A Project/Dissertation Review-1 Report

on

PARKING LOT MANAGEMENT SYSTEM USING IOT Or M.L

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ABSTRACT

Rise in population the demand for personal vehicles and parking area is increasing. Finding a parking space is one of the major issues which we face on a daily basis but we just ignore it. Keeping the vehicles parked anywhere on road is a matter of tension some times when we want to enjoy with our families or friends, or we are going for long trips, or if it is a business meeting in which we are travelling with our vehicle. For most of the working population in India, Sunday is an off day and we prefer enjoyment but parking becomes the issue when it comes to malls, amusement parks, beach or movie theatres. This study aims to determine how to handle this issue thus we can go somewhere freely without the tension of parking. Every problem has its solution all we just need to apply our brain with a little touch of technology. Park Here 24 is a website which is one of the solutions for this problem. Just with a single touch, we can choose our parking space wherever we want. To test this hypothesis structured interviews were conducted with 25 participants and results were positive. For this, we have to make a chain of owners who will be providing parking areas available at their homes, malls, movie theatres, empty plots, etc. And customer just has to visit the website choose their destination, choose their parking area and pay that's all and we are done. Our analysis shows a strong correlation between our project and the general public. We conclude that the parking issue can be solved to some extent with this idea. The exact model of Park Here 24 can bring revolution in the countries like India where population is a huge issue. Cities like Delhi, Bangalore are considered as most populated as well as these cities have highest number of urban populations which holds 2 and 4-wheelers. According to our idea we are going to build a web application which will work as the intermediator between the normal public and the service provide that is our team. In the

website there will be three products available that is quick parking, list your parking, special parking or valet parking. In quick parking option the location will be tracked using GPS and then nearby parking option will be displayed on the screen which costumer can book anytime anywhere or costumer can reach the destination and pay at the point if the parking available so only additional exclusive feature over here is pre booking which can be only done by the web application. Second is list your parking in which if a customer is planning to have outing on some specific date or meeting or any event in which the date is fixed, he/she can pre book the parking which will award them special discount with special service. At last valet parking, Valet parking is luxurious service which we are providing to costumer in which if a customer is facing any difficulty in reaching the parking destination our trust worthy valet person will park the vehicle. So overall system will crystal clear to costumer with all terms and conditions. Now coming to the technical part front end will be developed in languages like HTML, CSS and JavaScript which will be attended by the costumer where as the API will be used for connecting frontend with backend, our backend language will be python which will be under our team and four data base we will be using MongoDB. Further in future we are planning to do some additions like using IOT devices in parking lots which will make our work efficient and more crystal clear. This overall idea is just not profitable for public and us in fact it will increase the number of employments. Park Here 24 is an innovation that can bring revolution in our lives.

Table of Contents

List of Figures

1. INTRODUCTION

1.1. Introduction about Project:

In this project a proper chain of customer and supplier will form in which the team will tie up with owners of private residences, malls, movie theatres and public attraction sites. A pre booking option will be provided in which the customer can book on the spot parking lot after reaching the destination or they can reach there and book an area if a slot is available. If a customer is moving out of town with private vehicle or there is plan for outing there is option available called list your parking in which booking has to been done of the desired town or destination where they are moving whenever this will reward them special discount with services and our fancy service that is valet service will help costumer in parking there vehicle from the desired stuck location to the parking lot assigned. Facilities like quick parking lot, Car safety guarantee and safe transaction will be available in the website.

1.2. LITERATURE REVIEW:

"A Large-Scale Urban Vehicular Network Framework for Parking Lot in Smart Cities [1]"

Vehicular Network Framework was released in 2019 by Heng Li, Yonghe Liu, Zheng Qin, Huigui Rong and Qin Lin. This report focuses on the car parking system in smart cities where the population is high. The cities like Changsha in China where 8900 private cars are available face the parking issue where they have to park, they're on urban roads due to less parking areas available. In this paper, firstly, on the basis, the new purpose of network topology is simplified which improves the network stability. Secondly, the external network scheduling is reducing the system overhead on the large-scale vehicular DTN node. Based on this characteristic traffic routing and parking management. By focusing on the stable places and data exchange among parked vehicles and IoT devices, LUV provides more stable connections, more predictable node statuses and simpler network topology which can reduce the system complexity.

"Cost and Time-Integrated Road-to-Park Cruising Prevention Scheme in Smart Transportation [2]"

Cost and Time released in 2019 by Faan Hei Hung, Kim-Fung Tsang, Chung Kit Wu, Yang Wei, Yucheng Liu and Wang Hao. This report describes the car seriousness parking issues in addition to time and money management issues. In short, here it is noted that the vehicle crushing prevention scheme has the deficiencies like vehicle queueing at intersection road is ignored, no consideration of both the time and cost simultaneously in the car park hunting process and driver's guidance-to-parking information is ignored. This paper covered all the issues and proposed the plan of new queuing model and resources model development, new parking model development for holistic optimization of time and cost, Performance measurement with newly defined indicators.

