Park me pro

A PROJECT REPORT

Submitted By

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In partial fulfillment for the award of the degree

Of

BACHELOR OF ENGINEERING

In

COMPUTER ENGINEERING

Vadodara Institute of Engineering, Kotambi

Gujarat Technological University,Ahmedabad

DEC,2020

Vadodara Institute of Engineering, Kotambi

Computer Engineering

2020

CERTIFICATE

Date:

This is to certify that the project entitled **"Park me pro"** has been carried out by ***DESAI DHRUV (170800107015) LAD DHRUVIN (170800107033) YADAV ABHISHEK (170800107111)*** under my guidance in fulfillment of the degree of Bachelor Of Engineering in Computer Engineering 7th Semester of Gujarat Technological University, Ahmedabad during the academic year 2020- 2021.

Guide:

Prof. Bhumi Shah(CE)
Asst. Professor in CE Department

Prof. Ajay Sinh Rathod
Head of the Department

DECLARATION OF ORIGINALITY

We hereby certify that I am the sole author of this report and that neither any part of this report nor the whole of the report has been submitted for a degree to any other University or Institution.

We certify that, to the best of our knowledge, the current report does not infringe upon anyone's copyright nor violate any proprietary rights and that any ideas, techniques, quotations, or any other material from the work of other people included in our report, published or otherwise, are fully acknowledged in accordance with the standard referencing practices. Furthermore, to the extent that i have included copyrighted material that surpasses the boundary of fair dealing within the meaning of the Indian Copyright owners to include such materials in the current report and have include copies of such copyright clearances to our appendix.

We declare that this is a true copy of report, including any final revisions, as approved by my report review committee.

We have checked write up of the present report using anti-plagiarism database and it is in allowable limit. Even though later on in case of any complaint pertaining of plagiarism, I am sole responsible for the same and I understand that as per UGC norms, University can even revoke Master of Engineering degree conferred to the student submitting this report.

Date:

Place:

Name of Student: **Signature of Students: -**

DESAI DHRUV (170800107015)

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YADAV ABHISHEK (170800107111)

Name of Guide: **Signature of guide: -**

Prof. Bhumi Shah

INDEX

ACKNOWLEDGEMENT

A project can never become a success with efforts of only one individual. It requires a group of people to complete a project at its best. And it is my team members and our guide Prof. Bhumi shah who have helped us to complete our project work and reports.

Working on this project "Park me pro" was a source of immense knowledge for us. We would like to express our sincere gratitude to Prof. Bhumi shah for his guidance and valuable support throughout the course of this project work.

We acknowledge with a deep sense of gratitude, the encouragement, and inspiration received from our faculty members and colleagues.

DESAI DHRUV (170800107015)

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YADAV ABHISHEK (170800107111)

7th Sem B.E (COMPUTER ENGINEERING)

ABSTRACT

Today one of the most common problem is over crowding and traffic, and one of the reason is bad parking facilities. As the world population increases and also modern world have minimum capital to bought the vehicle and machinery so this problem is not going to be solved without taking any prior steps toward it And to overcome this situation our real-time parking sport based application can be used to solve many problems.

Park me pro is an application that will provide the nearby location of the parking spot and real-time data of the the available and filled parking spots later it will also provide the facility of pre-booking the parking spot through a online payment gateway. Which will be helpful for the user to bypass the long queues and manage there time in more efficient work.

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

I. PROJECT SUMMARY

India is second highest population holding country in the world after China India has the second highest population but having the small area as compared to China, So the density of population is highest in India which arise number of problem related to Medical, Industrial, Defense and many more. India is also a developing country which is developed in last some decades with tremendous heights in all sectors that are mentioned above and also in many other sectors including Automobile and roadways.

As with this new problem are raised-lack of sufficient parking space because of families getting smaller and total number of motor vehicles exceeding in the total number of heads per family. The number of families with cars has become much more than what the country is able to manage. The situation is such that on any given working approximately **40%** of the roads in urban India are taken up for just parking of cars. This problem become more hectic as it is directly related to common people, but the solution to this problem can to be practically implemented in Indian premises so we are going to solve this problem with the software approach which does not require any of the high cost sensors or any big data producing hardware. Using our application we can provide precised parking location and there vehicle security with many other feature like excluding time limit, digital processing and payment.

1.1 PURPOSE

Due to less productive parking system and less precised system driving your vehicle is more complex. Park Me Pro! Is the solution to this problem, we are here to provide the solution of all parking problem in our country, We come up with the mobile application which provide the user a good parking location on the go. User can do searching of parking location also can occupy the parking location by giving his/her details and parking duration. This application can provide the most precise data on real-time for the user with the power of Firebase Database. User can also extend the time limit and have the facility of extension at same, not only this we here tried to put a advance network of Parking Warriors to provide the real-time data and security of parked system with mobile phones to provide updating in the real-time data which can be used by user for further usage.

1.2 SCOPE

Simplification: People can check the parking spot and make the pre booking of the parking spot using android application.

System can do:

- **Location:** It will give you the location of the parking sports.
- **Real Time Update:** Can update parking spots on very minute time spans.
- **Security:** Our Parking Warriors can provide security to parked vehicle.
- **Payment:** It will allow you to pre-book the parking sport online.
- **User Friendly:** User can get the location of the parking sport and can access it without any problem

.

System cannot do: The system cannot provide parking facilities for places which is not stored in our parking data.

1.3 TECHNOLOGY AND LITERATURE REVIEW

1.4Component	Technology and Tools
Code Behind	JAVA,KOTLIN
View Technology	Android
Database Server	SQL lite, FIREBASE

2. System Requirement Study

2.1 User Characteristics

1. **User:**
    - Registers online
    - Checks parking spot
    - Occupy parking spot
    - Can extend parking time
    - Can provide feedback of parking
2. **Parking Owners:**
    - Can register there parking spots
    - Can provide parking timings
    - Can appoint Parking Warriors
3. **Admin:**
    - Continuous increase the database
    - Updating in model
    - Fine tuning the model
    - Getting users feedback
    - Managing online payment

2.2 Hardware and Software Requirement

Software Requirements:

Application Software	:	Android ,Windows, Kotlin, Android Studio, JavaScript

Table 2.2.1: Software Requirement

Hardware Requirements:

Android Supporting Device
Windows OS

Table 2.2.2: Hardware Requirement

2.3 Constraints

2.3.1 Hardware Limitation

Hardware limitation is that the mobile device should support Android operating system and it should have a minimum of 1GB RAM in order to run the application smoothly.

2.3.2 Interface to other Applications

Software limitation is that mobile device should have an Android Version no less than 4.2. That is the application won't run on versions less than Android v4.2 JELLY BEAN.

2.3.3 Higher Order Language Requirement

Android, JavaScript and kotline are necessary for usage of backend processes. HTML5, CSS and JavaScript are necessary for building frontend of the application.(Web application development (Advance stages))

3. SYSTEM ANALYSIS

3.1 STUDY OF CURRENT SYSTEM

In the current system the person needs to ask for the parking spot to the local people for the location of the parking spot because the owner of the small parking spot cant afford to do the advertisement of there spot and as a result there spots remain empty which turns in loss for the owners.

3.2 PROBLEM AND WEEKNESS OF CURRENT SYSTEM

- The system and process is quite slow.
- If the person don't knows the local language he cant communicate with local person for help.
- Even there is need of the parking sports the remain empty.
- People cant pre-book there parking place.
- People find it difficult to find a parking spot.
- If a person is not a local person he wont know the exact charge of the spot which he was charged.

3.3 REQUIREMENT OF NEW SYSTEM

Requires the software and tool for getting the real-time parking location updates with specific empty parking spots(precise up to single spot).

