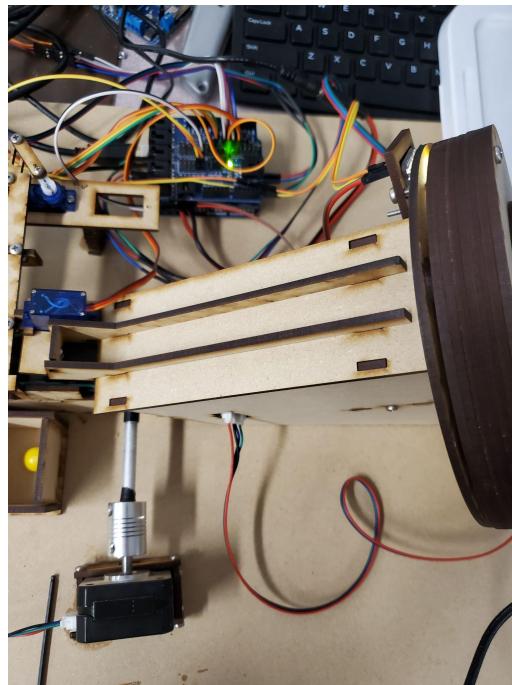
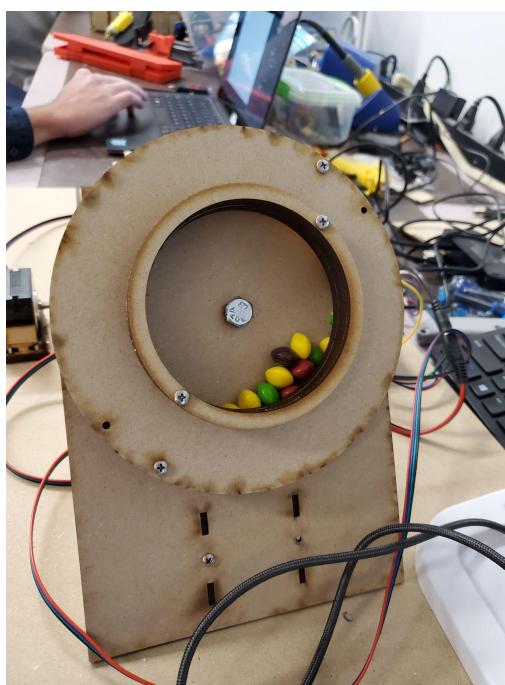
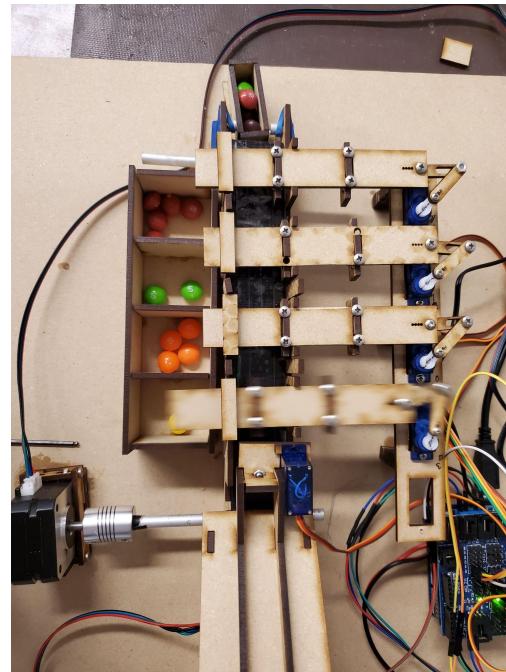
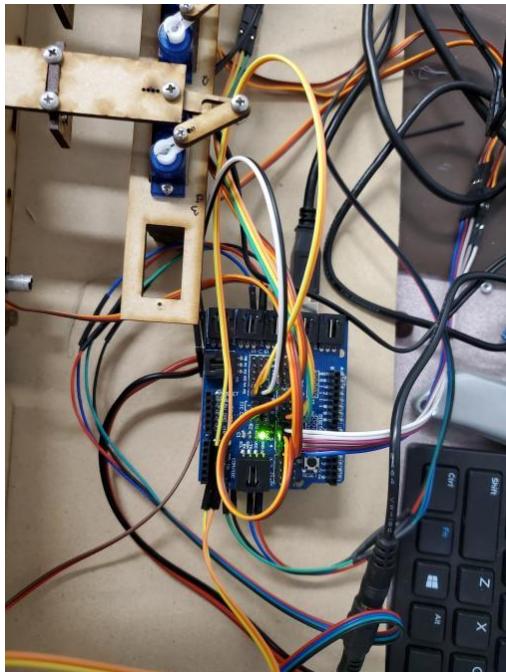
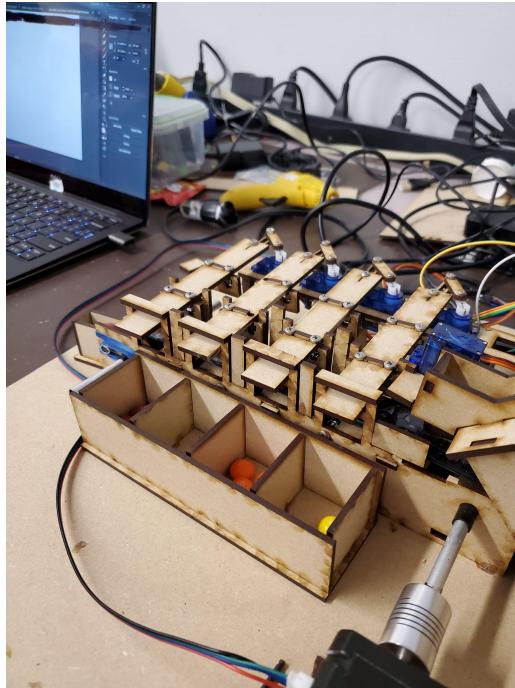


