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README.md

Lab 4 - Mobility

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4.1 Fabrication and Motor Driving

4.1.1 Driving Motors

Setup the H-Bridge motor driver SN754420 to drive one of the supplied yellow motors

Refer to Slide 51 of Lecture 14

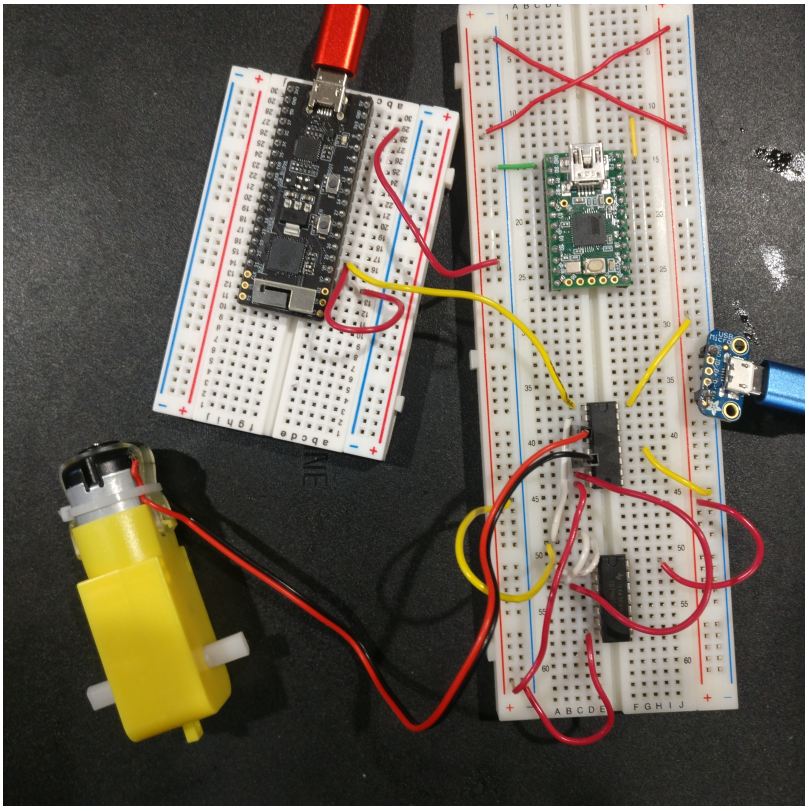
1. Optionally, use the FAN8100
2. Power the motor using the Beston battery

Use a NAND chip 74HC00 in your kit to make an inverter

Refer to Lecture 04

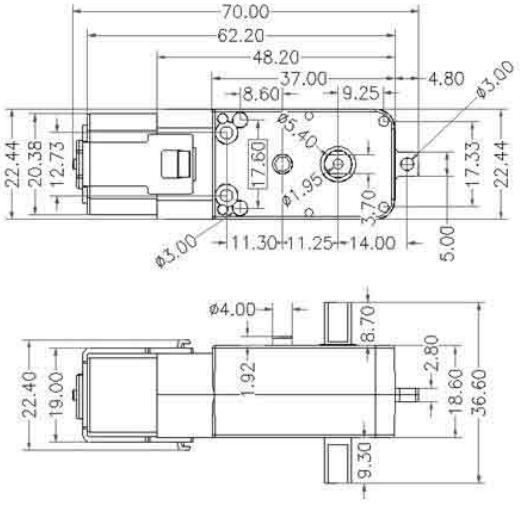
1. Use this inverter so you need only one I/O line to set the direction of the motor
2. the I/O line drives 1A and the input to the inverter, so the output of the inverter drives 2A
3. To use a NAND gate as an inverter, connect the signal to both inputs and use the output as the inverted signal
4. Set up the OscilloSorta to drive the enable pin with PWM and control the direction of the motor by switching voltages manually

5. optionally connect a switch and pullup resistor
6. Use 50Hz with 0% to 100% duty cycle to change velocity of motor
7. Demonstrate the motor changing speeds with varying PWM and different directions with different speeds.
8. Show a TA for check off.
9. Submit a photo of your circuit where the lines and motor are visible.



