CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)	Project Number
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Project Title

Map It Right!

Abstract

Objectives/Goals

The motive of this project is to create an autonomous robot using the LIDARLite V3 sensor to produce a 2D map of an uncharted area. A secondary application enables the robot to measure distances.

Methods/Materials

The robot was constructed from a LIDARLite V3 Sensor, AX-12A Servo, Arduino Board, Breadboard, and two KR-250 Servos. Downloaded a software called Arduino to program. The robot was programmed to map out an area and then compared to the actual room

Results

The first several trials did not generate an accurate map as the corners were sharp and the lines were crooked. Changing the different connections on the robot and modifying the code produced accurate results for the ten rooms tested.

Conclusions/Discussion

The implications of my results may be used in numerous situations, specifically the military, which helps soldiers have a plan before going in an unknown area. I created my robot to have the ability use various sensors for many other missions, such as locating radiation hotspots in a nuclear power plant or locating rust on a bridge.

Summary Statement

I created an autonomous robot to map out an unknown room or area using a LIDARLite V3 sensor.

Help Received

My older brother recommended I learn the Extended Kalmin Filter (EKF) to help with my calculations and my teacher reviewed my results.

Ap2/18