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# INNOVATIVE INPUT

## Assignment 3

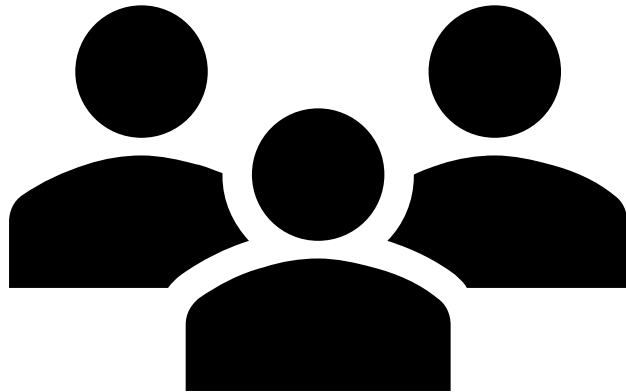
Andy Waterhouse 100744494  
Fardeen Faisal 100755369  
Ethan Kowalchuk 100752686

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# TEAM CONTRIBUTION



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**Andy Waterhouse:** I was responsible for creating the unity demo game. I created a movement system and simple gameplay mechanics with a win/lose condition. It also shows the button mapping with the 3D model in the scene by changing its material to red.

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**Fardeen Faisal:** I was responsible for coding the arduino and wiring/placement of all the components. I also coded the arduino parts of the code on the unity project.

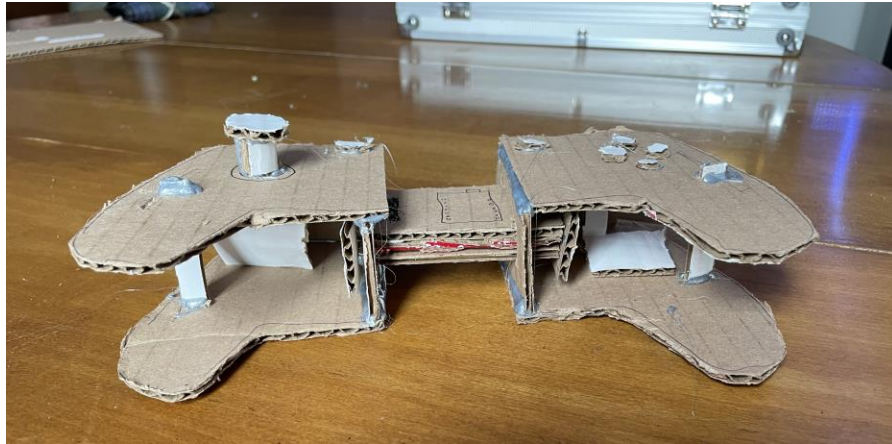
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**Ethan Kowalchuk:** I was responsible for making the sliding paper prototype and managing scope and adjusting the fabrication process.