¤ **User Requirements**

Easy to use

Fast and Reliable

Find the empty in the nearby area.

- **System Requirements**

  Android Supporting Devices.

  Windows supporting Devices.

3.4 FEASIBILITY STUDY

A feasibility study aims to objectively and rationally uncover the strengths and weaknesses of an existing business or proposed venture, opportunities and threats present in the natural environment, the resources required to carry through, and ultimately the prospects for success. In its simplest terms, the two criteria to judge feasibility are cost required and value to be attained.

3.4.1 Technical Feasibility

The main point of the feasibility study is to answer three questions:

1. Is this technically possible?
2. What is the best way to achieve it?
3. Are we the best people to do it?

The evaluation should include available technologies; required skills; deployment; ongoing management and support; integration into back end systems; scalability and future proofing.

- **System Platform:**

  Computer , Laptop , Tablets , Mobile, etc.

- **Development Tools:**

  Android Studio , kotline , HTML 5 and CSS adobe illustrator.

- **Software Platform:**

  Android 4.2+

3.4.2 Economical Feasibility

Low Budget

Ease to check

Online payment using UPI

3.4.3Behavioral Feasibility

Easy authentication

Fast and reliable

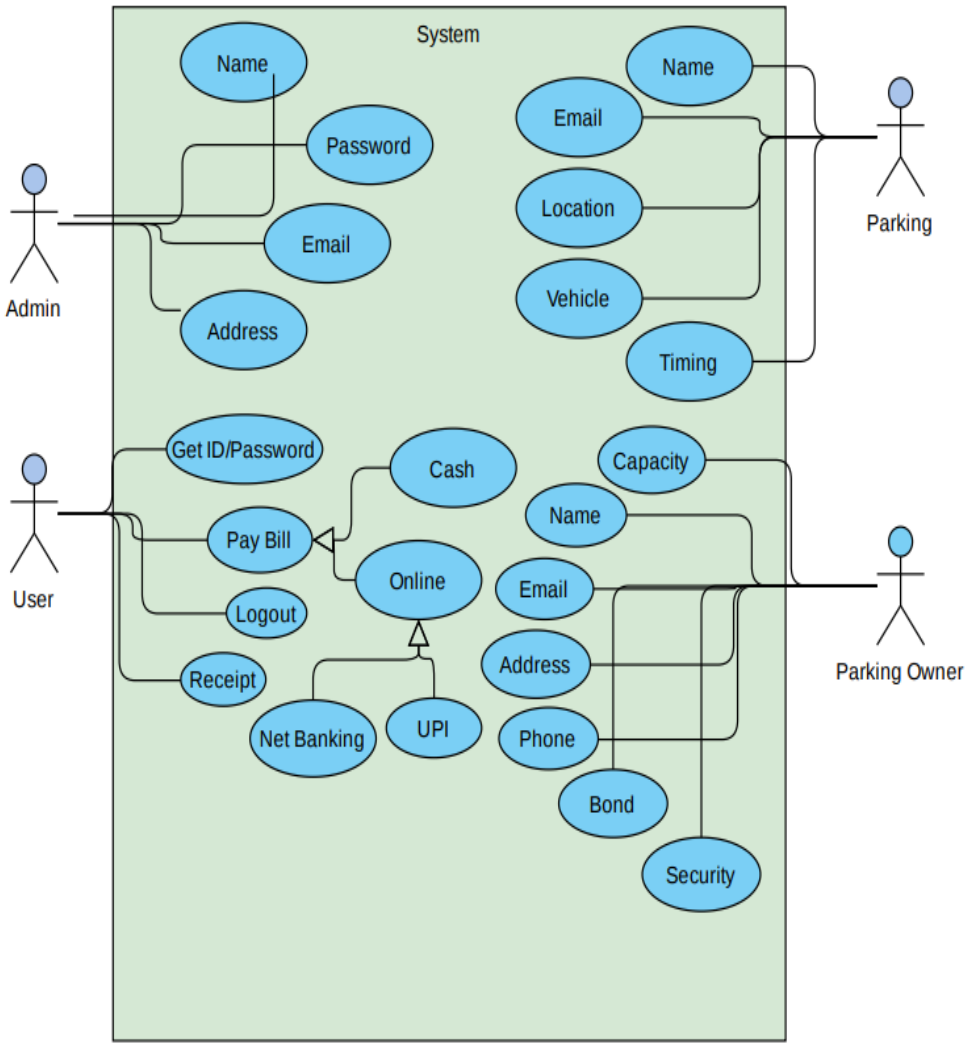
` 3.4.4 Implementation Feasibility

Ease to authentication

No need for extra devices

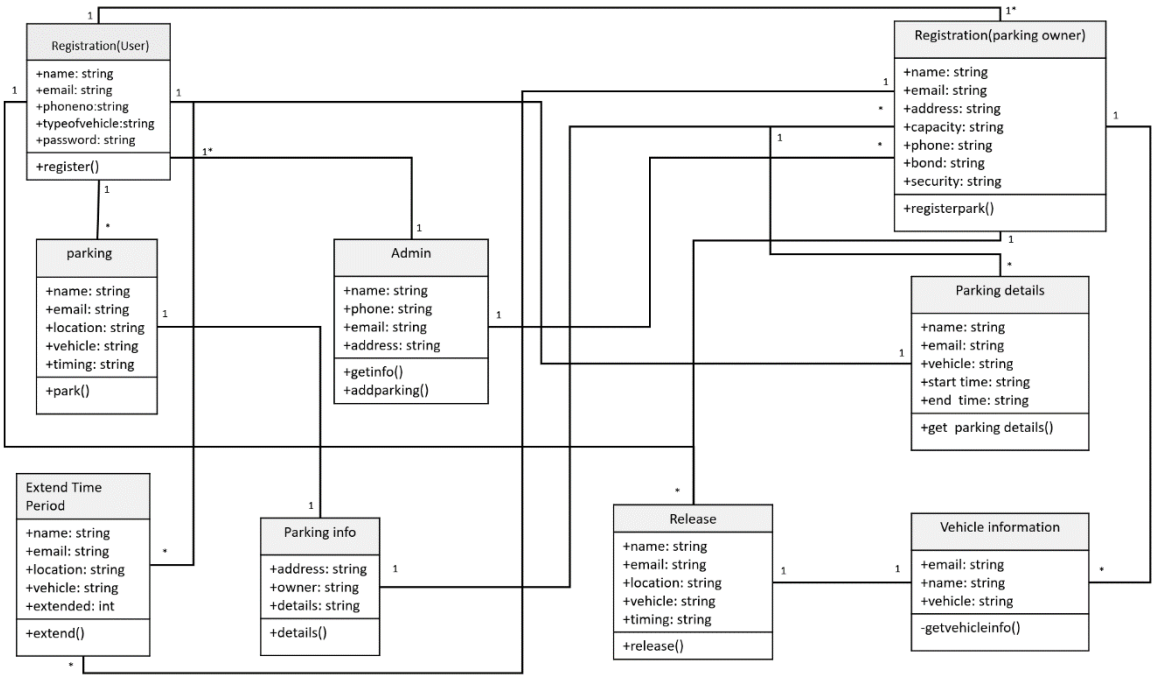
3.5 FUNCTIONS OF NEW SYSTEM

3.5.1 Use Case Model for system

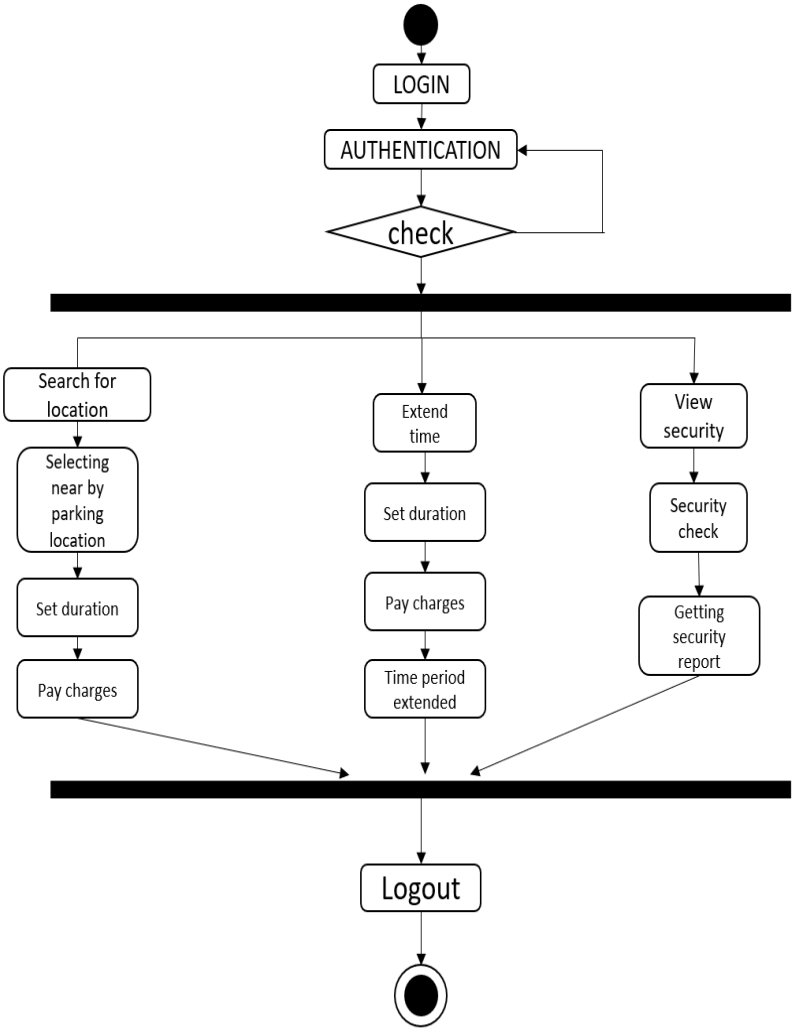


3.6 DATA MODELING

3.6.1 CLASS DIAGRAM



3.6.2 USER ACTIVITY DIAGRAM



3.7CONTROL FLOW DIAGRAM :

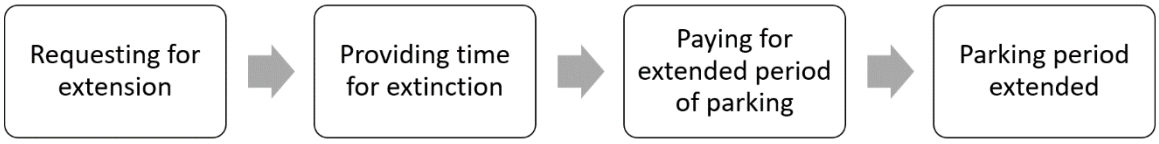
4.SYSTEM DESIGN

Flow of the program:

1. Login with the proper email and password method if you are new then first please register in the application with all proper information as it is going to be authenticated.
2. Getting Parking Location: User Can get the parking information by entering the location on the go.
3. Park and Pay: After getting the location and parking information user can enter the duration and get the parking spot by paying money for the same.
4. Extension: User can extend there time period of parking if the user required to do by same procedure

