

EEL 4914 Senior Design

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Project Abstract

Title: Viva La Bumper

Team Name: Nameless

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Project Abstract:

Our project, Viva La Bumper, will save front bumpers of many cars from damage during parking. A distance sensor will descend from behind the front bumper of the car when a microprocessor determines the vehicle is parking. This determination is based upon various conditions being met. Once activated, the sensor will measure the distance from the bumper to the concrete parking stop block in front of it. The information will be sent to a LCD screen inside the car to tell the driver how much farther they can pull forward without hitting the concrete. During normal driving conditions, a servo motor will retract the sensor into the bumper for safe storage and a discrete appearance.

Introduction:

This project will create a universal device that can be outfitted on any vehicle. The concept of the device was motivated by necessity more than anything else. The front of my car is very low to the ground, and my bumper is constantly hitting the concrete blocks or curbs in parking spaces. We wish to eliminate this problem with our project.

With this product, the driver will always know how far away from the curb they are during the parking process. This project will take the guess work out of parking.

Technical Objectives:

We want our product to be smart enough to tell when the driver is parking. When it realizes the car is parking, the distance away from the concrete parking block is relayed to the driver inside the car.

The first technical challenge is programming the microprocessor to think the car is parking when it analyses certain inputs. So far, we think the parking status inputs for the microprocessor should be speed, acceleration and brake application.

The second challenge is for the microprocessor to activate the servo motor to drop the distance sensor below the bumper and activate the sonar to read the distance between it and the curb.

Next, the microprocessor should interpret the data from the sensor and print the distance on a LCD inside the car.

The following diagram depicts the components involved in the project