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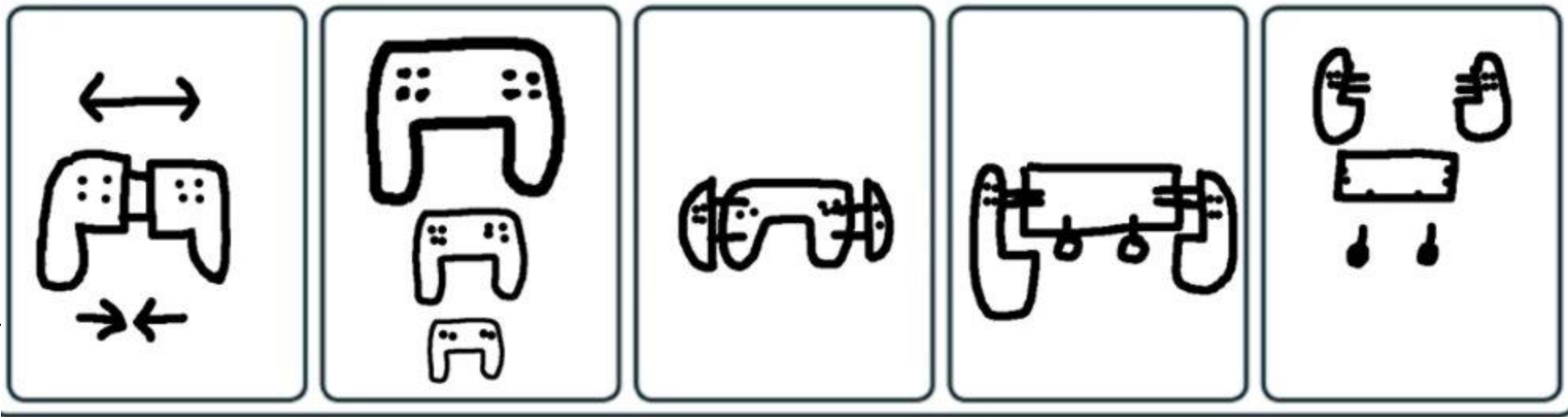
# PAPER PROTOTYPE



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# FABRICATION - PROCESS

- Process: We started brainstorming ideas and settled for expandable controller. After plenty of designs, we settled on one that expands out horizontally from the center. We created a model in blender to get an idea of what it might look like. After this, we made a simple version in Fusion 360 and iterated on it continuously which we will get into soon.



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# FABRICATION - CONSIDERATIONS

- Considerations: When designing this controller, our goal was to make sure it fit everyone's hands. We needed to make sure it was a similar blueprint to pre-existing controller such as the PlayStation 5. However, we needed to consider our minimal experience and limited tools. Because of this, we had to down scope our project.
- We also had to make sure that the controller fit together since there are tons of separate parts. The sizes needed to be precise as to not fall apart.

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# FABRICATION - ADJUSTMENTS

- Adjustments: As mentioned previously, we had to downsize our project. Instead of making our controller's button layout like a PlayStation 5, we decided to simplify it to be more like a SNES controller with only 2 bumper buttons, a d-pad (or joystick in our case), 2 start/ select buttons, and 4 other action buttons on the right.
- Since our 3D print turned out super thin, we may have to adjust the overall shell thickness for our final print.





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# ELECTRONIC INTEGRATION/ DEMO



