Demo Robot for ORTOP RobotC Workshops

To facilitate the ORTOP RobotC Workshop, we needed a simple well built robot that had the basic NXT Sensors attached for FTC use. This robot will be used to introduce RobotC. The sensors to be demonstrated are the touch, light, ultra-sonic and compass.

Footnote: this robot was initially constructed by Dale and Scott Jordan. Dale has been a coach for FLL and FTC teams for several years. Scott is currently a member of FTC Team #2, "Psychotic Strawberryz."

Constructing the Robot

The starting point for this robot was the "Hammer Car" from www.nxtprograms.com Figure 1). It was chosen because it is a simple, yet sturdy design that looked to be easily modified.

Figure 1 -- Hammer Car from nxtprograms.com

Modifications to the Hammer Car

The hammer and third motor were removed to make room for the sensor package. Figure 2 shows the bottom view of the robot after these changes were made.

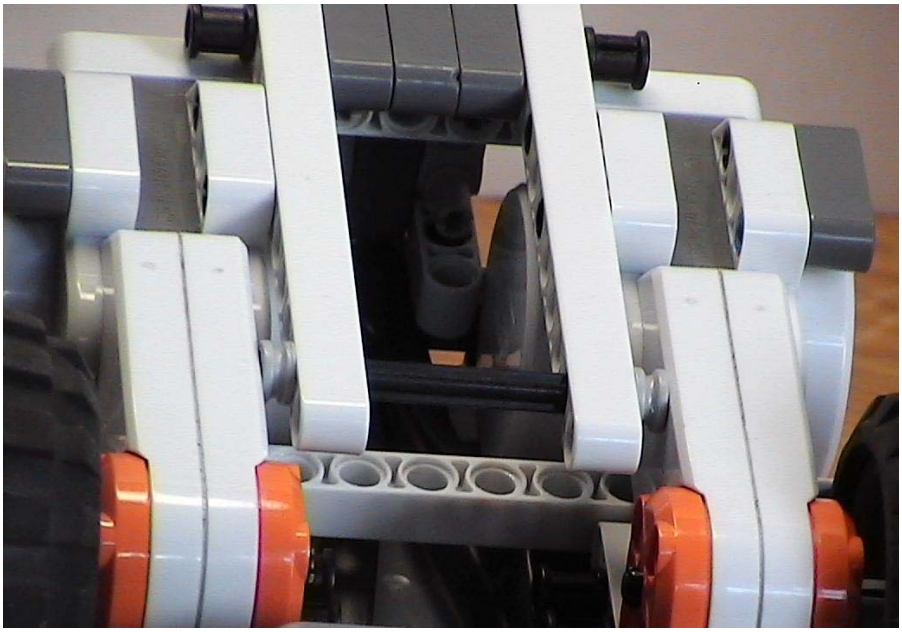

Figure 2 -- Bottom of robot with 3rd motor removed

We use NXT's with rechargeable batteries, so the Hammer Car was extended to accommodate this (**Figure 3**).

