Self-Driving Car
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Project Overview:
This project is to heighten the students awareness of the futuristic research conducted at the collegiate level. They will be encouraged to think outside the box to solve some of the problems currently being worked on to make self-driving cars safe for all. This will be accomplished through research, discussions, and coding arrays to get a concept of data manipulation. This project will also reinforce the concepts of being object-oriented in huge projects and coming together through collaboration.

Curricular Requirements:
- SC.912.CS.CS.1.4 - Represent and understand natural phenomena using modeling and simulation.
- SC.35.CS-CS.2.2 - Describe how computational thinking can be used to solve real life issues in science and engineering.
- ITEEA S3 - Students will develop an understanding of the relationship among technologies and the connections between technology and other fields of study.
- ITEEA S10 - Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.
- NGSS Engineering HS-ETS1 Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

Hardware and Software Tools:
- Machine Learning
- Neural Networks
- Deep Learning
- Neural Networks with Deep Learning
- LIDAR System
- GPS Arrays
- Sensors

Current Safety Needs!

Main Self-Driving Car Activity:

Python Code Manipulation:
- Slowing the car will be demonstrated
- Change Code to Speed the car up
- Analyze Data to detect anomalies
- Change the code to be object-oriented

Summary:
- With all of the research coming together, the cost is still outside the range of the average driver. With the Lidar System, sensors, radars, and GPS Array system, the current cost is $320,000.
- Using all of this information and using just a smartphone, UCF was able to drive a car without a human driver. This brings the cost down to the car plus $500.00 + the car.

Related Activity
Lung Cancer Detection
Use edge detection to get the "gist" (gradient-information stitching) of the surrounding features in reference to the cancer node.