TURBO SKATES
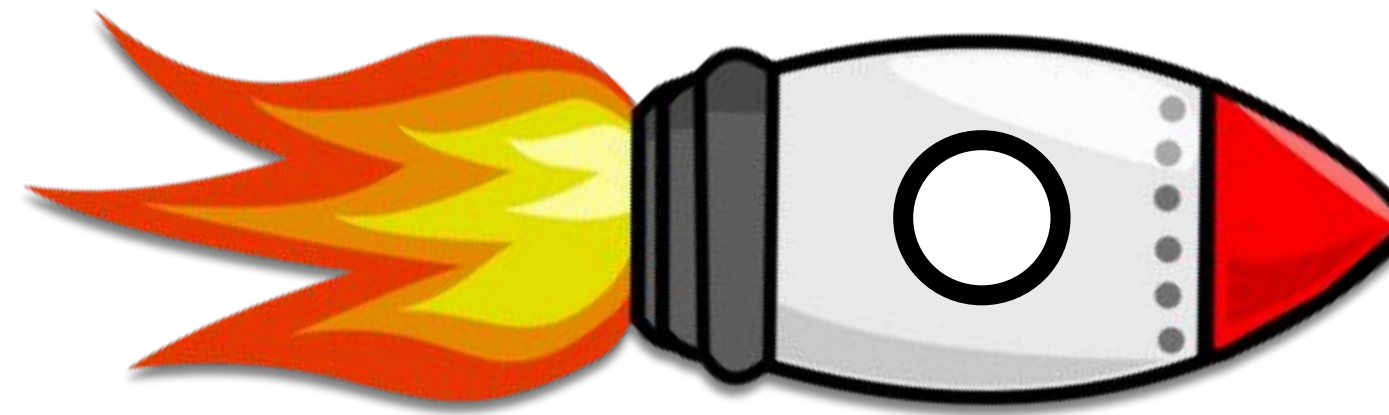
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Project Pasta

Concept

To provide an alternative mode of transportation that will eliminate the hassle of other modes while also keeping commute times to a minimum.

Requirements

- Must be safe to use
- It has to be compatible with all or most feet sizes
- Has to be able to hold someone's weight
- Relatively cost-efficient
- Easy to remove and put on

Constraints

- Housing of components must be able to fit on the skate
- There must be even weight distribution because of the components and the motoro

Future Work

- Create a second skate
  - For the other foot
- Use a higher capacity H-bridge
  - Capable of outputting 100W as opposed to current 24W
- Weatherproof the electronics