"Faster parking and less cruise for public parking spot discovery: Modelling and analysis based on Timed Petri Nets [3]"

Timed Petri Nets was released in 2016 by Xiaolu Zhang, Demin Li, Jiacun Wang, Guanglin Zhang and Xiaoyin Jiang. This report major concerns over driver's privacy based on the assumption that inter-vehicular communication through public vehicle availability. This paper represents minimal communication between vehicles and parking service providers and helps vehicles to get parked with the least amount of time. Considering the new parking model which considers the parking time, and amount of time spent in the parking lot waiting for an unoccupied spot. The proposed approach is low-cost while modelling with TPNs brings several noticeable benefits: it supports simulation directly; it is a mathematical model so that one can perform timeliness analysis based on the model; it is scalable and refined. Based on the proposed model, This paper demonstrates the real-time traffic and the real-time average parking time of a parking lot affect drivers' choice.

"Impacts of the urban parking system on cruising traffic and policy development: the case of Zurich downtown area, Switzerland [4]"

Cruising traffic and policy development was released in 2017 by Cao, J., Menendez, M. & Waraich, R. In this paper study of area within the city Zurich, Switzerland is done using the recently proposed macroscopic model to analyse the current conditions of cruising-for-model, inspired by a bottleneck model, reproduces the dynamics of both, the parking and the traffic system, as well as their interactions. This report concerns parking issues that impact delays on the overall traffic stream, which involves not only the searching traffic but also the through traffic. It is shown that the macroscopic parking model could, additionally, incorporate the data generated by agent-based models, cooperatively producing valid and trustworthy results of cruising estimations, while requiring comparatively few data inputs and relatively low computational costs.

"Parking Lot Allocation Based on Matching Theory using Prediction-based Optimal Vehicle Routing [5]"

Parking Lot Allocation was released in 2019 by T. Nakazato and T. Namerikawa. In this paper machine learning model is used for detecting the free area for parking. In brief at the time parking, the driver should know the optimal route and its time from current location to each parking lot. In this paper, Smart Parking Systems consider the road condition in the traffic network and present the driver time by the optimal route

from the driver's current location to each parking lot. Then, the parking lot allocation is determined by using matching theory considering both the driver's preference including information of optimal route and its time and the parking lot manager's preference. Finally, the effectiveness is confirmed by numerical simulations and results of parking lot allocation using optimal vehicle routing.

2. Feasibility and Scope/Objective

2.1. FEASIBILITY ANALYSIS:

- As already demonstrated in the literature review, Vehicle parking lot management systems have been already implemented in the past (reference 1 to 5).
- To solve the unique problem that is faced, articulated in problem formation, we are going to use really basic objects.
- The codes will be written in basic language like HTML, CSS, JS and for backend data management we are going to use SQL or mongo DB. The codes will be hosted in GitHub.
- This project is cost efficient both before and after execution. Surveys will be done which will be all online based that will not charge anything. After the product will be launched the ratings will be according to surveys.
- Product management will be all computer based; full time service will be provided as product will be auto generated at the same time backend team will be providing 24*7 service.
- The time limit of 2-3 months is required for proper testing and execution. Surveys and testing are the part where time is required more.

2.2. PROBLEM FORMATION:

Majority of studies related to vehicle parking area management are implemented in foreign countries in India; there is no such parking management system developed yet. According to our recent research there are 5 websites available in google but they aren't in use much. So firstly, we are focusing on Metropolitan cities where the number of private and public vehicles are high in number. In India there are approximately 21 million private vehicles. In most public attraction sites parking is one of the major issues. Wastage of time, money and fuel is something almost all of us ignore while searching for a parking area.

REASON:

- Ignorance.
- Poor Parking Management.
- Increment of private vehicles.

3. Implementation & Testing

3.1. TOOLS REQUIRED:

HARDWARE: COMPUTER SYSTEM.

LANGUAGES: HTML, CSS, JAVA SCRIPT, SQL (DATA BASE).

Codes will be hosted in GitHub.

3.2. IMPLEMENTATION:

Park Here 24 includes 4 parts front ends, survey, backend and execution. Reading the relevant literature and checking the feasibility of the project. Front end work and implementation of codes to detect the efficiency and accuracy of the product in the public point of view. Reviews from the selective public for understanding the demands of the public as well as the area. And working on the further front end of the website as well as covering the backend. At last, finishing the Backend and executing the complete project on GitHub and Survey on how the project is working.

3.3. ARCHITECTURE DIAGRAM:

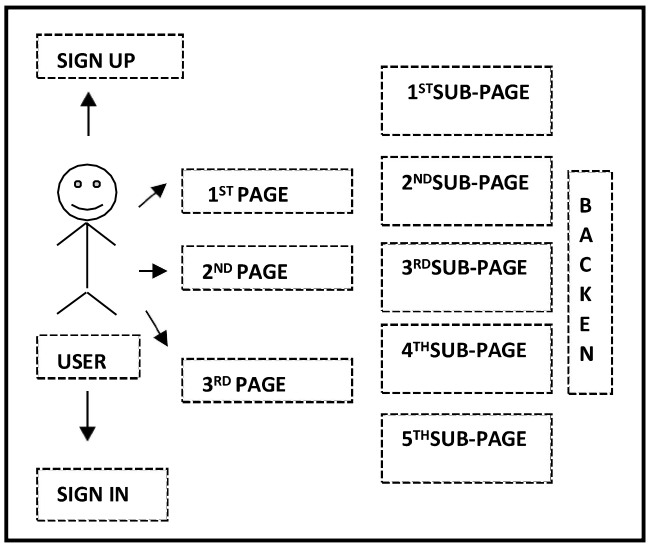

Fig 1. Architecture Diagram of Park Here 24.

FRONTEND PART AND BACKEND PART :

Working on the front end of the website as well as covering the backend.

4. REFERENCES

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