4.1.2 Car Architecture

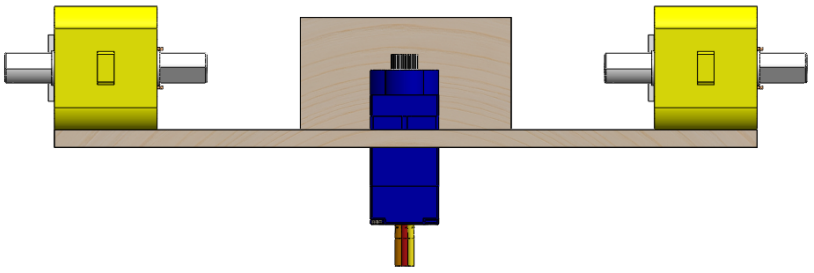
Motor Dimensions

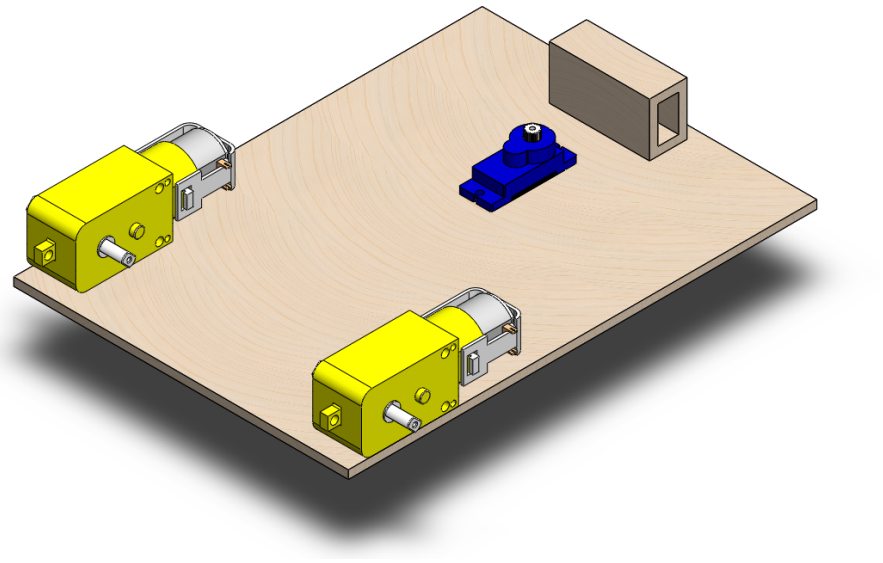


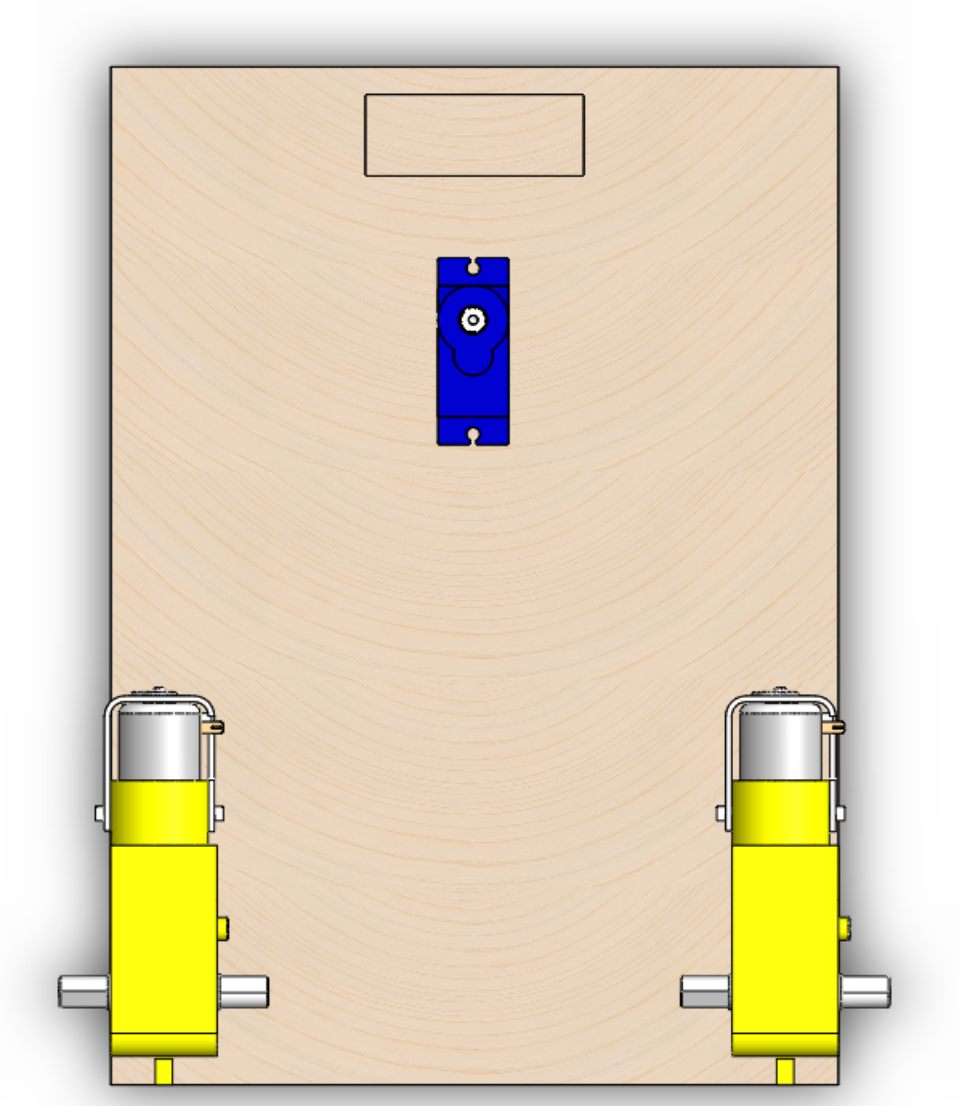
Discuss with your TA/coach about your design.