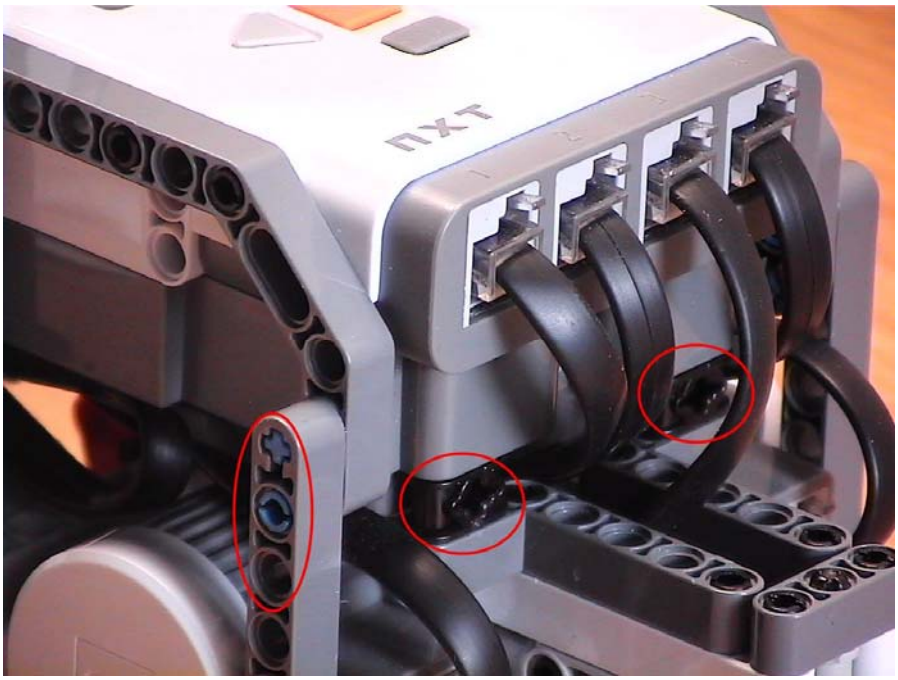

Figure 3 -- Extensions to accommodate Rechargeable Battery

Cross bracing was added back near the front of the motors for stability (Figure 4).

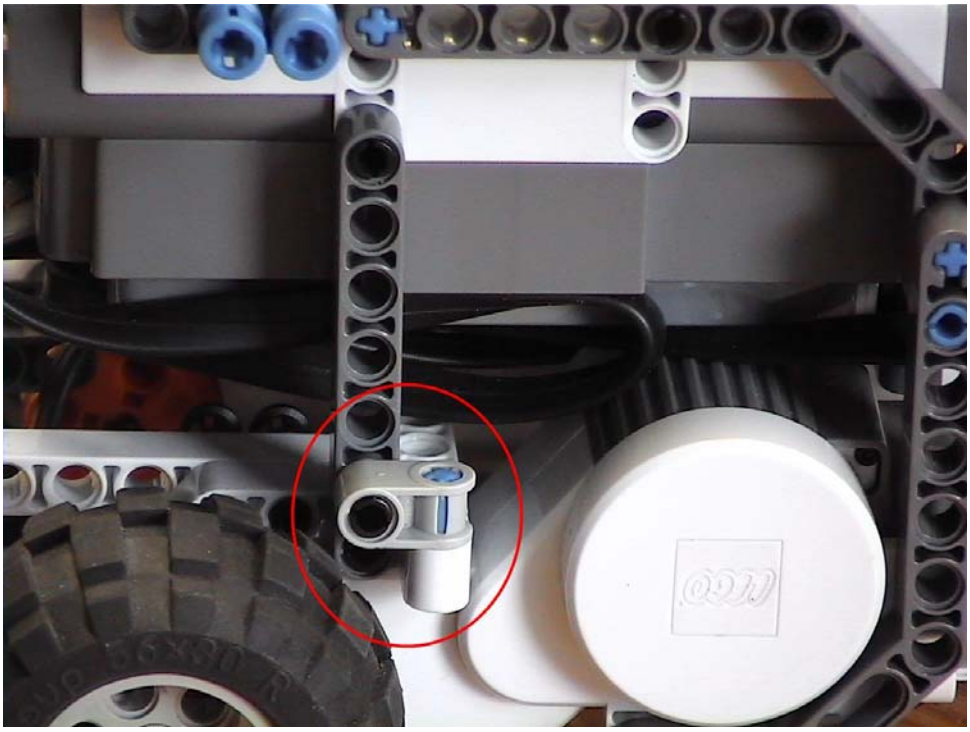

Figure 4 -- Motor Cross Bracing

Front Sensor Package

The touch, light and ultra-sonic sensors are constructed in a small configuration and attached to the front of the robot. Figure 5 through Figure 9 show the construction of this package.

