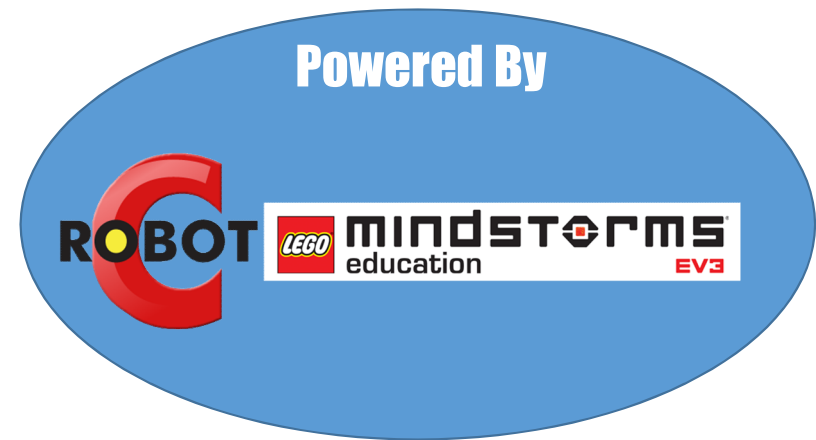
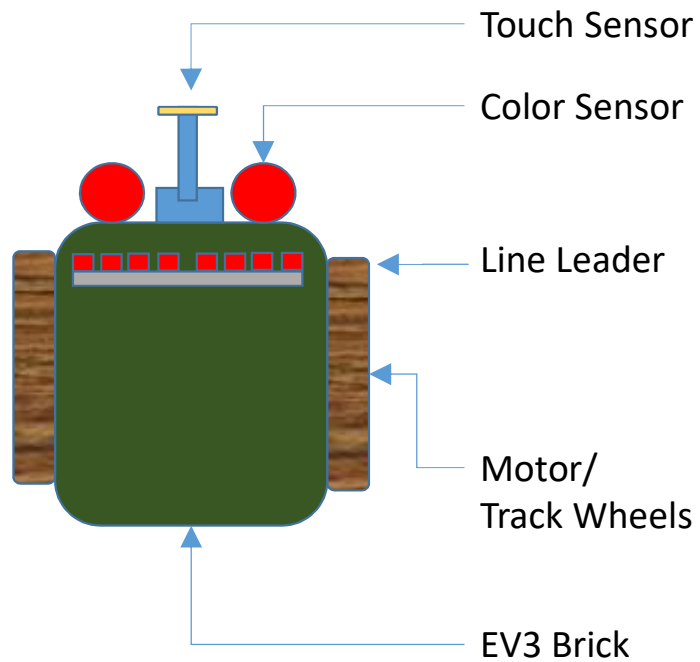


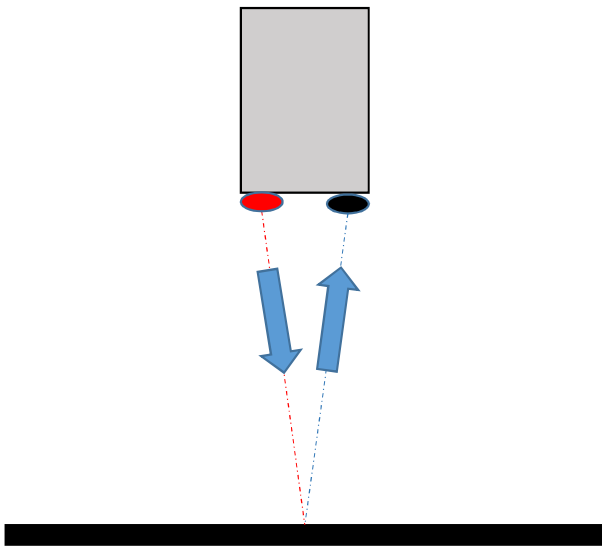


RoboCup Junior
Rescue Line

I'm WarriorBot, what's your name?



