

MANLESS TICKET MANAGEMENT SYSTEM IN PUBLIC TRANSPORTATION SYSTEM

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Abstract -The traditional method of ticket management requires human intervention which means a conductor or ticket distributor. In case of busy times, it is difficult to manage the tickets and people travelling in it. To overcome this an automated ticket management system is proposed. It is achieved by detecting the face of the passenger at the entry and the exit of the bus. The total fare is calculated based on their locations where they enter or departure. The fare is automatically deducted from the wallet attached to their account. In case face detection failure, another method QR code scanning is implemented. The QR code generated during the ticket booking is scanned at the entry gate

Key Words: Machine learning, IoT, Face detection, QRcode Scanning, Location Tracking, Wallet Transaction, Paperless Ticketing

1.INTRODUCTION

The technology we propose is an automated ticket administration system for buses that does not require human intervention. Here the ticket management and payment can be handled by the passenger itself. It will reduce the time consumption than current ticket management system. Implementation is done by using ML, IoT and Open CV. The primary feature is automated ticket booking. The system has two units installed in the bus one at the entry gate and the other at exit gate. Each unit contains a camera module which is

used to detect the entry and exit instances of the passengers. The proposed solution detects the face of the person who enters and exits the bus, for whom an E-wallet will be attached, so that the bus fare will be deducted from the wallet automatically based on the location where he or she entered and departed the bus. For whom who doesn't detect the face there will be a QR code Scanner which allows the users to scan the QR code Scanner which allows the users to scan the QR code generated during ticket booking and the fare will be immediately deducted. The traditional method of ticket management system in our public transportation system including bus in our country require a person to control and manage it by personally making them take the tickets which is time consuming. In case of the busy times where the bus is filled with people sometime it is difficult to manage the ticket and the people travelling. The system we propose here is an automated ticket management system in buses which require no man to manage it.

2. PROPOSED SYSTEM

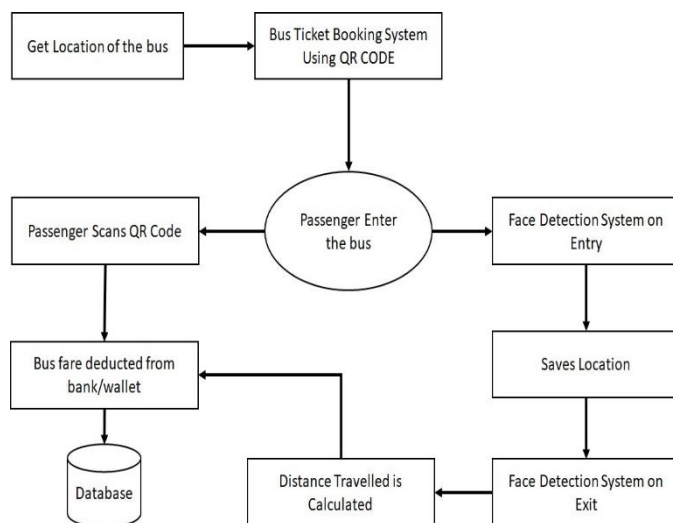


Chart -1: System Model

System architecture is divided into various modules. Ticket booking module of the architecture is used for prebooking tickets and it can be done through the website. The system uses GPS module for finding location of the bus and the location is stored in the database. When a passenger enters the bus there will be two techniques for calculating bus fare. The camera module will be the first technique, it detects the face of the passenger entered the bus. The details of the passenger are retrieved from the database and the corresponding location of the passenger is stored. Similarly, the face is detected during the exit and the corresponding is used for calculating the bus fare which is deducted from the E-wallet. The second technique is QR code scanning module, in case of failure in face detection the QR code generated by the mobile application is used. The QR code is scanned by the QR code reader placed at the entry and exit of the bus. So as a result, bus fare is automatically deducted from the E-wallet.

2.1 FEATURES OF THE PROPOSED SYSTEM

2.1.1 FACE DETECTION

The device has gadgets mounted withinside the bus one on the access gate and the opposite at go out gate. Each unit contains a camera module that is used to scan the entry and exit instances of the passengers by the detection of their face. Each unit has a GPS module in an effort to again and again replace the bus area at

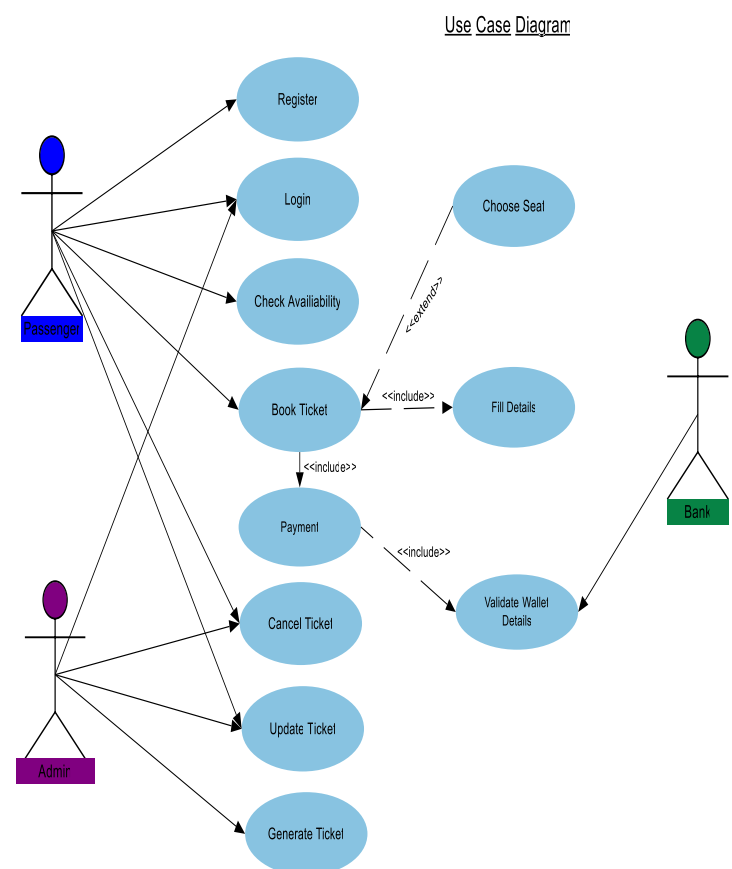
particular quick duration in an effort to be useful in shooting passengers area at each the instances. The system will calculate the fare for the distance travelled and reduce the fare amount from the passenger's Wallet that can be managed in a particular mobile application used in this system.

