toufic@ontariotechu.net

Seif Helaly
Hopeful Goats Studios
seifeldin.helaly@ontariotechu.net

Project Description

Over the years we have noticed a lack of immersive active walking games in the marketplace for a reasonable price. This affects those unable to achieve daily activity throughout their day in a fun way. Our group has decided to create a controller that would meet this lack of demand. The controller will be a board that captures walking movement once stepped as well as jumping. A recent attempt to resolve this problem was Nintendo's Ring Fit Controller, which allowed players to do a variety of different exercises while also providing games that correspond to different exercises . However this solution fell short of solving the issue we are facing, which we will explore further in the following product comparison paragraphs.

Justification

If we are unable to design our solution to the problem then this gap in the marketplace will remain and players looking for a relaxing, fun, active game experience will be out of luck. We believe that our design has the opportunity to help keep gamers and anyone interested in our product in better shape and living a healthier lifestyle. This is due to walking's many benefits to overall health. Walking just 30 minutes a day can have numerous health benefits, such as stronger bones, reduced risks of heart disease and stroke, increased muscle strength, decreased body fat, and the list goes on.

Ideation

Empathizing:

Lately after the recent pandemic people have not been able to exercise as much as they would like to due to restrictions, most people have gotten into the habit of being lazy. However for those stuck at their houses or those unable to get those daily physical activities in, they now have a way to stay active with our controller. Our group also wants our controller to be accessible to anyone and everyone, as well as making our controller affordable compared to other devices comparable to it like the Wii Fit.

Defining:

Survey Questions:

1: How Much Exercise do you get per day

- 14.3% answered 0 minutes
- 42.9% answered 1-15 minutes
- 14.3% answered 15-30 minutes
- 28.6% answered 30-60 Minutes

2: Do You Enjoy doing it

- 57.1% answered no
- 42.9% answered yes

3: Would you be willing to pay for an immersive game controller

- 28.6% answered no
- 71.4% answered yes

4: how much you be willing to pay for an immersive game controller

- 42.9% answered $0 - $30
- 57.1% answered $30 - $60
- 0% answered $60 - $90

After conducting a survey with 7 people we believe the design for our controller makes it very desirable. It combines two things that people need the most, which is exercise and entertainment. Exercise is very important and people should have at least 30 minutes of daily activity. As you can see, more than 50% of people we surveyed did not reach that much physical activity. Most people did find it boring and a waste of time to do daily exercise because it's not fun. However, you can see most people are willing to use our controller. People are also willing to pay $30-$60 for our controller which will give us more breathing room into creating something with higher quality. Players will be able to get the daily exercise they need, while also being able to enjoy themselves while they do it.

Ideating:

During the ideation process our team developed many potential ideas for controllers we could design. Listed below are some of the ideas that we thought stood out to us. However none of the ideas were as practical and enjoyable as the fourth idea which was the one we decided to continue with in our design process.

Idea 1: Hand and feet clicker which is used for side scrolling games, the idea was made using 2 separate buttons which can be placed either under the feet or

hands and by pressing a button the player would move side to side.

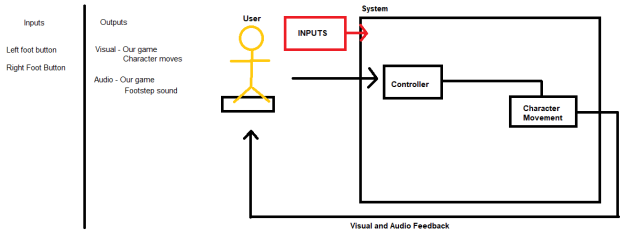
Idea 2: A treadmill which is used for runner type games which increases and pushes the player to get active

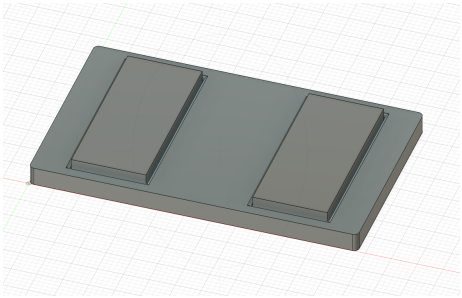
Idea 3: Finger caps which can be placed on each finger to emulate the playing of piano so you can pretend to play along with your favorite songs/music

Idea 4: A rectangular board that resembles the Wii Fit with two controls on the left and right side of the board for detecting movement. Our design caters towards users having the ability to apply more pressure to the board without having worries about the board breaking.

