Lab 01: Braitenberg Vehicles

Due: February 13th, 2019
75 Points

Purpose: As a starting point for our robotic labs we are going to build and program Braitenberg vehicles 2a, 2b, 3a and 3b. See the 1-Introduction to Robotics slides for details on the robots and their behaviors. Since our robots are not analog like the conceptual Braitenberg robots, you will have to create code that "recreate" the linear relationship between sensor and motor output.

Preparatory: You will need to have completed Lab 00 and have a working and tested development environment.

Lab Detail: You will need to design a robot body to accomplish the goals of mimicking the behavior of the vehicles. The design is up to you team there are no set requirements by the lab other then you will need 2 sensors for input (light sensors are suggested, but you can use something else if you want) and 2 actuators (servos) to move the vehicle based on the sensor input.

Once you have the robots physical design you will need to start creating code to accomplish all of the vehicle behaviors. You can create one project in eclipse for all 4 vehicles, but you should create individual java files for each (VehicleTwoA.java, VehicleThreeB.java, etc).

You will want to look at the EV3 documentation for the following classes for help getting started (in addition to ones you have used in lab 00!):

- RegulatedMotor
- Port
- SensorModes
- SampleProvider
- EV3ColorSensor, NXTLightSensor (depending on which sensors you are using)

Submission: Your team will demonstrate your working robots in class by the due date and will submit its code in iLearn (best way is to zip up your project directory, but I will take the individual .java files).

Resources: You will complete the installation of all required development tools using the following resources and any additional resources needed.

- LeJOS wiki: https://sourceforge.net/p/lejos/wiki/Home/
- Chapter 2 from: Beginning Robotics Programming in Java with Lego Mindstorms also provides examples of working with the servo motors.
- You may need to google for additional resources on the web for your particular computer setup.