Introduction

This document is the documented prototype III and its execution. Finally, we refined the test plan created in the last deliverable, incorporating results from prior testing to enhance the quality of the final implementation for Design Day, along with the demo plan for design day.

Prototyping and Test Plan

Cart Attachment

What: The attachment of the cart to the Robomaster

Why: To improve attachment speed

When: March 18th

Documentation:

* Attached a buckle to the ribbon, by tying a classic overhand knot, so now the cart can be quickly removed by undoing the buckle. While a loop remains around the robomaster
* Refer to section in conclusion

Coding

What: Compile all the coding files from DJI into separate images.

Why: To make it easier to document, as well as for use on the final design day presentation.

When: 2 hours / March 9th

Documentation: The fields were placed in the shared Google Drive folder amongst the team.

Video Editing

What: Complete final video editing

Why: For final presentation and to be shown to government officials

When: 3 hours / March 20th

Documentation: Collected all the clips that will be used in the video and decided on a video editing software.

Manifesto

What: Write a manifesto from the perspective of the robot expressing its disapproval for being used to teach students about using it for war

Why: This is one of the final deliverables required by the client.

When: 3 hours / March 20th

Documentation: Brainstorming

Conveyance of message

What: Asking the client for feedback

Why: Allows us to identify areas for improvement

When: 20 minutes / February 11th

Length of travel of delivery

What: Attached the wagon to the robomaster and had it travel in a straight line

Why: To identify if the robomaster is able to travel from point A to B with the food on board

When: 5 minutes / March 2nd

Documentation:

* Moved the attachment location of the ribbon from bottom to the midpoint
* Changed what material the connector is made of

Lights

What: Program in DJI Education hub, the robomaster to lights

Why: To see if the lights are visible, able to turn on and change colour.

When: 10 minutes / March 2nd

Documentation:

* The lights are separately programed
* Made it blink along with changing the colour

Handling the weight of the pizza.

What: Add weight to the wagon and test how much the robomater is able to pull.

Why: To identify if the robomaster will be able to pull food, pills and other objects

When: 20 minutes / March 2nd

Documentation:

* Prototype of wagon design
  + Made of plastic plant cart
  + Punctured a small hole to screw in a hook
  + To make more personably
    - Attached googly eyes with hot glue
    - Attached pipe cleaner arm and mouth
* Weight: 776 grams
  + Can carry it easily

Audio output from the robot.

What: Robomaster plays sound ques. Different sounds for different situations

Why: To see if it can it can play audio

When: 20 minutes / March 2nd

Documentation:

* Can play piano notes
* The custom audio not available

Setting the speed of the robot.

What: Change the speed of the robomaster

Why: Ensure the robomaster does not move too fast causing items from the wagon to spill out.

When: 5 minutes /March 2nd

Documentation:

* Robomaster Was originally set at 2-3 m/s was to fast
* Set speed to 0.25 m/s

Detecting people / objects

What: Be able to detect people and objects in front of it.

Why: Once detected the robomaster will be able to avoid collisions.

When: March 9th

Documentation:

* Will be finished in prototype 2

Film Video

What: Be able to film video through robomaster.

