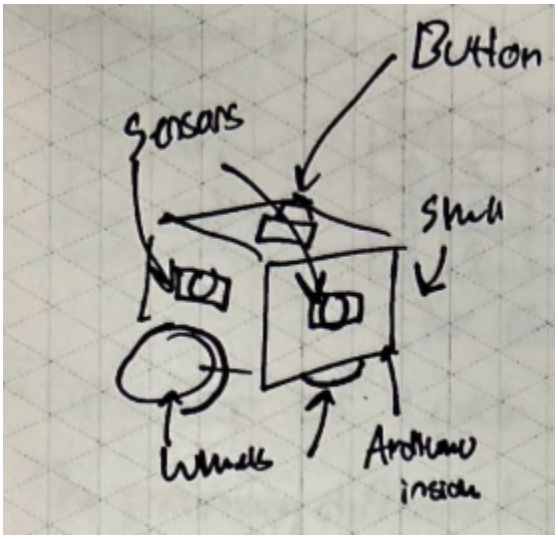
Toy Project Design Brief

Portfolio	**Portfolio Link:** https://sites.google.com/riversideunified.org/matthewjeide/projects/de-2024-2025/toy-project
Client	Nancy Guzman, Jeff Dietz, and Adam Christensen
Target Consumer	Parents wanting educational toys for their children
Designer(s)	Matthew Jeide, Francisco Izaguirre, Asher Atchison
Concept Sketch	
Problem Statement	Children often disengage from traditional educational toys that fail to sustain their interest, resulting in missed learning opportunities.
Design Statement	Design an interactive educational toy that autonomously moves away from children, encouraging active learning through play by challenging them to apply STEM concepts to successfully interact with it.
Criteria	1. Who will buy this toy? Parents 2. How much will it cost? Ideally, less than $20. 3. How will it look? Futuristic and colorful, it should captivate the children.

	4. What must it do? Run away 5. What age group are you designing this toy for? 4-8 year olds 6. Add other id
Constraints	1. Material Cost We have to encase the important components of the toy and provide a structure. 2. Number of motors More motors means faster runs, but additional power draw and cost. We additionally don't have a lot of motors in the classroom where we are building prototypes. 3. Sensors More sensors means more accurate readings, but adds in complexity and cost. Additionally, some specific types of sensors may interfere with each other if they're too close. 4. Battery Size We want a long-lasting battery that provides enough voltage for fast runs, however, we aren't able to use rechargeable (via plugging the robot into a power source) batteries in this prototype. The bigger battery means longer charge times and more expenses per toy. 5. Time We have around a week to get this prototype working, we can practically only use already-present supplies in the classroom (ordering components via online web store like Amazon would take time to ship) 6. Arduino We were tasked to use the Arduino as the microcontroller of our prototype, the Arduino has a limited amount of digital pins (pins used to communicate and control the components), and even fewer pins capable of PWM (pulse-width modulation) which were needed for specific components like the motors. 7. Asher 8. Breadboard Size We were given a really small beardboard.
Materials	1. Aluminum 2. Arduino 3. 22-Gauge Wire 4. Vex 2-Wire 393 Motors 5. Vex Ultrasonic Range Module 6. Omni-Wheels

Final Design Toy	IN DEVELOPMENT
STL FILE	IN DEVELOPMENT