ABSTRACT

A sensor is used to track the distance of objects that may be in front of the cane. The sensor outputs an analog voltage signal that represents how far it senses the nearest obstruction. The sensor is placed in front of an object at various distances, and its voltage output is output to a microcontroller, which converts the voltage to be analyzed for verification of operation.

THEORY

The LV-MaxSonar EZ2 sonar sensor outputs a voltage that represents the distance at which it's sensing an obstruction. The sensitivity of this output signal is about 9.8 mV/in with a power supply of 5 V. Using this specification, the output voltage of the sensor has to be divided by 9.8 mV to determine the distance at which the sensor is sensing an object.

RESULTS

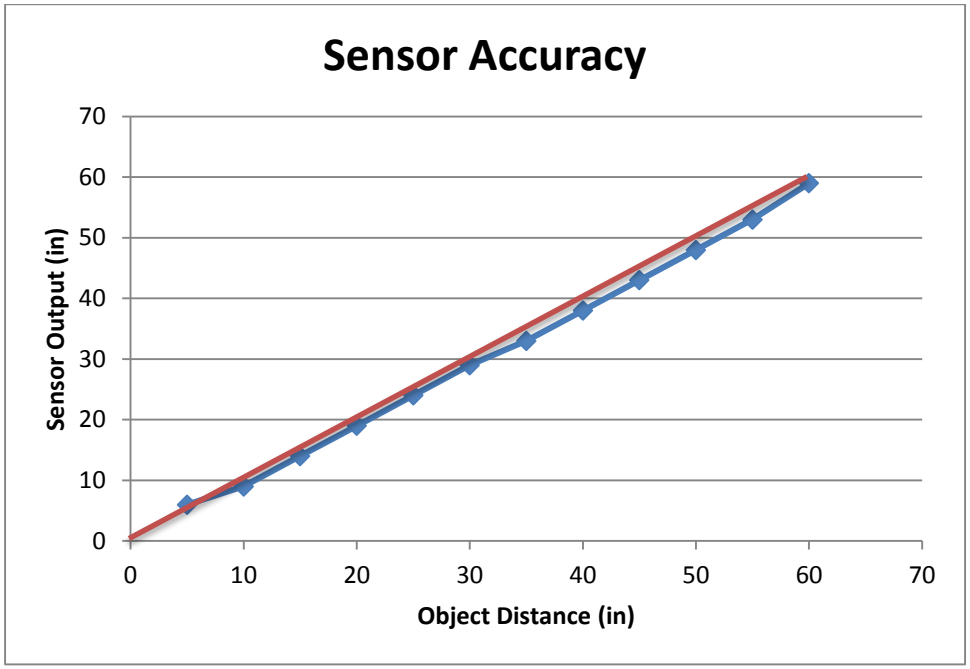

Figure 1. Sensor Output, next to ideal output

CONCLUSION

The output of the sensor is very accurate and is more than sufficient for the application of the SmartCane. Most often, the reading from the sensor was off by only one inch. The results of this test are satisfactory and in congruence with expected results.

Key Hardware Used:

http://www.maxbotix.com/Ultrasonic_Sensors/MB1020.htm