## Controls:

R\_Trigger = Dash Right

L\_Trigger = Dash Left

X = Jump

Square = Turn Green

Triangle = Turn Red

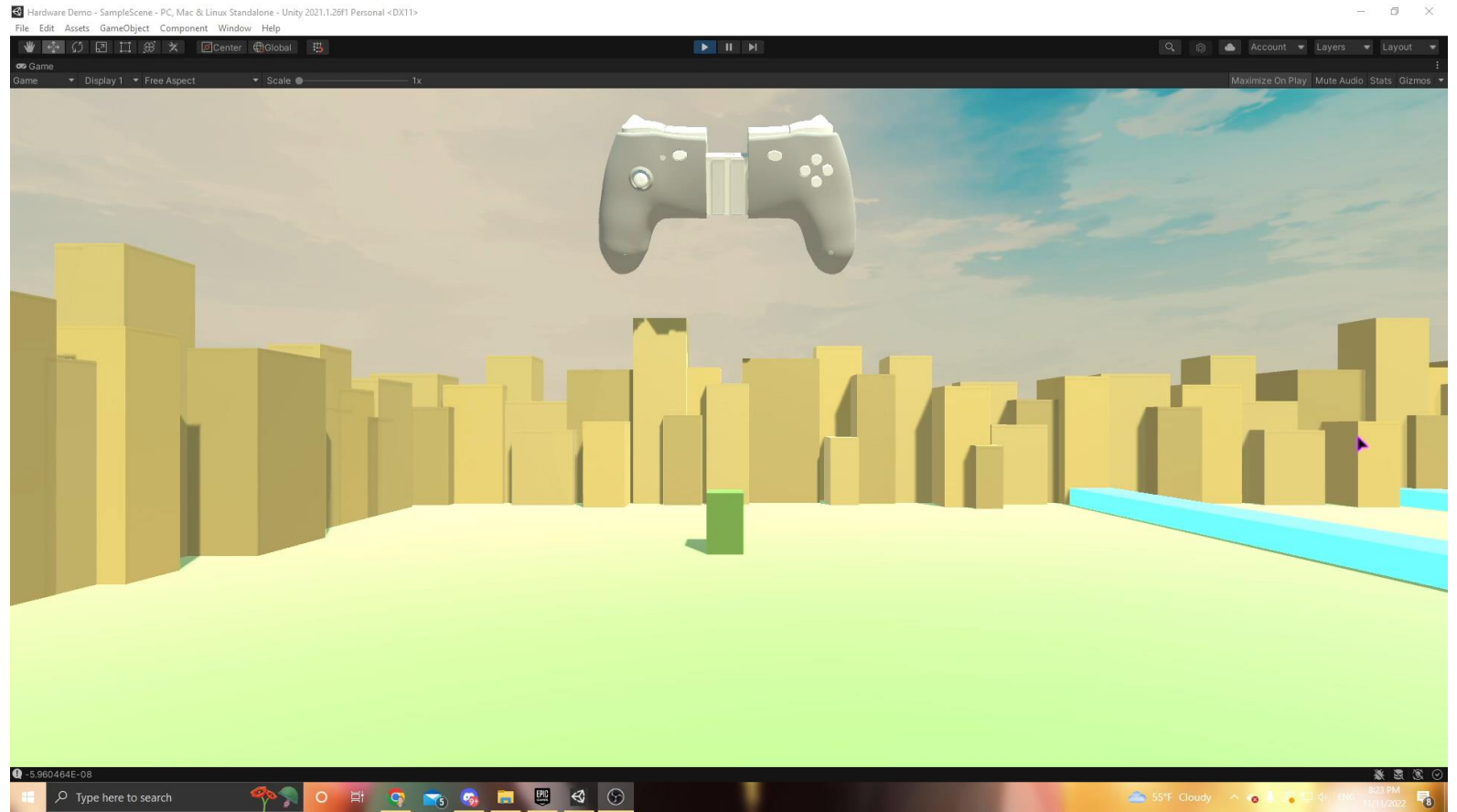
Circle = Turn Purple

Start/ Select = Pause/ Unpause

Joystick = Move Left/Right

## Goal:

Navigate obstacles and change the player to the correct colour corresponding with the floor to not fall through. Reach the finish line to win



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# UNITY GAME INTERACTIVE SCENE



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# PROJECT PROGRESSION (ASSIGNMENT 1)

- We came up with the idea of making an expandable controller.
- We created a prototype in blender.



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# PROJECT PROGRESSION (ASSIGNMENT 2)