2.1.2 QR CODE SCANNING

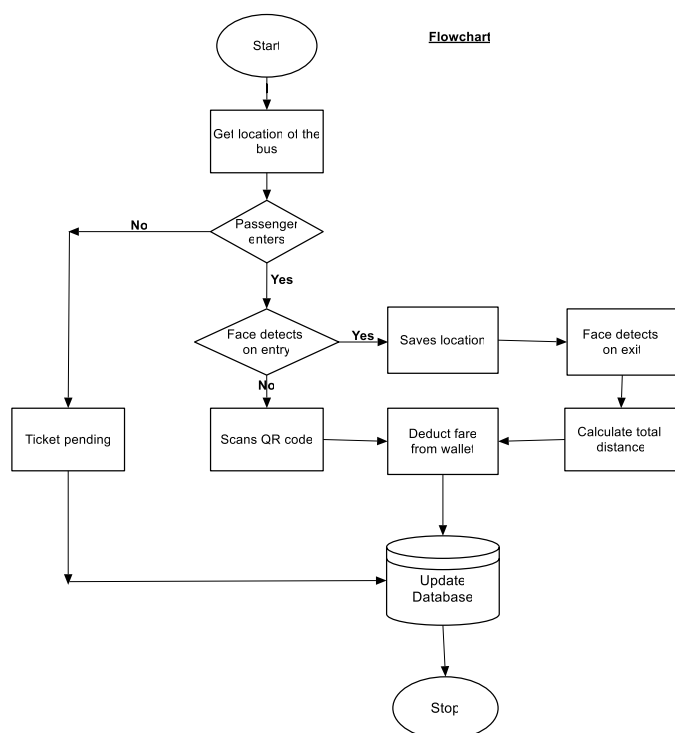
Each passenger will be issued with a QR code while booking a ticket. In case of face detection failure, an alternative method QR code scanning is used. QR code reader will be available at the entry and exit gate, which will allow passengers to scan their QR code generated in the mobile application. All the user's details will be associated with this unique QR code and stored in the database through the application.

3. SOLUTION METHODOLOGY

3.1 USE CASE DIAGRAM



3.2 FLOW CHART



4. IMPLEMENTATION

Implementation is the stage if the project, where the theoretical design is turned into a working system. At this degree the principal workload the best up heal and the foremost effect on present practices shift to consumer departments If the implementation stage is not planned and controllers carefully, it can cause chaos. It involves careful planning, investigation of the current system and its constraints on the implementation, design methods to achieve the changeover in procedures and evaluation of change over methods. It consists of following steps;

- Testing the developed system with the sample data.
- Detection and correction of errors.
- Making necessary changes in the system.
- Training and involvement of user personnel
- Installation of software utilities.

4.1 FRONT END

4.1.1 Flutter: It is an open-source UI software development kit created by Google. It is used to develop cross platform applications for Android, iOS, Linux, macOS, Windows, Google Fuchsia and the web from a single codebase.

4.1.2 HTML: TheHypertext Markup Language or HTML is the standard markup language for documents 7designed to be displayed in a web browser. It may be

assisted through technology along with cascading stylesheets (CSS)and scripting languages along with java script

4.2 BACK END

4.2.1 Firebase: It is a platform evolved through Google for developing cellular and net applications. It became at first an unbiased business enterprise based in 2011. The product assists software program developers in constructing real-time, collaborativeapplications.

4.3 HARDWARE SPECIFICATION

- Hard disk space: 40GB
- Memory: 8 GB RAM
- Processor: i7 10th gen processor or above

4.4 SOFTWARE INTERFACES

- Front end: Flutter, HTML, CSS
- Back end: Firebase
- Platform used: VS Code, Android Emulator
- Languages used: Dart, HTML, CSS, JavaScript, Python
- Operating system: windows 10
- Web browser: Google Chrome, Mozilla

5.RESULT

Manless Ticket Management System in Public Transportation System using ML and IOT is an automated ticket management system in public transport which does not require human intervention. The system we proposed mainly works on a method of face detection and recognition system for identification of passengers of vehicles, who have been registered in advance to the passenger management system. In case of face detection failure an alternative method of QR code scanning is used.

6.CONCLUSION

Manless Ticket Management System in Public Transportation System using ML and IOT is an automated ticket management system in public transport (mainly buses) which does not require human intervention. The system we proposed mainly works on

a method of face detection and recognition system for identification of passengers of vehicles, who have been registered in advance to the passenger management system. In case of face detection failure an alternative method of QR code scanning is used.

7.FUTURE SCOPE

Nowadays, the world is changing to fully digitalized environment so the proposed can be a remarkable innovation in the modern era. Manless Ticket Management System in Public Transportation System uses Machine Learning techniques and IOT based techniques. Machine Learning and IOT are two promising new technology trends. So, there will be a wide scope for this proposed project in the future.

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