1. Have a completed draft CAD assembly of your car ready to be reviewed by teaching staff in lecture on Monday 3/15.
2. Be ready to create and submit `.dwg` files if your TA/coach approves your design.
3. Drafts should be near complete so the TA's can judge how they assemble.
4. Be sure to follow the laser-cutting guidelines (reproduced below for your convenience).
5. Submit drafts to canvas.

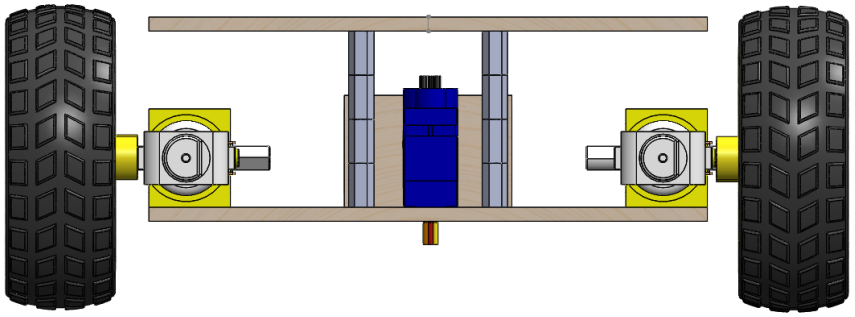
Draft 1

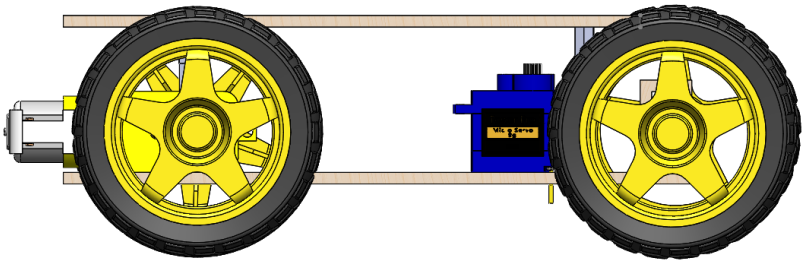


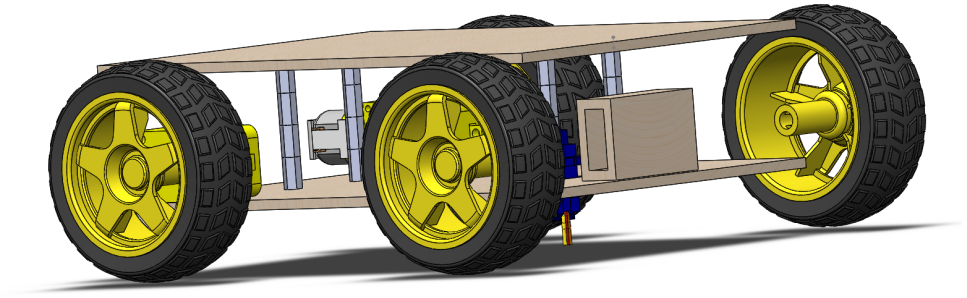




Draft 4 (vFinal)







Bill of Materials

Part	Quantity	Purchase Link	Unit Cost
Wheel	4	Adafruit	1.50 * 4 = 6
2202K-ND 4-40, FF, 3/8”	16	Ministore	0.25 * 16 = 4
2mm x 150mm Shaft Rods	Pack of 10	Amazon	6.99