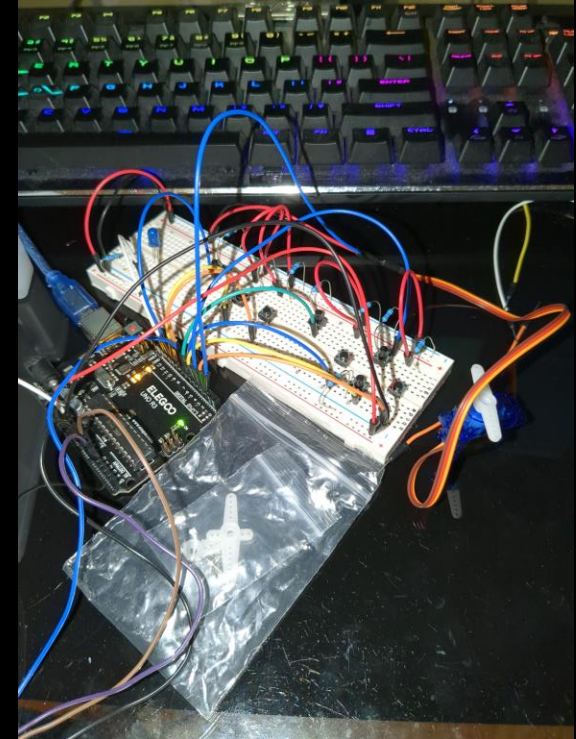
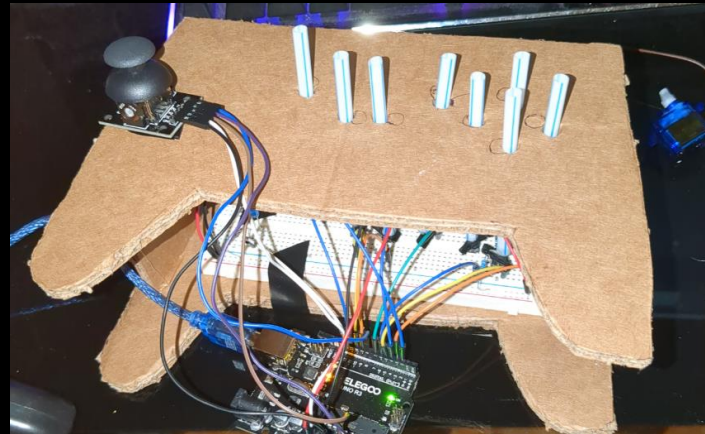
- We created our model in Fusion 360.
- Due to component size and practicality, we decided to pivot and changed out button layout.
- We also decided to use magnets to hold each part of the controller together
- There were tons of detours from our original plan as we learned more about what was possible.



