AUTOMATIC PARKING SYSTEM

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ABSTRACT

Nowadays, automatic parking system is essential at all parking areas. It can be found in parking areas around the big city. The purpose of the automatic parking system is to provide convenience and shorten the time users need to look for free parking slots. It may also prevent users from entering the car park when it is full.

For convenience the automatic parking system is able to indicate to the users where parking slots are available and also to guide the car to the available parking slot. The core component used in this project is the microcontroller PIC16F877A which functions as the brain to control all the circuits and components. The parking system in the parking area will first detect the availability of the parking slots. After that, LEDs will light up to show the status of the parking slots. The number of free parking slots for each zone in the parking area will be shown via seven segments. The arrow LEDs placed nearby the seven segments will operate depending on the number displayed on the seven segments. Arrow LEDs will switch off when the particular zone is full. The number of free parking slots at each zone will be displayed on LCD when users enter the parking area. When free parking slots are detected, a signal will be sent via RF transmitter to the car to inform and guide the car to the free parking slot. When the car enters the parking area, it will detect the signal from the transmitter in the parking area to get the latest information on available parking slots. After signal is received, the car will move automatically to the desired destination. To design a car which is able to reach the parking slot smoothly, additional sensors must be installed to prevent the car from crashing into obstacles at both sides and front of the car.

This report begins with background and objectives. After that, it will be followed by block diagrams of the parking system and automatic car and also explains briefly on the overall operation of the system. Subsequently, in literature review, there will be descriptions on current technology which is able to be implemented for this project and the comparison between components. Methodology will explained both hardware and software design used in this project. Testing and results will be shown and explained with pictures. After that, troubleshooting and skills used to solve the problem is discussed. Finally, the outcome of the project is concluded.

Keywords: Automatic Parking System, Microcontroller, LEDs, Seven Segments, LCD, RF transmitter