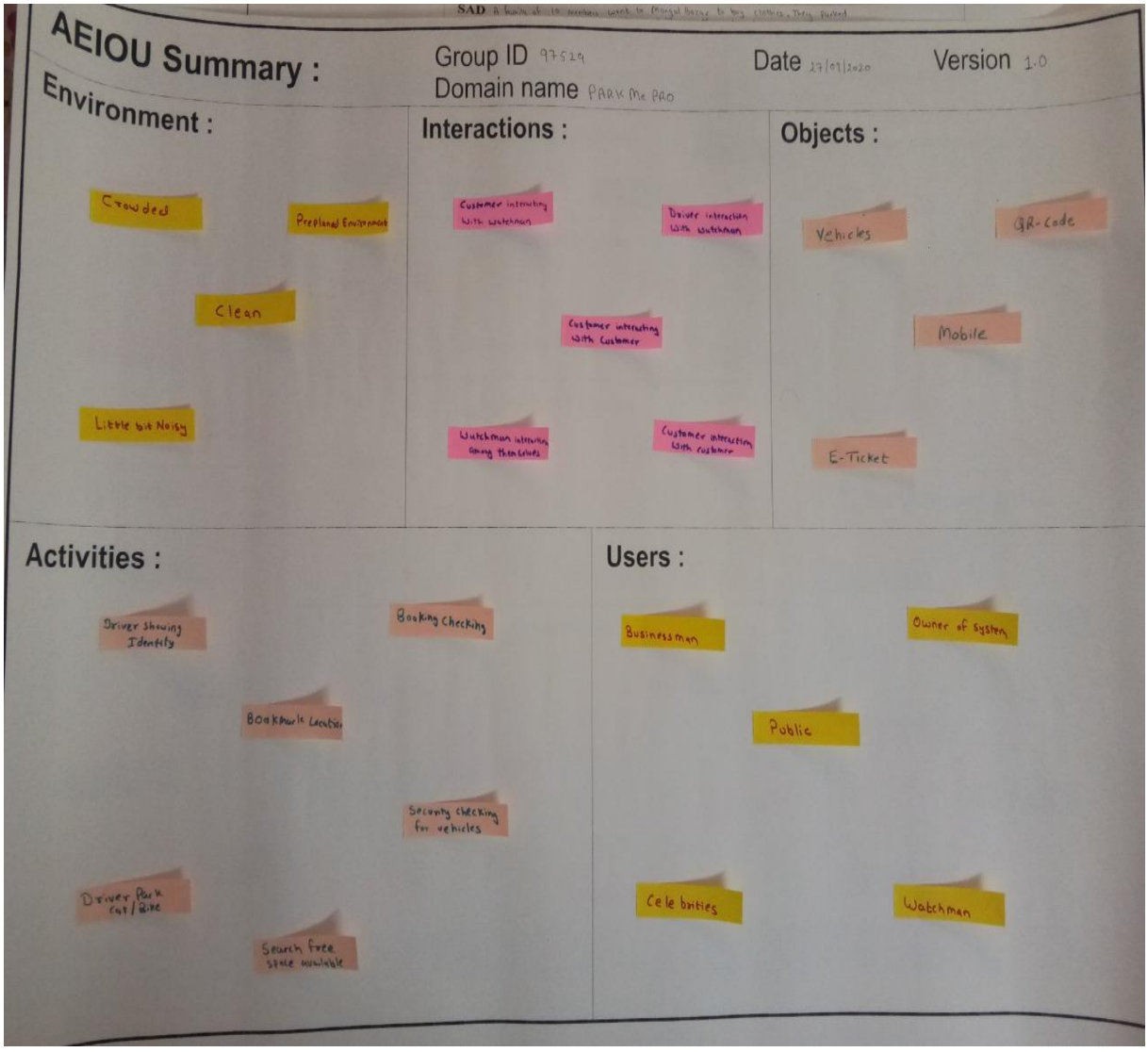
1. Process Model Of Users

2.Process Model For Parking Warriors