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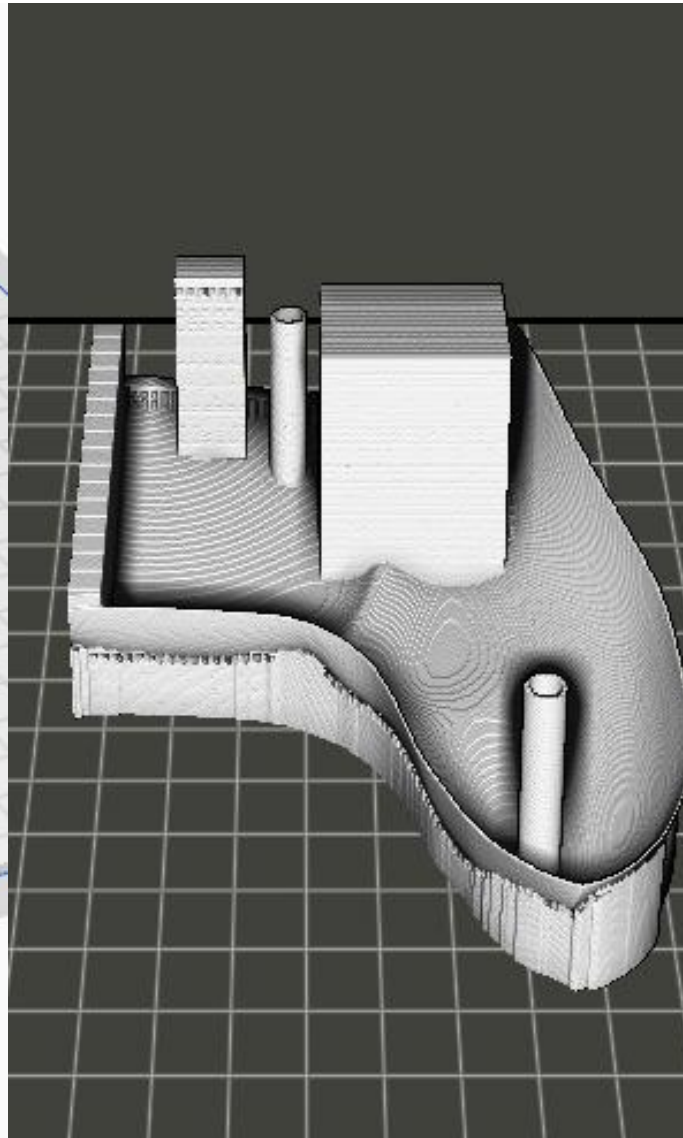
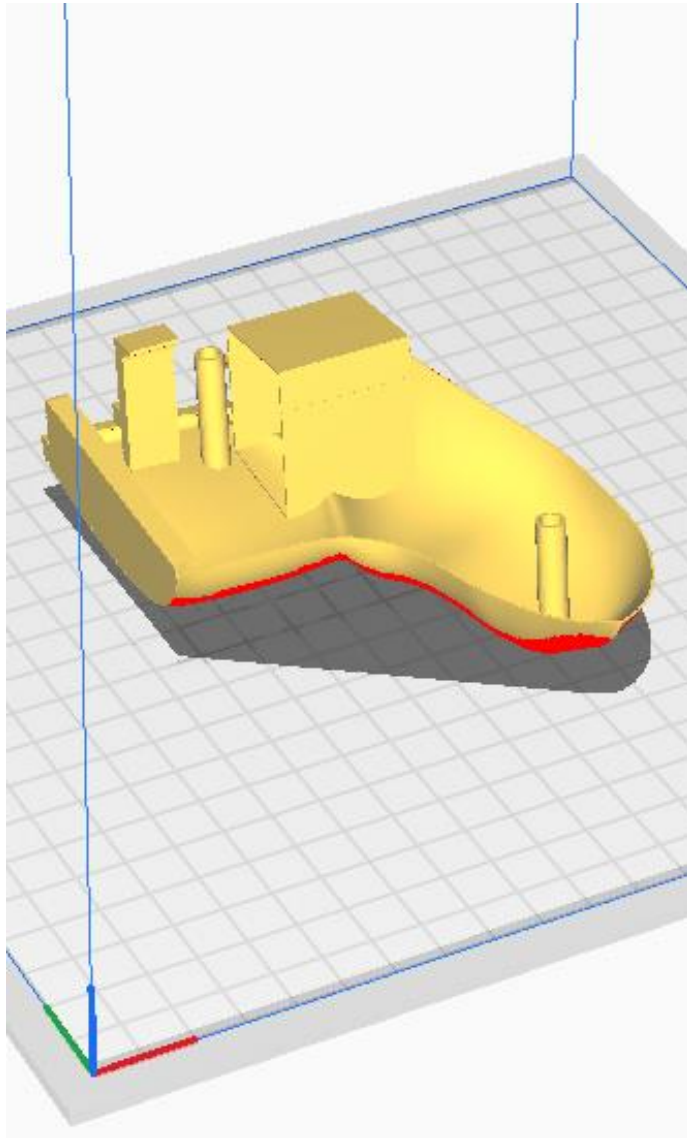
# PROJECT PROGRESSION (ASSIGNMENT 3)

- During the 3<sup>rd</sup> stage in development (A3), we really made sure our 3D model would work properly. We added support, tested the components using a breadboard, and tried 3D printing a portion of the controller.
- All that's left is to print the rest of the controller and solder the components together and plop them into the shell.