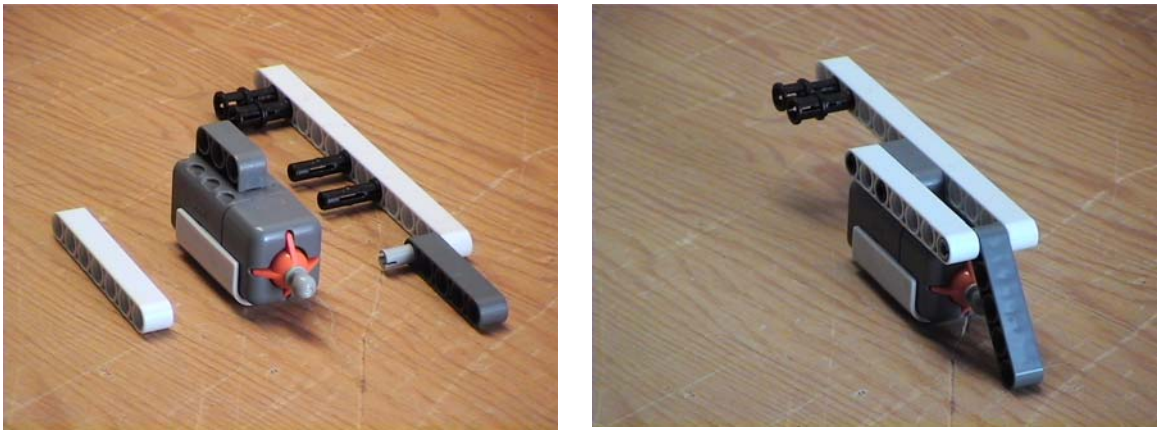

Figure 5 -- Constructing the Touch Sensor

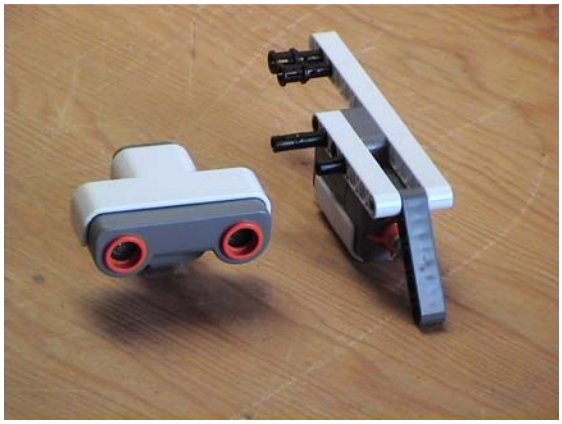

Figure 6 -- Adding the Ultra-sonic Sensor

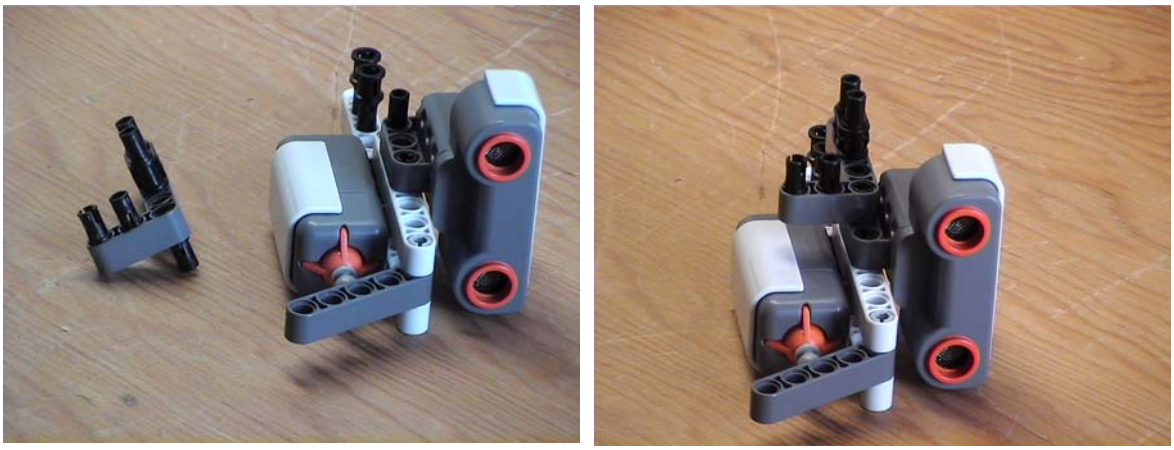

Figure 7 -- Adding L-bracket for Light Sensor

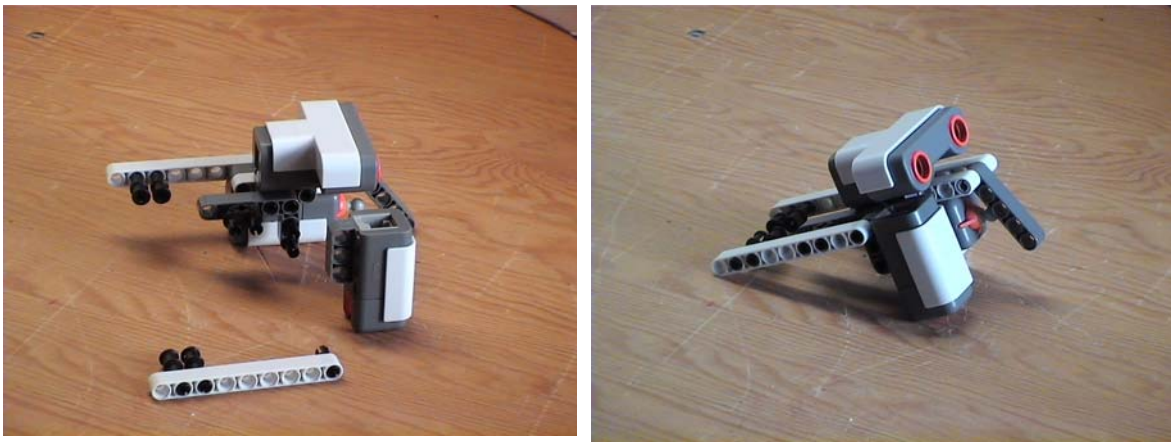

Figure 8 -- Adding Light Sensor, Note: add cable before attaching Light Sensor (not shown)

