SMART PARKING MOBILE

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ABSTRACT

The Smart Parking Mobile is an autonomous car which is designed to move onto a parking space and park itself without the user's intervention. The car is basically made to move forward slowly in a place where there are car's parking horizontally until it finds a car parking space. Then it measures the length of the parking space and if the space is long enough to accommodate it, and then move forward again until it detects another car parking in front then reverse back to park at full lock. It then moves forward while in the parking space to ensure the distance between parking cars at the back to its rear end is equal to the distance between its front end and the other front parking car.

This Smart Parking Mobile makes use of IR SHARP sensors to detect the availability of the parking space and motors for manoeuvred it. Two IR sensors, one at the rear end and one at the front are used to detect the space of the parking and they rotate to detect the other parking car at the back and its front when reversing to park. Four motors in the mould of three servo motors and a single brushless DC motor are also used. The brushless DC motor used is controlled by two relays to move the car either in the forward or backward direction. An Optocoupler is connected to a MOSFET which is connected to the DC motor for speed control of the car using Pulse Width Modulation signal (PWM) generated by the PIC.

The other three servos motor: two used to move the IR sensors in different angles of direction for the purpose of parking space and object detection and the last one used to control the steering front wheels of the car. A PIC16F873A is used as the control unit for this project programmed using c language with LCD screen to show different positions of the car.

Keywords: *IR SHARP sensor, PIC16F873A, LCD, MOSFET, Optocoupler, PWM, brushless DC.*