Light Sensor



- 2 Parts
 - Photo-resistor
 - LED (Light Emitting Diode)
- LED produces light
- Photo-resistor converts light energy to electrical impulses
- Amount of light reflected is proportional to sensor readings
- Complete light = 100; complete darkness = 0



Touch Sensor



- Touch Sensor can detect when the sensor's red button has been pressed or released
- With this information, you can program an action when the sensor is:

Currently Pressed

Currently Released

Pressed and Released Just Before (Bumped)



Line Leader (Mindstorms)

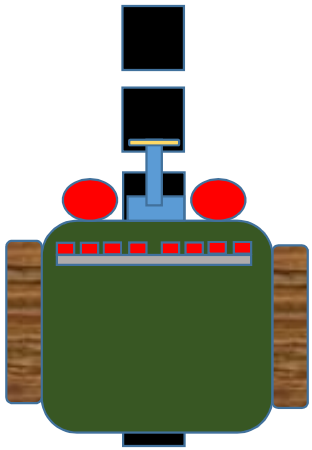


Line Leader has an array of 8 sensors with controlled light source.

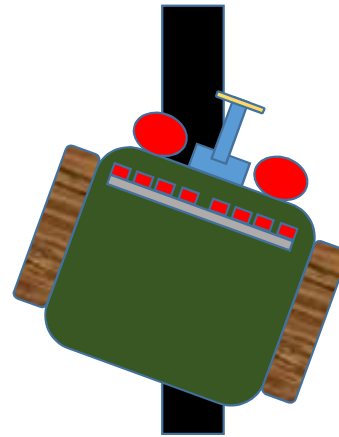
It returns you values of the sensor readings.

- Easy to mount on your NXT or EV3 robot facing ground
- Reports dark and light pattern from array of 8 sensors
- Detects and helps follow a line
- We can use our own PID control logic

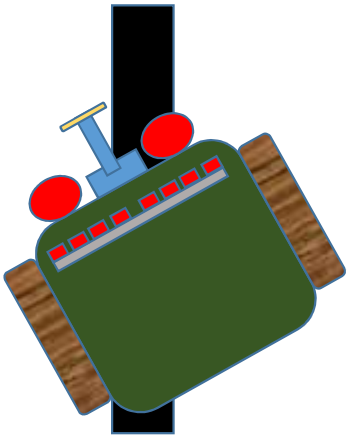
Strategy for line following



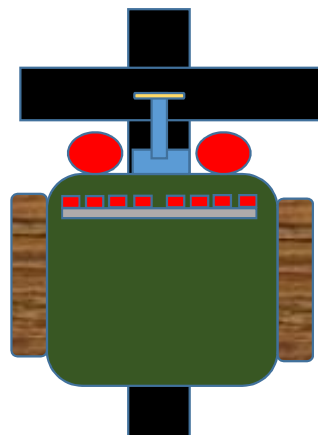
Go straight
(ignore gaps)