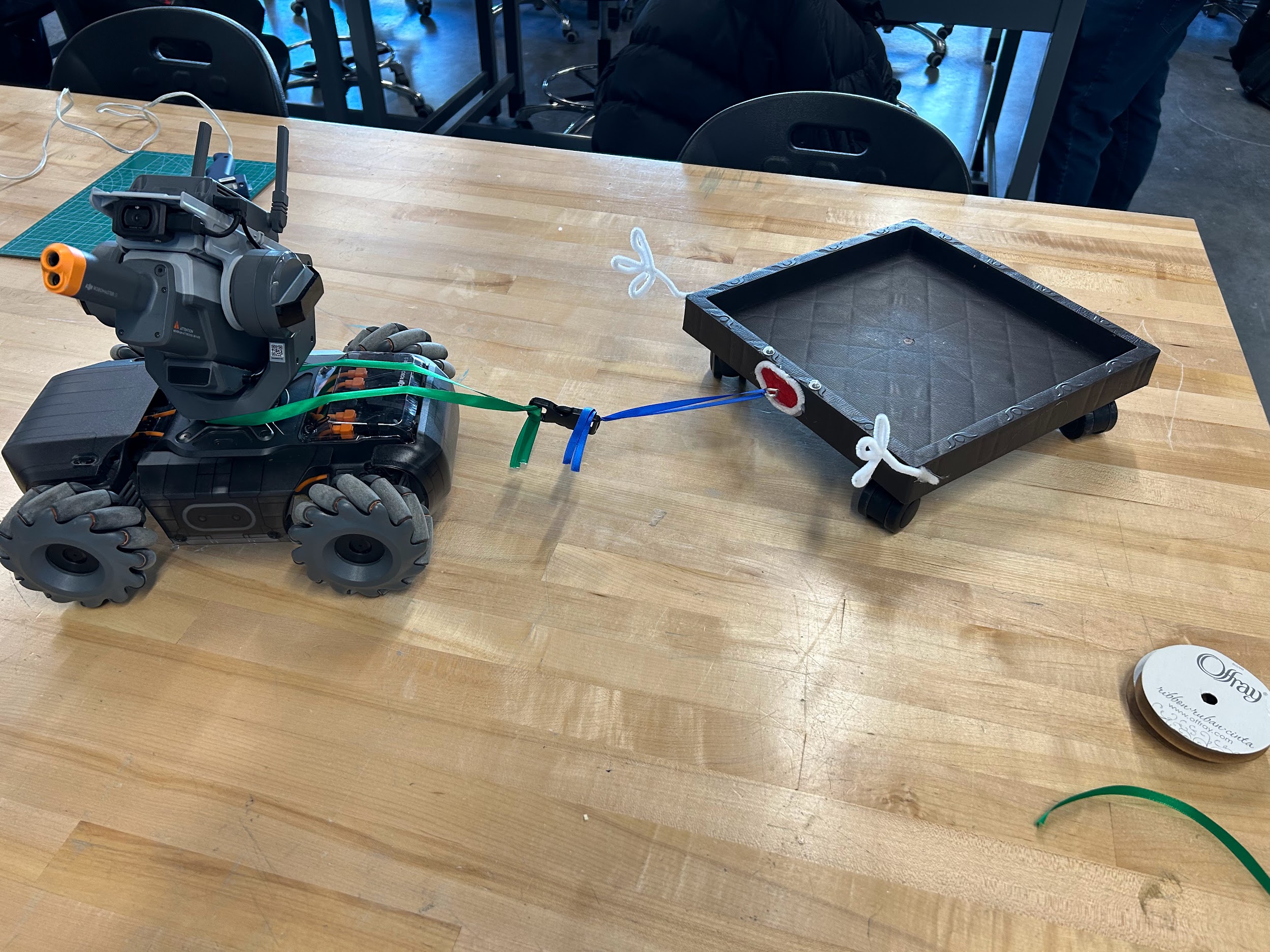
Why: Be able to add a POV shot in the video

When: March 2nd

Documentation:

* Only hold five photos
* SD mini chip
* DJI Education hub programed

Instillation Change



As shown in the image above, we chose to change the installation that connected the moving trolley to the RoboMaster from a ribbon that was tied with a knot, to an attachment with a backpack-style clip. This makes the design of the final installation more seamless, enhancing our presentation to the judges. Furthermore, this allows us to spend more of our time during the presentation focused on content, as opposed to setting up the installation for the judges.

Conclusion

In Conclusion, we improved the cart attachment method by tying the buckle to the ribbon. In addition, to adding further iteration to the video and adding different key words to make the experience flow better and convey a stronger message. Furthermore, we ensured the speed between the different sections of coding for a smooth transition when presenting on design day.