

Parking Monitor , 3/18/2013

“ By Philip and Wesley Murar”

Problem Definition

- Due to the daily hassle of trying to find a parking spot, an investigation of a sensor to monitor the availability of parking spots will be researched.
- Scope:
- Goals:
 - Create a programmable prototype sensor , that uses either security camera analysis, infrared, and/or ultrasonic concepts.
 - **Ultimate Goal: Have a marketable sensor that could be applied to the Clark College parking lot.**
 - The development of a sensor system to monitor every parking spot in the various parking lots.
 - Have that sensor be connected to a register that depicts the availability of the parking spots via the sensor.
- Schedule:
- Programmable sensor by 04/12/2013
 - Depending on the effectiveness of the prototype sensor, the ultimate goal should be met within a two-month span.
- Resources
- Clark College Engineering Lab
 - Personal Funds to buy supplies

Solution Specifications

- Solution Block Diagram



- Operation Description
 - The parking monitor process begins with the sensory of a parked car, after the parked car is detected the signal is sent to the microprocessor which in turn goes to a storage database of the parking lot inventory. Once the parking lot is filled with cars, the storage space will be full for the parking lot and display the results of detection.
- Component Specifications
 - Parallax PING))) Ultrasonic Distance Sensor (Model 28015)
 - Arduino UNO Board
 - Xbee Shield w/adapter and wireless transmitter

Competitive Analysis

- Competitors
- Portland Airport
- Park-Zone Company
 - In both cases, each of these sensors use ultrasonic/metal detectors giving a great starting point in sensor identification.
 - There isn't too much information concerning camera identification, where although that eliminates some competition, it is also difficult being the pioneer in this subject makes the establishment of this type of system difficult.

Potential Applications

- Phone application that goes along with the Clark College website.
- Provides a system that enhances the parking process, and allows people to more efficient in terms of going to a parking lot with available spots and getting to class on time.

Future Improvement Ideas

- Create a storage database that will allow for easy usage, and easy access.
- Have a map of all the parking lots identifying exactly which parking spots are currently accessible.