Turn left

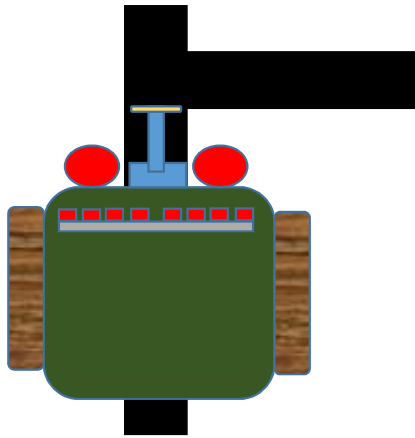


Turn right

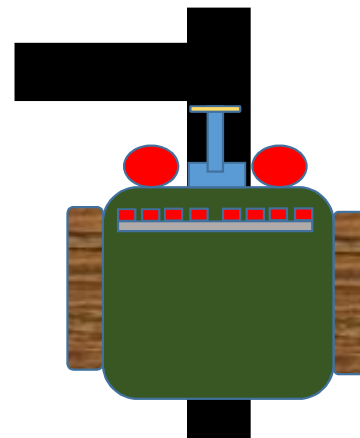


Go straight

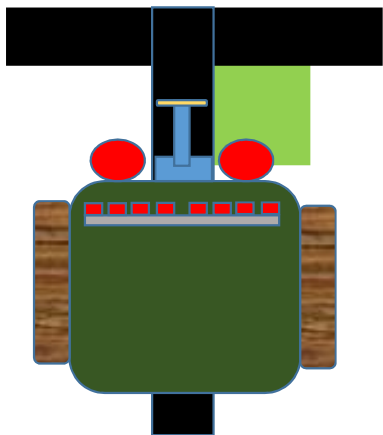
Strategy for line following



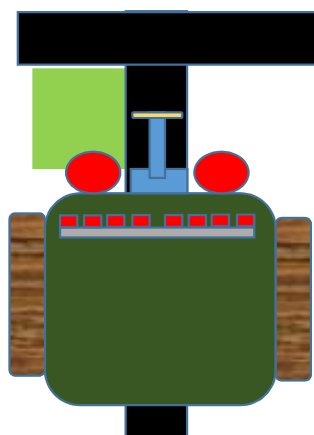
Go straight



Go straight



Turn right



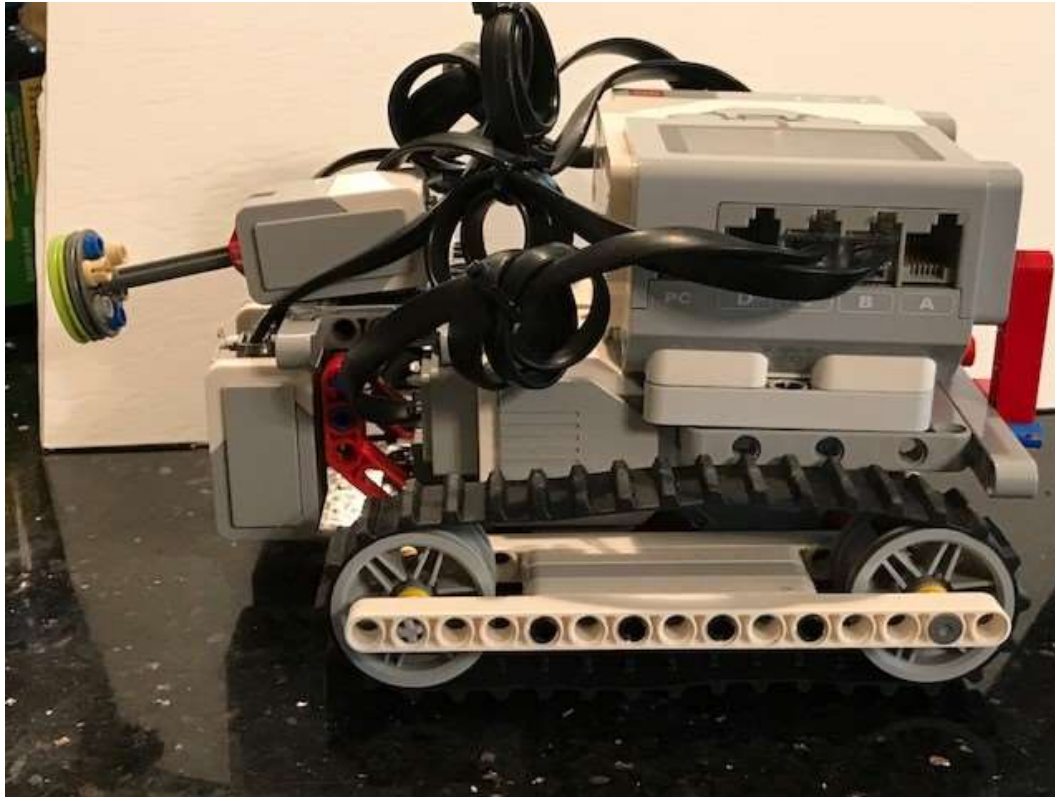
Turn left

RoboBug – Our initial attempt



- Some issues with our previous attempt –
- Used 4 wheels – rear wheels were dragging during turns
 - Used 2 light sensors – some turns were difficult to turn
 - Was very long – it was unable to take sharp turns