Thomas Harman, Raphaelle Guinanao
December 8, 2021
ISTA 303 | Dr. Jansen

Assignment 4: Skittle Sorter

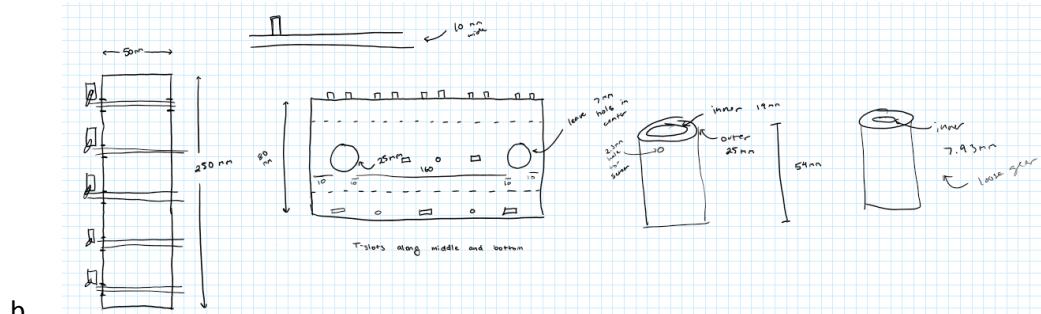
1. Pictures of assembled system





2. Diagrams, schematics, pictures, etc: Schematic (Arduino), Code (Arduino), Illustrator Files (2.5D), CAD files (3D), pictures of all subsystems (**files attached separately**)

a. Images



b.

c. Conveyor belt drafts

d. Video links: <https://www.youtube.com/watch?v=4tXuCqE-pIM>,
<https://www.youtube.com/watch?v=18QXzYHbIXU>

3. Feeder

- a. The feeder system is a rotary feeder with a color sensor in the position before they release and slide onto the conveyor belt.

4. Sensor

- a. The sensor uses the normalized red, green, and blue values recorded from the color sensor. To solve an issue detecting purple skittles we combined the outcome of nothing and purple.

5. Sorter

- a. For our sorter, we created a conveyor belt; moving the skittles along a belt from the feeder slide to their respective buckets.

- b. For the conveyor belt pulleys, we laser cut multiple circles to control the width of our cylinders. One side was freely attached to our axis, while the other screwed on and connected to our motor. We also used rubber bands to suspend our pulleys to spread our belt as much as possible without compromising the motor running.
- c. For the conveyor belt itself, we used leather tape, but later found that there wasn't enough friction to make the skittles consistently stay in place on the belt itself, so we used double-sided tape to keep the skittles in place once dropped from the feeder.
- d. To push the skittles off of the conveyor belt, we created slots on the side of our conveyor belt holders to hold a pushing piece which allows us to convert the circular sweeping motion of the servo motors, to a linear force that can push the skittle.



e.

6. Results

- a. Speed: 33:35:56 -> 2,015 seconds
- b. Accuracy: 53/62