Prototyping:

As a group we decided that idea 4 was our best idea and decided to continue on to the prototyping stage. First we created a system architecture to outline the core mechanics of the controller such as the inputs and outputs the player would receive while using our controller. Next we designed a quick prototype so we could get a better understanding of what our final product would look like, the best way to go ahead and build it and how it will work in the real world.





Testing:

After the prototype is complete, testing will be done within the group. Since we all weigh different weights and are different heights this allows us to get the most out of the testing. After we have tested the first prototype, we will see if there is anything that we think needs to be improved and we can reiterate and add that into the design for the final product.

Product Comparison

Wii Fit Board (2008): The Wii Fit Board was Nintendo's first big attempt at an immersive active controller. It would work on games purely designed for the Wii FIt Board which would have players lean, jump and walk to replicate the immersion of those feelings. A major downfall for the controller was that most games relied on quick movement which the Wii Fit Board was not capable of which led to various assortments of complaints. Another major downfall of the Wii Fit Board was the price it cost to actually get your hands on one, Which was around $149 Cad just for the board itself which made the controller for some people unobtainable.

Ring Fit (2019): As previously stated, the Ring Fit allowed players to do a variety of different exercises in which you would bend or squeeze the ring controller. The Ring Fit provided games that correspond to several different exercises to create a more enjoyable experience. Ring Fit really set a high bar for immersive active games. A major comparison between the Ring Fit Controller and our team's controller is that Ring Fit focuses mostly on Hand movements while our controller aims to focus on mimicking a simulation of walking.

Planning

Team Roles:

Mark Toufic:

Programmer- Mark will be in charge of making the device compatible with the game and make sure everything is calibrated correctly.

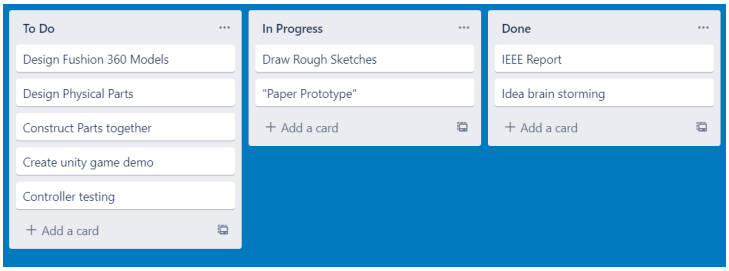
Colin Charleson:

Designer- Colin will design the controller, while doing that he will also be incharge of finding the cheapest but also high quality material.

Seif Helaly:

Builder- Seif will assemble the controller based on the design previously established by Colin this includes the prototype and the final device.

Our group is using a Kanban Board to plan our future development of the project.



References

Walking for good health. Walking for good health - Better Health Channel. (n.d.). Retrieved September 27, 2022, from https://www.betterhealth.vic.gov.au/health/healthyliving/walking-for-good-health

World Health Organization. (2020, November 26). *Physical activity*. World Health Organization. Retrieved September 27, 2022, from https://www.who.int/news-room/fact-sheets

Ring fit adventure™ for Nintendo Switch™ – Official Site. Ring Fit Adventure™ for Nintendo Switch™ – Official Site. (n.d.). Retrieved September 27, 2022, from https://ringfitadventure.nintendo.com/

Tarakci, Ersoz Huseyinsinoglu, B., Tarakci, E., & Razak Ozdincler, A. (2016). Effects of Nintendo Wii-Fit® video games on balance in children with mild cerebral palsy. Pediatrics International, 58(10), 1042–1050. https://doi.org/10.1111/ped.12942

Alce, Hansson, A., & Mårtensson, K. (2019). Using VR for Fitness Training – Pilot Study. 16th EuroVR International Conference, EuroVR 2019 ,Tallinn, Estonia,2019-10-23 - 2019-10-25, 11883, 97–115. https://doi.org/10.1007/978-3-030-31908-3_7