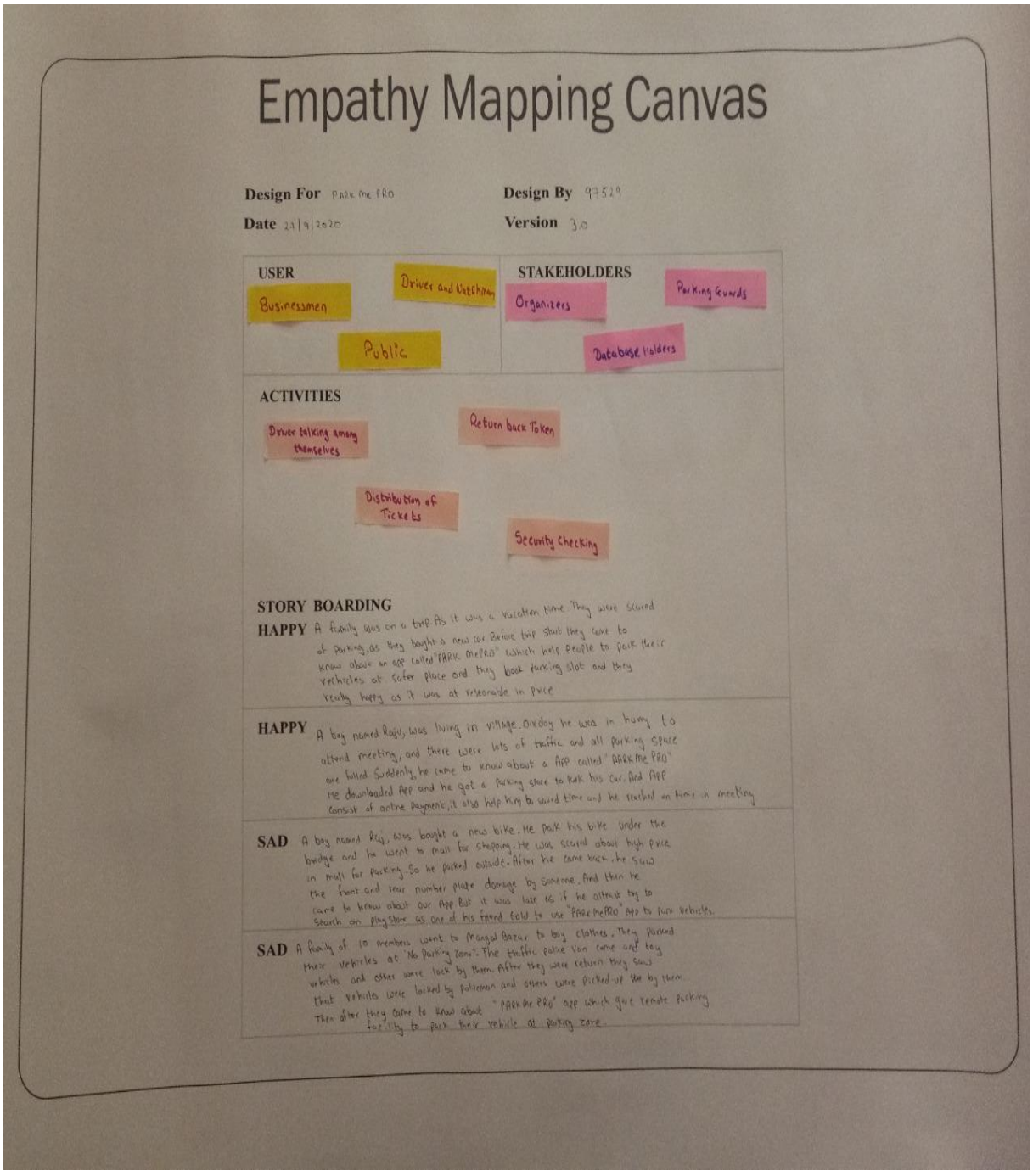


5.DESIGN ENGINEERING CANVAS

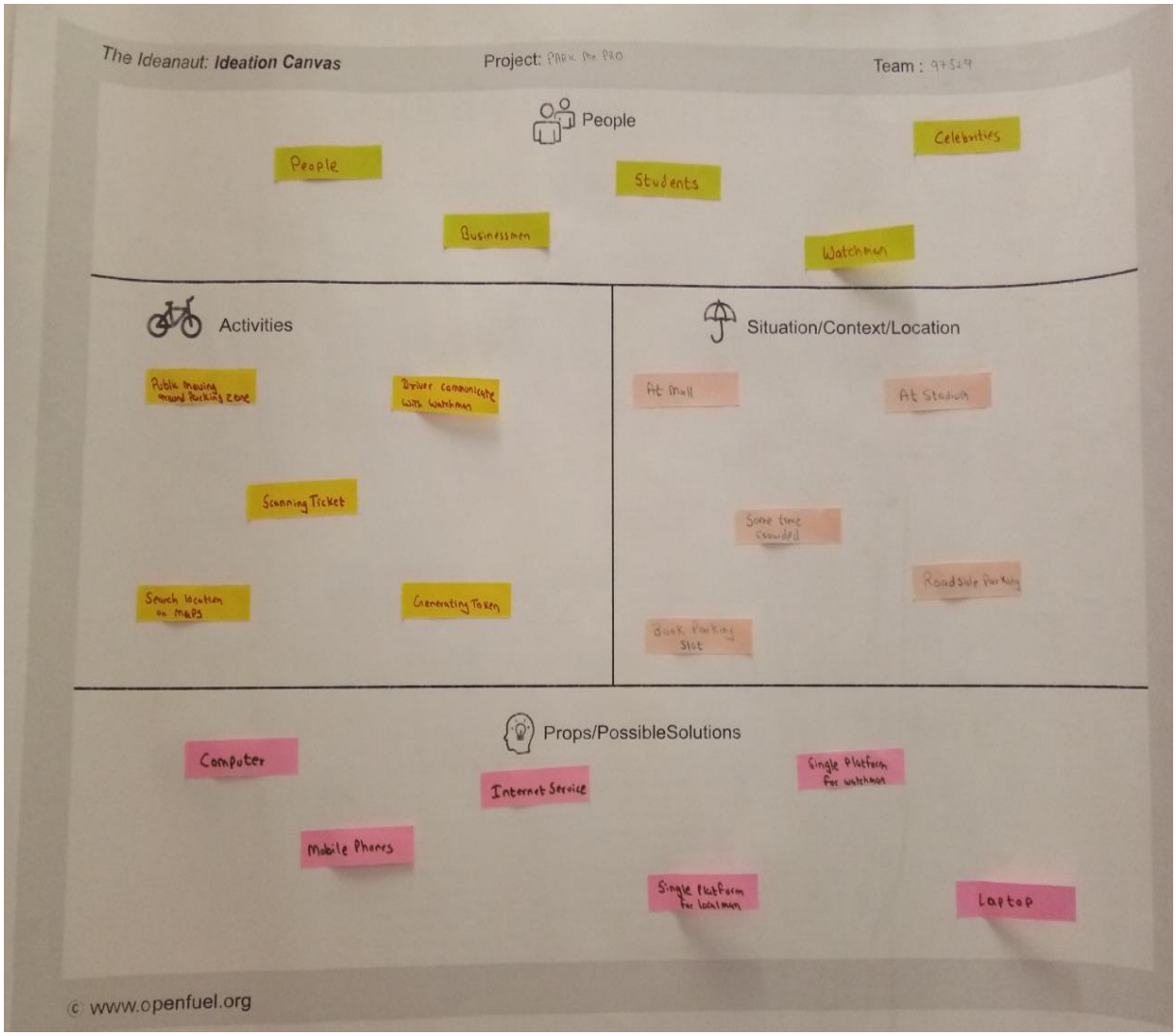
5.1 AEIOU Canvas:



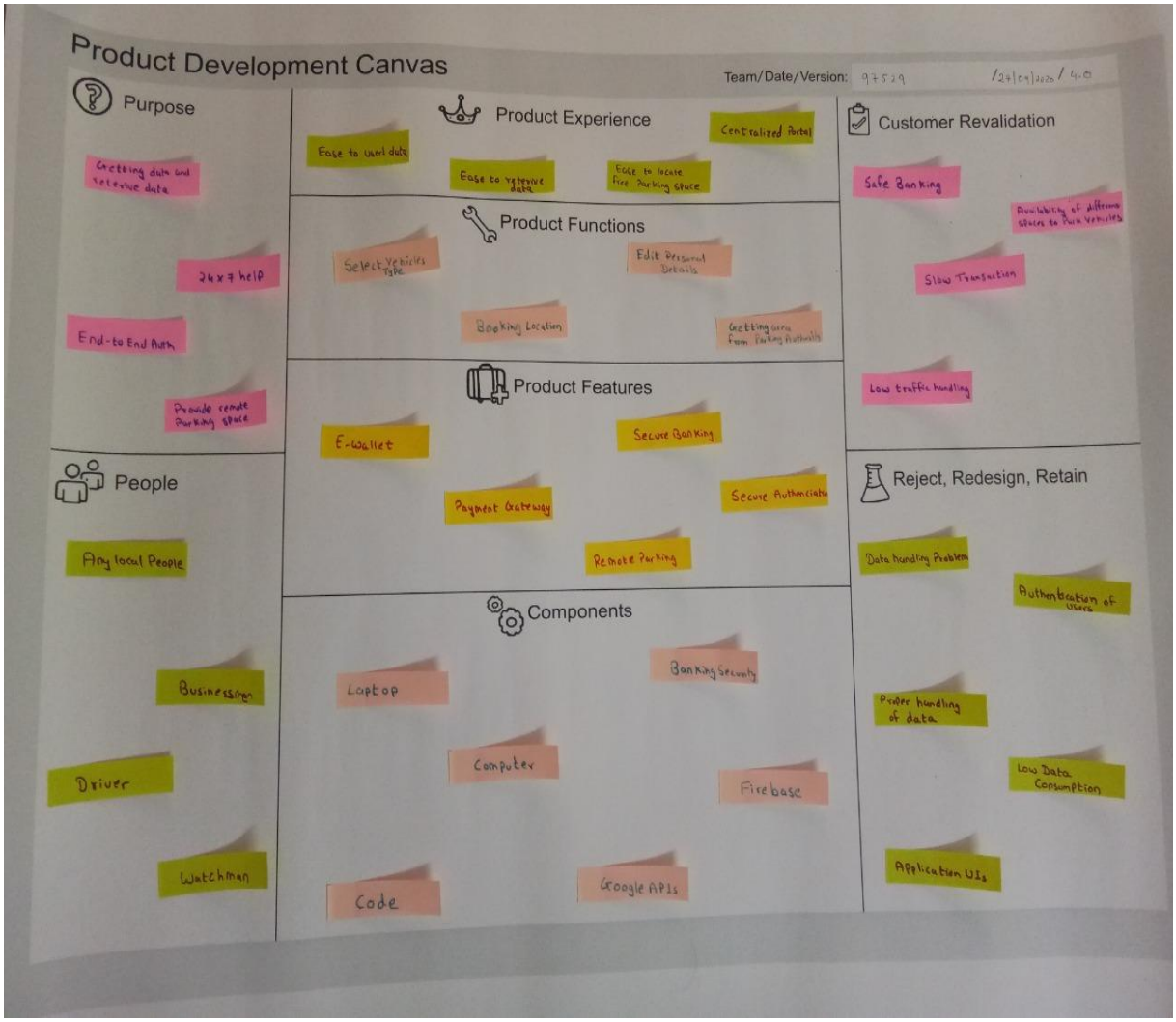
5.2 Empathy Mapping Canvas:



5.3 Ideation Canvas:



5.4 Product Development Canvas:



6. Periodic Progress Report

6.1 PPR 1:

PPR Details

Periodic Progess Report : First PPR

Project : Park Me Pro!

Status : Reviewed

1. What Progress you have made in the Project ?

we are done with our domain, project title and project title. Also we are done with the abstract of our project, we selected the technologies we are going to work on.

2. What challenge you have faced ?

we faced the challenges in defining the project flow means in which direction we have to go to make a good project.

3. What support you need ?

we need a guidance in defining a good project flow to complete our project.

4. Which literature you have referred ?

https://www.smartparking.com https://www.marketwatch.com/press-release/smart-parking-market-2020-by-advanced-technologies-growth-opportunities-key-players-revenue-emerging-trends-and-business-strategy-till-2025-2020-08-04

Document : Download

6.2 PPR 2:

PPR Details

Periodic Progess Report : Second PPR

Project : Park Me Pro!

Status : Reviewed

1. What Progress you have made in the Project ?

We are done with the proper flow diagram of the project ,also we are done with selecting our technologies on which we are going to work .

2. What challenge you have faced ?

The problem we are facing is that we have to make a good user interface that user can easily engage with also we have to make some decision on the working of the project that we are good to go with only application or we have to make the web also.

3. What support you need ?

We need a guidance on the some better ui design that we have the good user access and nice looking ui design which is simple also.

4. Which literature you have referred ?

https://dribbble.com/tags/parking_app https://github.com/NVIDIA-AI-IOT/deepstream_360_d_smart_parking_application

Document : Download

6.3 PPR 3:

PPR Details

Periodic Progess Report : Third PPR

Project : Park Me Pro!

Status : Reviewed

1. What Progress you have made in the Project ?

We have done with ppt presentations and we started with making hands-on work of our project we have started learning DOM of javascript for website development.

2. What challenge you have faced ?

We have faced problem in UI designing and model interfacing with different authentication mode.

3. What support you need ?

We need guidance on pattern designing and how we can deal with real time database .

4. Which literature you have referred ?

https://www.ukessays.com/essays/information-technology/literature-review-on-car-parking-system-information-technology-essay.php
https://www.researchgate.net/publication/313667380_Smart_Parking_System_Student_Activity_Project

Document : Download

6.4 PPR 4:

PPR Details

Periodic Progess Report : Forth PPR

Project : Park Me Pro!

Status : Reviewed

1. What Progress you have made in the Project ?

we have done with authentication with firebase and done with complete UI designing.

2. What challenge you have faced ?

We faced many challenges such as authentication with google and other platforms, linking google maps and how to set and update a real time data in database.

3. What support you need ?

We need guidance on pattern designing and how we to deal with the patent research and analysis report.