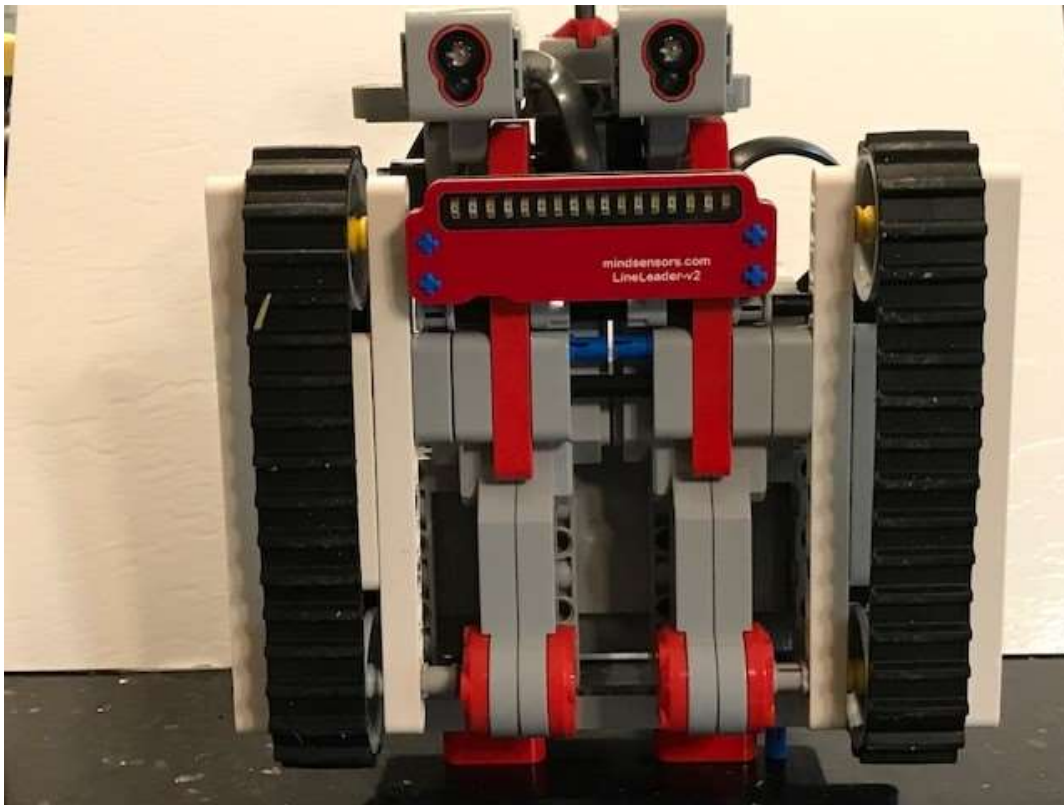
RoboBug – Competition version



Our robot has –

- Uses only 2 servo motors to drive the robot
- Uses tracks to allow it to go over obstacles
- Uses 2 color sensors – Left and Right sensors straddle line
- Uses LineLeader to efficiently track a line
- Uses touch sensor to avoid obstacles

Design Strategy



Robo Warriors

- Our robot was designed to be compact and sturdy
- Light sensors are placed to straddle the line
 - Touch sensor is extended beyond the front of the robot
 - LineLeader allows us to track a line and sense turns
 - Track wheels allow us to climb over spilled debris and any ramps