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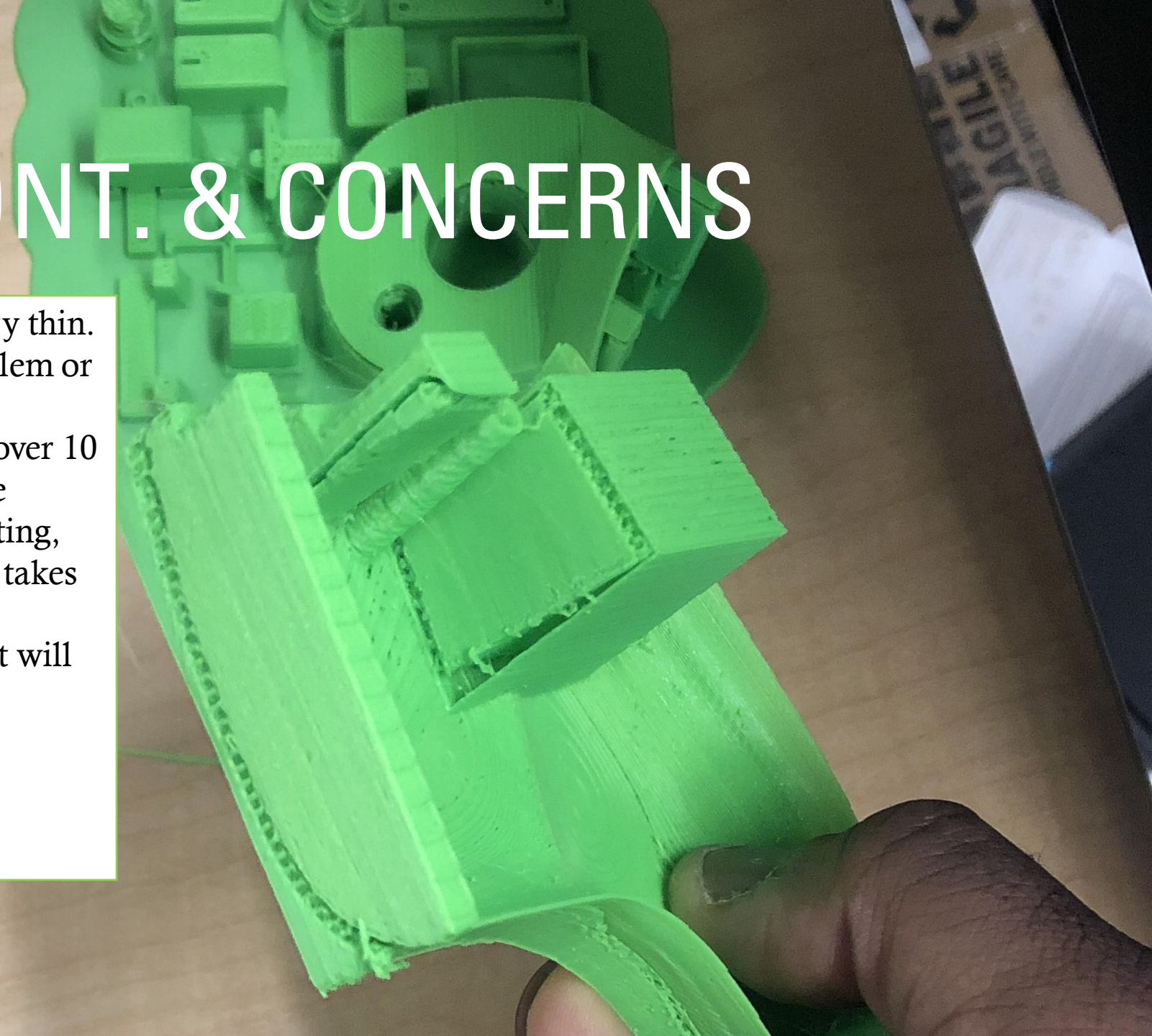
# 3D PRINTING/SLICER ANALYSIS





# ANALYSIS CONT. & CONCERNS

- As one can see, the controller printed very thin. We are still unsure if this is a major problem or not.
- This was a rough test print but still took over 10 hours just for  $\frac{1}{4}$  of our controller. We are worried that with every other group printing, not everyone will be able to print since it takes too long.
- If we make our controller edges thicker it will only increase the time to print.





# Innovative Input Controller Gantt Chart