Project Description

Turbo Skates are motorized derby skates that provide students and others who have a 1-7 mile commute a faster, and more reliable mode of transportation that will get them anywhere around campus and town, while being simple and quick to remove and put back on in order to reduce transition time from destination to destination.
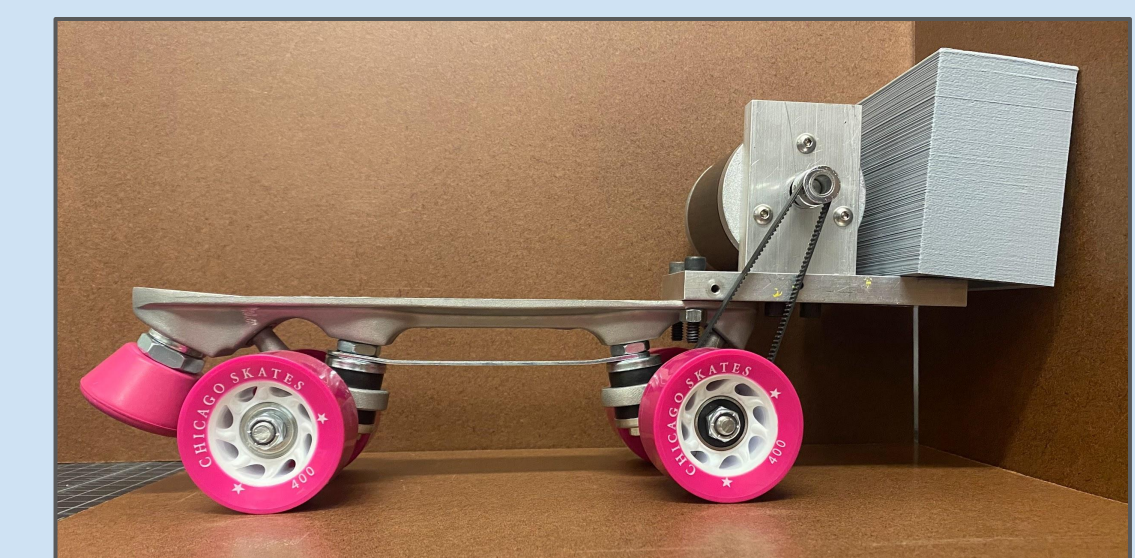
Remote and Motor Controller
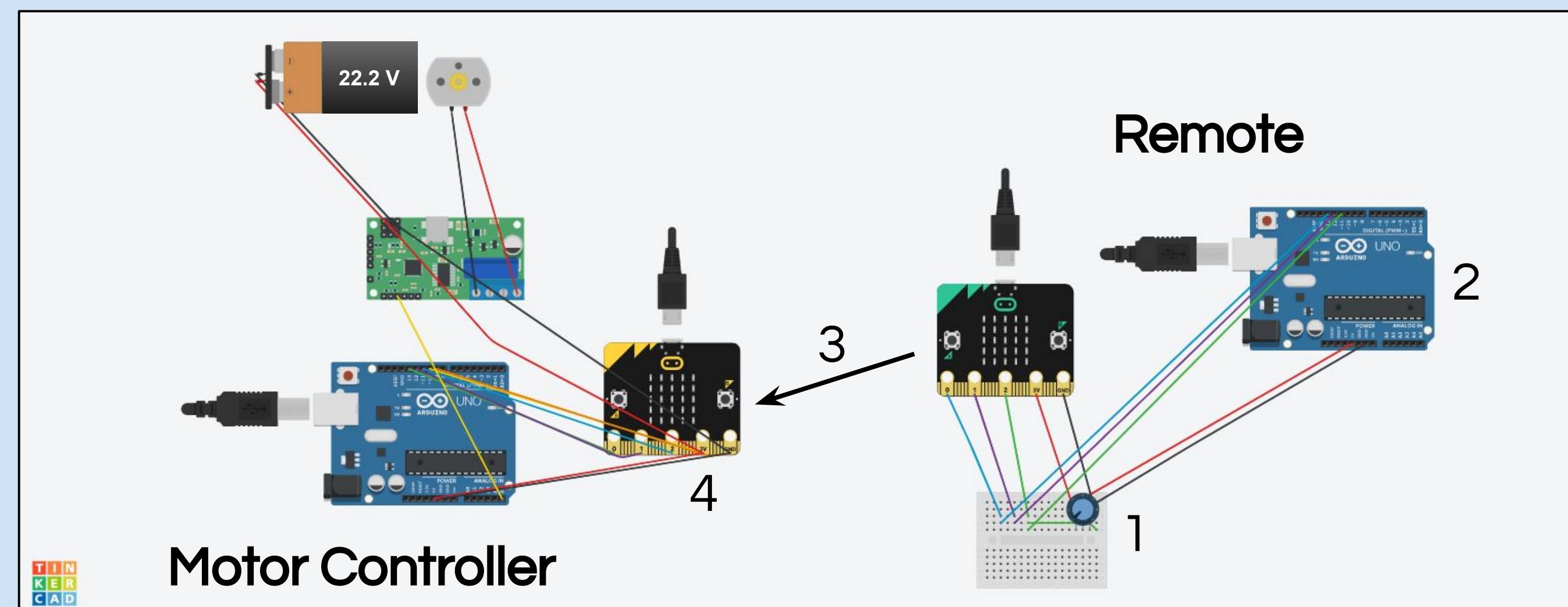
Cost

Materials	Cost
Motors	$40.40
H-Bridges	$37.03
Belts & Gears	$13.60
Skates	$53.60
Batteries	$66.12
Battery Packs	$10.00
RF24s	$13.76
Hardware	$9.00
3D Spool	$1.04
Straps	$8.89
Total:	$253.44

Steps

1. Potentiometer sends signal
2. Arduino Translates signal
3. Remote radio Sends signal
4. Skate radio receives signal
5. Motor controller translates signal
6. Motor runs
7. Drivetrain turns
8. Wheel Spins

Analysis & Testing

- Tested motor directly to batteries
- Tested wiring, circuitry, and batteries on smaller motors
- Tested increasingly rigorous code against circuitry and motors to debug and test power output
- Skated without power to ensure strap security
- Testing provided insurance of safety and functionality

Essential Components

- 24V, 100W DC Motor
- Arduino Uno x 2
- Belt Drive and Gears
- Samsung 18650 Batteries x 6
- nRF24 Radio x 2
- L298N Motor Controller

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