Software Requirements Specification

for

<Parking Management System>

Version 1.0 approved

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Introduction:

Purpose: The purpose of this ‘Parking Management system’ is to provide an alternative solution to the clients an innovative parking facility. Since most of the public places do not have a proper parking facility, we intend to provide a solution for this problem by accommodating a proper parking space along with security devices to monitor the movement of vehicles. Number plates will be recognized for maintaining a list of vehicles that have been entered or exist in a parking space.

Documentation Convention: The IEEE template for System Requirement Specification Documents was used to construct this document.

Intended Audience and Reading Suggestions:

Developers: to ensure that they are working on the proper project that meets the requirements outlined in this document.

Testers: to create an exact list of the features and functionalities that must respond in accordance with the requirements and diagrams given.

Users: to become acquainted with the project's concept and to offer additional improvements that would make it more functional. Any organization, institution or industry’s stakeholder might need to have a read.

Scope: A vehicle parking management system is an automated system that processes data at a rapid rate and in a methodical manner. Parking is becoming more and more of a need. This system's development is extremely beneficial in this industry. This system can be sold to any company. They may effortlessly keep track of their records by using our system. Every aspect of parking management is covered by our system. Vehicle parking management systems will be in high demand in the future because of rapid urbanization every organization would be needing this system to provide an efficient method of parking in their premises.

References:

<https://pdfcookie.com/documents/parking-management-system-srs-ex2045467pl3>

<https://www.academia.edu/36410792/Parking_Management_System_Parking_Management_System>

<https://www.cse.msu.edu/~schmi703/Documents/SRSDocumentv2.pdf>

Overall Description

Product Perspective: This product is specially made to automate the parking system. It is a subsystem of a car's control system that assists the driver in automatically parking the vehicle. To achieve the goal of automatically parking the car throughout the operation, it will interface with many subsystems and hardware. The hardware and subsystems include the powertrain management subsystem, braking control subsystem, steering control subsystem, vehicle position subsystem, and various auxiliary systems.

Product Function: Vehicle positioning, cruise control, and multidirectional scanning are all features of the system. When choosing features, the parking system should have the ability to find a parking spot based on parking preferences, compute the vehicle's parking trajectory, auto park, cancel/abort parking, and identify obstacles or approaching pedestrians. This system can upgrade its controlling software and can also interact with the driver via the HMI on a software level. Along with that, it will save the driver’s data too like the number plate of the car and the image of the driver.

User Classes and Characteristics:

To implement the system, different classes were made according to requirements.

User: The driver of the vehicle can be of different categories. Like the ones who visit that parking space regularly, or those who are visiting that free slot of space for the very first time.

The driver must have a driving license and must have an idea of an automated parking system. The driver must be alert in case of emergy situations where one has to exit quickly as possible.

Operating Environment: It will run on

* Window 8, 10, 11
* Linux
* Mac Os

Design and Implementation Constraints:

Different governmental rules govern parking system testing and functionality.

The vehicle is equipped with sensors and cameras.

The sensors and cameras are in the right place.

The touch screen is precise and sensitive.

The display on the screen is in good working order.

The brakes on your car are in good working order.

To meet the trajectory, the connection to Pre-collision System is secure and open.

The steering wheel is completely free of any obstructions.

The connection to PCS is safe and open, allowing you to steer as needed to stay on track.

Assumption and Dependencies:

* The hardware is compatible with the vehicle.
* The driver can determine whether the parking space found is suitable for parking.
* The parking class's search function locates valid parking spots.
* Perpendicular parking requires a vehicle that is less than 8.5 feet wide.
* Side by side parking spaces is available that is 2 times the length of the car.
* Human-machine interface is quick to respond and precise.
* The sensors are responsive, accurate, and precisely aligned.
* The camera vision is clear and correctly oriented.