4. Which literature you have referred ?

https://www.researchgate.net/publication/313667380_Smart_Parking_System_Student_Activity_Project https://www.ukessays.com/essays/information-technology/literature-review-on-car-parking-system-information-technology-essay.php

Document : Download

7. PATENT SEARCH ANALYSIS REPORTS

7.1 PSAR 1:

GUJARAT TECHNOLOGICAL UNIVERSITY
(GTU)
INNOVATION COUNCIL (GIC)
Patent Search & Analysis Report
(PSAR)

Date of Submission : 16/09/2020

Dear **Yadav Abhishek Rajendraprasad,**

Studied Patent Number for generation of PSAR	:	**20BE7_170800107111_1**

PART 1: PATENT SEARCH DATABASE USED

1. Patent Search Database used	:	Google Patents
Web link of database	:	https://patents.google.com/
2. Keywords Used for Search	:	smart ,parking ,system
3. Search String Used	:	smart parking system
4. Number of Results/Hits getting	:	156

PART 2: BASIC DATA OF PATENTED INVENTION /BIBLIOGRAPHIC DATA

5. Category/ Field of Invention	:	
6. Invention is Related to/Class of Invention	:	database including an inventory of parking spaces
6 (a) : IPC class of the studied patent	:	H0474/00
7. Title of Invention	:	REAL-TIME PARKING AVAILABILITY SYSTEM
8. Patent No.	:	US 2013/0143536A1
9. Application Number	:	13/705,857
9 (a) : Web link of the studied patent	:	https://patents.google.com/patent/US20130143536A1/
10. Date of Filing/Application (DD/MM/YYYY)	:	Jun. 6, 2013
11. Priority Date (DD/MM/YYYY)	:	
12. Publication/Journal Number	:	
13. Publication Date (DD/MM/YYYY)	:	
14. First Filled Country : Albania	:	

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15. Also Published as

Sr.No	Country Where Filed	Application No./Patent No.
1		

16. Inventor/s Details.

Sr.No	Name of Inventor	Address/City/Country of Inventor
1	Carlo Filippo Ratti	US

17. Applicant/Assignee Details.

Sr.No	Name of Applicant/Assignee	Address/City/Country of Applicant
1	Massachusetts Institute of Technology	US

18. Applicant for Patent is : College

PART 3: TECHNICAL PART OF PATENTED INVENTION

19. Limitation of Prior Technology / Art

The parking lot identification and the self-patrolling options will be made possible only by a smart phone or a mobile cell phone.

20. Specific Problem Solved / Objective of Invention

problems relates to a real-time parking availability system and, more particularly, to a system that uses drivers to collect and transmit parking spot availability information.

21. Brief about Invention

Drivers have long complained about the endless search for parking—but what is seldom realized is how much this inconvenience extends beyond the limits of their car. Drivers circling endlessly to find a vacant spot turn be linked to many prominent problems in cities such as by affecting the quality of urban life by contributing to traffic congestion, pollution, increasing driving hazards (both for other drivers and for pedestrians), and a reduction of public space, A number of studies have recently attempted to quantify these inconveniences.

22. Key learning Points

The enhancement of time for more parking time directly by users is somethin that we didn't thought about.
The drivers are having the access to update the information for there need, this is a biggest threat that they can suffer is if driver doesn't follow the protocols for updating the information the unreliable data is filed and hence it doesn't give precise data.

23. Summary of Invention

The real-time parking availability system according to the invention includes a database having an inventory of parking spaces in a region such as a city including their location, size, and level of demand. A mobile phone is programmed for access lo the database to locate a vacant space, to pay for a requested time duration in the space, and to update the database to remove the space from the database of available parking spots for the requested time duration. In a preferred embodiment, the mobile phone includes an augmented reality application to identify whether a parked car has paid for the space and to identify how much time remains. The inventory of parking spaces may accommodate an automobile or a plurality of smaller vehicles such as bicycles.

24. Number of Claims : 6

25. Patent Status : Other (Abandoned)

26. How much this invention is related with your IDP/UDP?

< 70 %

27. Do you have any idea to do anything around the said invention to improve it? (Give short note in not more than 500 words)

The drivers are having the access to update the information for there need, this is a biggest threat that they can suffer is if driver doesn't follow

7.3 PSAR 2:

GUJARAT TECHNOLOGICAL UNIVERSITY
(GTU)
INNOVATION COUNCIL (GIC)
Patent Search & Analysis Report
(PSAR)

Date of Submission : 16/09/2020

Dear **Yadav Abhishek Rajendraprasad,**

Studied Patent Number for generation of PSAR	:	**20BE7_170800107111_2**

PART 1: PATENT SEARCH DATABASE USED

1. Patent Search Database used	:	Google Patents
Web link of database	:	https://patents.google.com/
2. Keywords Used for Search	:	real-time ,data ,parking ,system
3. Search String Used	:	real-time data parking system
4. Number of Results/Hits getting	:	313

PART 2: BASIC DATA OF PATENTED INVENTION /BIBLIOGRAPHIC DATA

5. Category/ Field of Invention	:	
6. Invention is Related to/Class of Invention	:	automatic parking method
6 (a) : IPC class of the studied patent	:	B60W 10 / 04
7. Title of Invention	:	AUTOMATIC PARKING SYSTEM AND AUTOMATIC PARKING METHOD
8. Patent No.	:	US 10 , 392 , 009 B2
9. Application Number	:	15 / 833 , 842
9 (a) : Web link of the studied patent	:	https://patents.google.com/patent/US10392009B2/
10. Date of Filing/Application (DD/MM/YYYY)	:	Aug . 27 , 2019
11. Priority Date (DD/MM/YYYY)	:	
12. Publication/Journal Number	:	
13. Publication Date (DD/MM/YYYY)	:	
14. First Filled Country : Albania	:	

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15. Also Published as

Sr.No	Country Where Filed	Application No./Patent No.
1		

16. Inventor/s Details.

Sr.No	Name of Inventor	Address/City/Country of Inventor
1	Yoon Soo KIM	US
2	Joo Woong Yang	US
3	Dae Joong Yoon	US
4	Jin Ho Park	US

17. Applicant/Assignee Details.

Sr.No	Name of Applicant/Assignee	Address/City/Country of Applicant
1	Hyundai Motor Co	US
2	Kia Motors Corp	US

18. Applicant for Patent is : Company

PART 3: TECHNICAL PART OF PATENTED INVENTION

19. Limitation of Prior Technology / Art

This system uses number of sensors so the cost of implementation is high also the maintenance cost is high also wear and tear may be there after some times.

20. Specific Problem Solved / Objective of Invention

a camera processor configured to acquire images around a subject vehicle, and convert the acquired images into external images and synthesize the external images;
a sensor processor configured to measure spaced distances between the subject vehicle and surrounding vehicles;
a parking space recognizing unit configured to periodically receive the spaced distances and the external images and sequentially compare the consecutive external images with the spaced distances using an image recognition technology to recognize parking areas; and
a controller configured to calculate a moving path between a current position of the subject vehicle and an optimal parking area among the parking areas and operate the subject vehicle based on the moving path,
wherein the parking space recognizing unit is configured to detect the parking areas based on a length and a width of the subject vehicle.

21. Brief about Invention

According to an aspect of the claimed invention, an automatic parking system may include: a camera processor configured to acquire images around a subject vehicle, and convert the acquired images into external images and synthesize the external images; a sensor processor configured to measure spaced distances between the subject vehicle and surrounding vehicles; a parking space recognizing unit configured to periodically receive the spaced distances and the external images and sequentially compare the consecutive external images with the spaced distances using an image recognition technology to recognize parking areas; and a controller configured to calculate a moving path between a current position of the subject vehicle and an optimal parking area among the parking areas and operate the subject vehicle based on the moving path, in which the parking space recognizing unit may be configured to detect the parking areas based on a length and a width of the subject vehicle.

22. Key learning Points

getting the parking information for the car itself.
No extra manpower required as camera can assure security as well as transfer data.
Sensor based information gives real-time updates.

23. Summary of Invention

An object of the present invention is to provide an automatic parking system that performs automatic parking by setting an optimal parking area

using a sensor, and an automatic parking method.

Another object of the present invention is to provide an automatic parking system that obtains an image around a vehicle using a plurality of imaging devices installed in the vehicle, converts the obtained image to recognize an available parking area, and provides a driver with a moving path that corresponds to the parking area, and an automatic parking method.