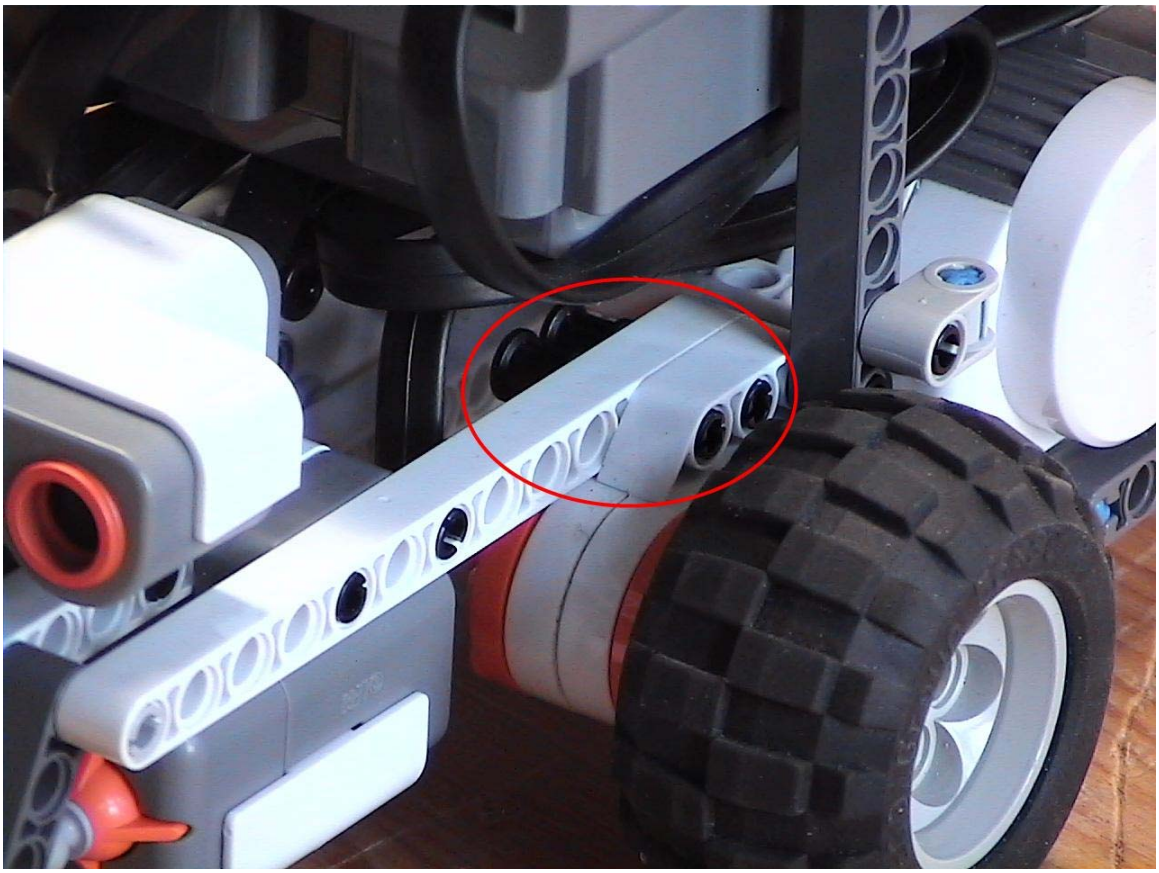

Figure 9 -- Attaching Sensor Assembly to Robot

Compass Sensor

To keep interference down from the NXT Controller and the motors, the compass should be mounted at least six inches from the motors and four inches from the