ECGR4161/5196, MEGR4127 – Introduction to Robotics
Lab Assignment #1 – Spring 2021

See Canvas for the due date/time

In this lab assignment has two parts and will be done individually. You may consult with your lab partner, but in the end you will need to record your own video and complete your own lab report.

Submission type: Video (<u>Must</u> include your name and all video requirements mentioned below)

Part 1: Vehicle Assembly

Fetch the assembly instructions from
https://www.ti.com/lit/ml/sekp164/sekp164.pdf?ts=1591037289431.

The beginning of any successful assemble job is to verify you have all the parts, and they appear to be unbroken. For example, I did this assessment and found my main chassis board was broken (a capacitor was sheared off the board). If this has happened to you, contact TI immediately!	
	Keep in mind that the kit comes with some extra bags of parts: jumper wires, breadboard/ standoffs, and electronic parts. You will not need these parts for this lab, but the jumpers will come in handy for future labs.

Common assembly mistakes are:

- Not putting the three small "rollers" with the ball assembly, and putting the assembly on the wrong side.
- Messing with the MSP432 board jumpers (small "connectors"). Make sure they are installed as identified in the instructions

Part 2: Vehicle Hardware Verification and Peripheral Check

Now, verify the vehicle has been assembled correctly by installing and checking the various peripherals of the robot at this online debugger webpage:

https://dev.ti.com/gallery/view/1766484/RSLK_Debug/ver/2.0.1/

This webpage will prompt you to install a helper program onto your PC called TI Connect Cloud.

Note: You MUST install the batteries in order for the motors to run. Also, you must switch the power "ON" (slide switch) on the motor board (the bottom board (switch is about 2" behind the left motor). And make sure you use the cable that came with the kit.

Record a very short video showing: some of the bumpers being activated on the screen, both motors moving, both encoders counting up.

Answer these questions in the lab report:

1. While the robot is up in the air, what value does a motor need to be set to in order for it to start turning? (see the Canvas page for an example of the movement)
2. While the robot is on a table, what value does a motor need to be set to in order for it to start turning? (see the Canvas page for an example of the movement)

Lab Report - Submission Instructions:

1. Upload a Video to your YouTube account (or other location with a URL).
2. Prepare a file, output to PDF that includes:
    a. Your name
    b. What the general objective the robot / apparatus is expected to perform, and
    c. URL of the video
    d.   (in report or video) Commentary on the tests
    e. Answer the "motor stall" questions. You do not need to video the experiment to determine the answers.
3. Upload the PDF to Canvas, Lab 1 submission

Note: If you have problems with the hardware, contact the instructor – he may have replacement parts.