Still another object of the present invention is to provide an automatic parking system and an automatic parking system capable of remotely performing an automatic parking mode to adjust a spaced distance between a subject vehicle and vehicles parked on both sides of the subject vehicle to provide convenience when exiting the vehicle.

Other objects and advantages of the present invention may be understood by the following description, and become apparent with reference to the exemplary embodiments of the present invention. Also, it is obvious to those skilled in the art to which the present invention pertains that the objects and advantages of the present invention may be realized by the means as claimed and combinations thereof.

24. Number of Claims : 19

25. Patent Status : Other (active)

26. How much this invention is related with your IDP/UDP?

< 70 %

27. Do you have any idea to do anything around the said invention to improve it? (Give short note in not more than 500 words)

They have this applications for cars only as per drawings, parking might be mashed up in those situation data transfer is hard.

7.3 PSAR 3:

GUJARAT TECHNOLOGICAL UNIVERSITY

(GTU)

INNOVATION COUNCIL (GIC)

Patent Search & Analysis Report

(PSAR)

Date of Submission : 02/11/2020

Dear **Yadav Abhishek Rajendraprasad,**

Studied Patent Number for generation of PSAR	:	**20BE7_170800107111_3**

PART 1: PATENT SEARCH DATABASE USED

1. Patent Search Database used	:	Google Patents
Web link of database	:	https://patents.google.com/
2. Keywords Used for Search	:	smart ,parking ,system
3. Search String Used	:	smart parking system
4. Number of Results/Hits getting	:	20

PART 2: BASIC DATA OF PATENTED INVENTION /BIBLIOGRAPHIC DATA

5. Category/ Field of Invention	:	
6. Invention is Related to/Class of Invention	:	low cost and low power smart parking system
6 (a) : IPC class of the studied patent	:	H04W 84/18
7. Title of Invention	:	Low cost and low power smart parking system utilizing a wireless mesh network
8. Patent No.	:	US 2015/0130641 A1
9. Application Number	:	14,539/786
9 (a) : Web link of the studied patent	:	https://patents.google.com/patent/
10. Date of Filing/Application (DD/MM/YYYY)	:	05/14/2015
11. Priority Date (DD/MM/YYYY)	:	
12. Publication/Journal Number	:	
13. Publication Date (DD/MM/YYYY)	:	
14. First Filled Country : Albania	:	

Page 1

15. Also Published as

Sr.No	Country Where Filed	Application No./Patent No.
1		

16. Inventor/s Details.

Sr.No	Name of Inventor	Address/City/Country of Inventor
1	Md Sazzadur Rahman	US
2	Richard Farley	US
3	Gang Ding	US
4	Padmapriya Jagannathan	US
5	Angela KHANNA	US

17. Applicant/Assignee Details.

Sr.No	Name of Applicant/Assignee	Address/City/Country of Applicant
1	Qualcomm Inc	US

18. Applicant for Patent is : Company

PART 3: TECHNICAL PART OF PATENTED INVENTION

19. Limitation of Prior Technology / Art

Smart parking systems that employ mechanisms based on computer vision and/or sensor data tend to be highly infrastructure dependent. In particular, how many cameras and/or sensors need to be installed depends on the infrastructure in the parking facility (e.g., whether the parking facility is single storied or multi-storied, how many parking spots exist in the parking facility, etc.).

20. Specific Problem Solved / Objective of Invention

A method to provide a smart parking system, comprising: receiving a parking map from a parking facility, wherein the received parking map comprises a physical layout associated with the parking facility; receiving occupancy notifications over a multi-hop wireless mesh network associated with the parking facility, wherein each occupancy notification comprises a unique identifier assigned to a wireless identity transceiver that corresponds to a vehicle and unique identifiers assigned to wireless identity transceivers that correspond to one or more neighbor vehicles from which an occupancy notification was received; and
estimating an occupancy map associated with the parking facility based on the occupancy notifications received over multi-hop wireless mesh network and the physical layout associated with the parking facility.

21. Brief about Invention

Smart parking systems are sometimes used to help in routing drivers towards an available parking spot in a parking facility in optimal time and thereby save resources (e.g., time, gas, etc.). Existing smart parking systems typically have a central server maintain information relating to current parking availability in an automated fashion and direct any incoming vehicles to free parking spots accordingly (e.g., via a mobile application, digital signs installed in the parking facility, etc.). However, existing techniques used to provide smart parking systems are typically based on computer vision or sensor data, which suffer from various disadvantages and other limitations. For example, smart parking systems that employ the computer vision approach typically have different cameras installed in a parking facility and analyze images collected from the cameras installed in the parking facility to identify available parking spots. On the other hand, sensor-based smart parking systems typically have sensors installed in each parking spot in order to detect whether the spot is currently occupied and notify the central server accordingly.

22. Key learning Points

1)The method claim, wherein the occupancy notifications further comprise signal strength information associated with the occupancy notification received from the wireless identity transceivers that correspond to each neighbor vehicle.
2)wherein the on-board module listens to occupancy notifications in proximity to the vehicle to identify an available parking space in proximity to the vehicle and to provide directions to the available parking space.

23. Summary of Invention

According to one aspect, a method to provide a Smart parking system may comprise receiving a parking map that comprises a physical layout associated with a parking facility, receiving occupancy notifications over a multi-hop wireless mesh network associated with the parking facility, wherein each occupancy notification may comprise at least a unique identifier assigned to a wireless identity transceiver that corresponds to a vehicle and one or more of the occupancy notifications may further comprise one or more unique identifiers assigned to one or more wireless identity transceivers that correspond to one or more neighbor vehicles from which an occupancy notification was received. As such, the method may further comprise estimating an occupancy map associated with the parking facility based on the occupancy notifications received over multi-hop wireless mesh networkand the physical layout associated with the parking facility.

24. Number of Claims : 30

25. Patent Status : Other (Abandoned)

26. How much this invention is related with your IDP/UDP?

< 70 %

27. Do you have any idea to do anything around the said invention to improve it? (Give short note in not more than 500 words)

The driver has to wait till ticket generate at parking place ,this is a problem due to which the driver or passengers some times wait for it and may miss any work ,so this thing should be improve.

7.4 PSAR 4:

GUJARAT TECHNOLOGICAL UNIVERSITY
(GTU)
INNOVATION COUNCIL (GIC)
Patent Search & Analysis Report
(PSAR)

Date of Submission : 08/11/2020

Dear **Yadav Abhishek Rajendraprasad,**

Studied Patent Number for generation of PSAR	:	**20BE7_170800107111_4**

PART 1: PATENT SEARCH DATABASE USED

1. Patent Search Database used	:	Google Patents
Web link of database	:	https://patents.google.com/
2. Keywords Used for Search	:	Smart,Parking,System
3. Search String Used	:	Smart parking system
4. Number of Results/Hits getting	:	20

PART 2: BASIC DATA OF PATENTED INVENTION /BIBLIOGRAPHIC DATA

5. Category/ Field of Invention	:	
6. Invention is Related to/Class of Invention	:	parking assistance, and more particularly
6 (a) : IPC class of the studied patent	:	B62D 5/02
7. Title of Invention	:	Apparatus and method for parking assistance
8. Patent No.	:	US 9,031,731 B2
9. Application Number	:	14/012,067
9 (a) : Web link of the studied patent	:	https://patents.google.com/patent/
10. Date of Filing/Application (DD/MM/YYYY)	:	05/12/2015
11. Priority Date (DD/MM/YYYY)	:	
12. Publication/Journal Number	:	
13. Publication Date (DD/MM/YYYY)	:	
14. First Filled Country : Albania	:	

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15. Also Published as

Sr.No	Country Where Filed	Application No./Patent No.
1		

16. Inventor/s Details.

Sr.No	Name of Inventor	Address/City/Country of Inventor
1	Jae Seob Choi	KR
2	Dae Joong Yoon	KR
3	Eu Gene Chang	KR

17. Applicant/Assignee Details.

Sr.No	Name of Applicant/Assignee	Address/City/Country of Applicant
1	Hyundai Motor Co	Seoul (KR)

18. Applicant for Patent is : Company

PART 3: TECHNICAL PART OF PATENTED INVENTION

19. Limitation of Prior Technology / Art

In general, a parking assist system such as a smart parking assist system (SPAS) essentially requires a parking mode determination step and a parking space search step to be performed in advance. In particular, a driver must select a parking mode in the conventional systems and when a parking space is small (e.g., compared to the size of the vehicle) or a substantial amount of vehicles are near the driver's vehicle, it is difficult to obtain searching distance and the searching time increases. Further, while searching a space for parking, another vehicle may take the parking space, showing that there is the time difference between an automatic parking system and manually parking performed by a driver.