controller. Figure 10 shows a design to accomplish this. One push pin on each side of the base can be removed so that the sensor can be folded down for easy packing (circled pins in Figure 10).

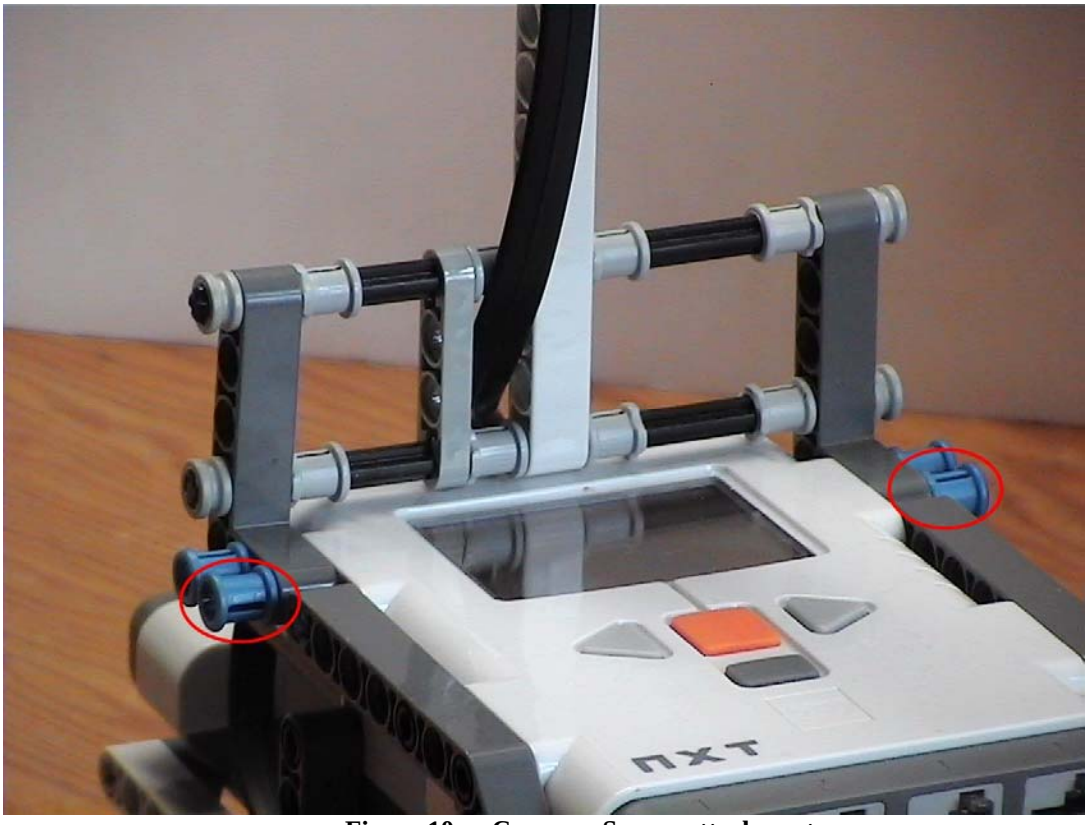

Figure 10 -- Compass Sensor attachment