20. Specific Problem Solved / Objective of Invention

The parking intention determining unit may be configured to determine that the driver intends to park in an area when a parking line is sensed in the vicinity of the vehicle. In addition, the parking intention determining unit may be configured to determine that the driver intends to park in an area when the vehicle travels at a substantially low speed which is less than a threshold speed, when parking lot information in the vicinity of the area is detected.

21. Brief about Invention

An apparatus and a method for parking assistance is provided that include a controller configured to determine an intention to park based on vehicle condition information and environ mental information. In addition, the controller is configured to set a parking mode of a vehicle by analyzing the direction of the vehicle and a gear position, when the vehicle stops in an area in response to determining that the vehicle is to be parked. Furthermore, the controller is configured to assist the vehicle in automatic parking into a target parking lot based on the set parking mode.

22. Key learning Points

The determining of the driver's intention to park may include determining that the driver intends to park in an area when a parking line is sensed near the vehicle. In addition, the determining of the drivers intention to park may include determining that the driver intends to park in an area when the vehicle travels at a substantially low speed which is less than a threshold speed, when parking lot information near the area is detected by a navigator.

23. Summary of Invention

Accordingly, the present invention provides an apparatus and a method for parking assistance that determines a driver's intention to park before performing parking control in a target parking lot and recognizes a parking mode based on the location and condition of a vehicle.

24. Number of Claims : 18

25. Patent Status : Other (other)

26. How much this invention is related with your IDP/UDP?

< 70 %

27. Do you have any idea to do anything around the said invention to improve it? (Give short note in not more than 500 words)

To improve the efficiency of system with regards to hardware and software to show correct location and space without any errors

7.5 PSAR 5:

GUJARAT TECHNOLOGICAL UNIVERSITY
(GTU)
INNOVATION COUNCIL (GIC)
Patent Search & Analysis Report
(PSAR)

Date of Submission : 08/11/2020

Dear **Yadav Abhishek Rajendraprasad,**

Studied Patent Number for generation of PSAR	:	**20BE7_170800107111_5**

PART 1: PATENT SEARCH DATABASE USED

1. Patent Search Database used	:	Google Patents
Web link of database	:	https://patents.google.com/
2. Keywords Used for Search	:	smart ,parking,system,using, interconnected, sensor
3. Search String Used	:	smart parking system using interconnected sensor
4. Number of Results/Hits getting	:	25

PART 2: BASIC DATA OF PATENTED INVENTION /BIBLIOGRAPHIC DATA

5. Category/ Field of Invention	:	
6. Invention is Related to/Class of Invention	:	status of the vehicle or environment conditions for autonomous driving
6 (a) : IPC class of the studied patent	:	G05D 1 / 02
7. Title of Invention	:	MULTI - NETWORK - BASED PATH GENERATION FOR VEHICLE PARKING
8. Patent No.	:	US 10 , 106 , 153 B1
9. Application Number	:	16 / 004 , 051
9 (a) : Web link of the studied patent	:	https://patents.google.com/patent/
10. Date of Filing/Application (DD/MM/YYYY)	:	10/23/2018
11. Priority Date (DD/MM/YYYY)	:	
12. Publication/Journal Number	:	
13. Publication Date (DD/MM/YYYY)	:	
14. First Filled Country : Albania	:	

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15. Also Published as

Sr.No	Country Where Filed	Application No./Patent No.
1		

16. Inventor/s Details.

Sr.No	Name of Inventor	Address/City/Country of Inventor
1	Xinhua Xiao	US
2	Yifan Tang	US

17. Applicant/Assignee Details.

Sr.No	Name of Applicant/Assignee	Address/City/Country of Applicant
1	SF Motors Inc	US

18. Applicant for Patent is : Company

PART 3: TECHNICAL PART OF PATENTED INVENTION

19. Limitation of Prior Technology / Art

Vehicles such as automobiles can include mechanisms to gather information related to vehicle operation or to the environment of the vehicle. This information can indicate a status of the vehicle or environment conditions for autonomous driving or assisted driving.

20. Specific Problem Solved / Objective of Invention

The present disclosure is directed to systems and methods of multi-network-based path generation for a vehicle controller. Vehicles with autonomous driving or driver assistant features can use computer vision technology to provide parking assistance. Parking assist systems can help drivers park their vehicles in parking spaces. Parking assist systems can include parking sensors, rear-facing cameras, 360-degree cameras, intelligent parking assist systems, and fully automated parking assist systems

21. Brief about Invention

The present disclosure is directed to systems and methods of network-based path generation for a vehicle controller, in accordance with an embodiment. Vehicles with autonomous driving or driver assistant features can use computer vision technology to provide parking assistance. Parking assist systems can help drivers park their vehicles in parking spaces. Parking assist systems can include parking sensors, rear-facing cameras, 360-degree cameras, intelligent parking assist systems, and fully automated parking assist systems. Information from surveillance cameras can be used for planning the path the vehicle traverse to enter the parking space. However, using surveillance camera information and computer vision to generate paths can result in the generation of multiple or excessive paths, or the repeated generation of paths

22. Key learning Points

1)establish the parking zone using location information from a satellite based global positioning system.

23. Summary of Invention

Systems and methods of the present technical solution provide for multi-network-based path generation for a vehicle controller, in accordance with an embodiment. The present technology provides a unified multi-task network by utilizing on-vehicle sensors for parking assistance which generates a path based on semantic scene segmentation, object detection, global positioning system ("GPS") maps and vehicle dynamics

24. Number of Claims : 20

25. Patent Status : Other (other)

26. How much this invention is related with your IDP/UDP?

< 70 %

27. Do you have any idea to do anything around the said invention to improve it? (Give short note in not more than 500

words)

Sensor may damage or stop working so it should be replace with software technology.

8. CONCLUSION

Thus, this system will provide the real-time parking assistance to the user for getting the right place to park there vehicle with the Esurance of their vehicle security and also they can get free of hectic process of finding the parking place at new place or in daily routine the user can also extend the time limit by performing some steps and paying with untouched process (digitally).

This will help to get a clean city which is our main moto also provide user a good parking system, a parking user to a small parking vendors or plots, also number of Parking Warriors a getting the employment through this project which is the biggest need in today's world.

9.REFRENCES

https://blog.getmyparking.com/2019/02/14/issues-with-parking-in-indian-metropolises/#:~:text=Another%20problem%20that%20arises%20due%20to%20a%20lack,choose%20to%20cruise%20instead%20of%20paying%20for%20parking.

https://www.mapsofindia.com/my-india/government/parking-problems-in-india-and-their-solutions