

Automated Bus e-Ticketing Service

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Abstract: Nowadays public transport systems like metro are well advanced. The need to improve passenger safety, convenience and performance of existing public transport is increasing the demand for intelligent transportation systems in the market. The paper-based ticketing system for collecting bus fares has been considered the source of major financial losses in India. It is difficult to assure every passenger to buy a ticket. A paper ticket becomes useless for passengers upon reaching the destination. The number of untold tickets per day is very high. In the era of technology, India should focus on developing an automated system to collect bus fares. Therefore, this paper proposes an automated card operated system using RFID and GPS for bus travel in India.

Keywords: Bus e-Ticketing

I. INTRODUCTION

Today, everything in the world is becoming smart and digital, with significant advances in the transport sector. However, public transport buses in India have not kept pace with these new developments. Intelligent vehicle research has been an active area of work, especially in the context of public transport.

Traditionally, every bus has been controlled by a conductor who collects money from each passenger and issues a ticket. To address this, we are proposing an IoT-based ticketing system. The primary objective of this project is to use IR sensors to automatically count passengers and GPS sensors to calculate the distance travel by each passenger. The corresponding fare will then be debited from the RFID card.

II. LITERATURE SURVEY

In general, buses are typically managed by conductors who collect money from each passenger and issue tickets. Initially, printed papers or tokens were used as tickets. Nowadays, hand-operated machines are employed for ticket printing. However, this system has several disadvantages. Passengers must carry the ticket until they reach their destination, conductors need to ensure that everyone has a valid ticket, and the ticketing process takes a comparatively long time, requiring more paper.

For example, when a passenger wants to travel on a bus, they need to carry money. The conductor collects the money and issues a ticket, a process that every passenger must repeat. This results in increased time, resource waste, and energy consumption.

The data pertains to an Automatic Fare Collection (AFC) system integrated with an Automated Vehicle Location (AVL) system that records each passenger's transaction when boarding the bus. This data includes information about the route, vehicle, travel card, as well as the time and place where the journey begins. While some of this data is recorded for on-board ticket inspection, it also enables innovative spatial verification features introduced by the methodology.

The integration of the Internet of Things (IoT) in Automatic Fare Collection is crucial. An AFC system consists of automated gate machines, ticket vending machines, and ticket checking machines. A stable and integrated platform is essential for smooth passenger flow during peak hours, ensuring that all data is collected and transmitted to the server.

In recent progress, RFID-based automatic bus ticketing has seen remarkable development in various technologies for public welfare, especially in the field of public transport. RF modules, particularly Radio Frequency Identification Devices (RFID), are gaining prominence for their potential in the near and distant future of public transport bus systems.

III. MODULE IDENTIFICATION

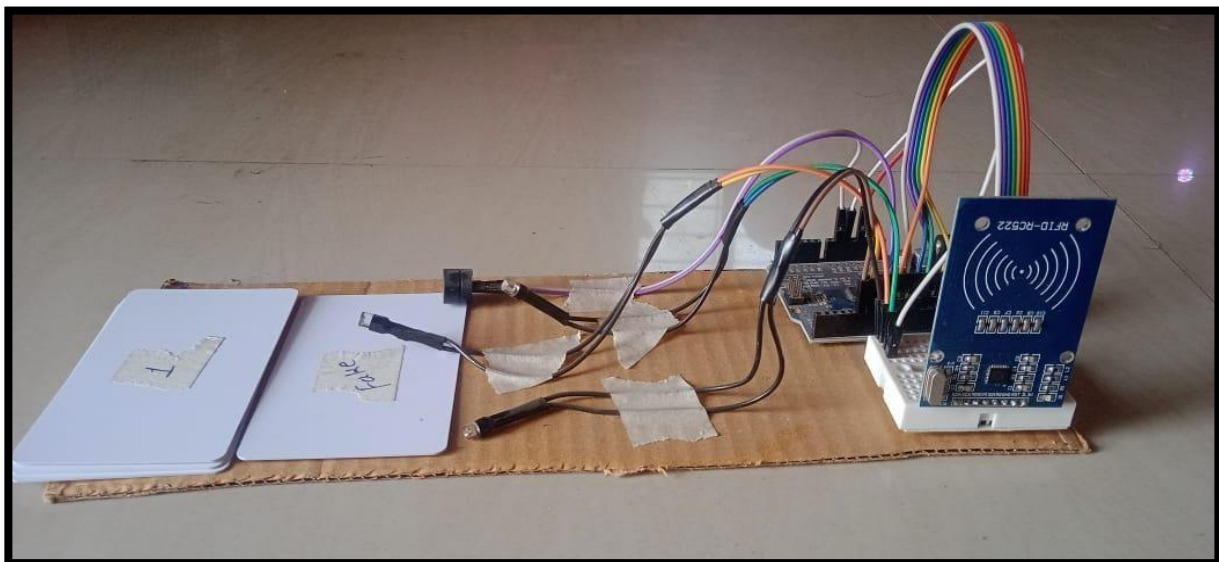
The project is designed for bus passengers traveling within the city. Users can view daily ticket transactions through the app. Each passenger is issued an RFID card, which they must swipe on the RFID reader upon boarding the bus. Additionally, they need to swipe the card again when reaching their destination.

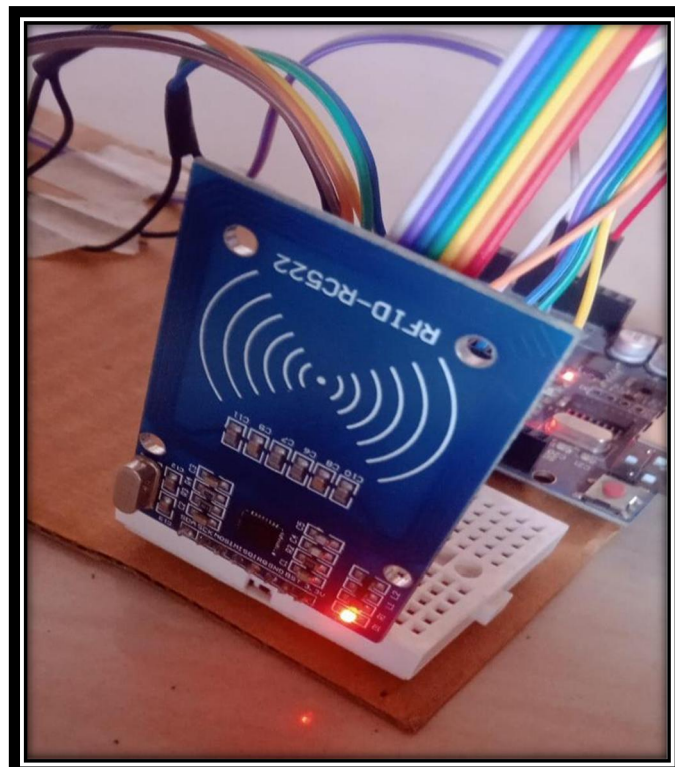
The primary goal of this project is to utilize an IR sensor to count passengers and a GPS sensor to automatically calculate the distance travelled. The corresponding fare is then debited from the RFID card, eliminating the need for a paper-based ticketing system. This approach ensures a seamless process with no conductor interference. Ticket history is stored in a database, and transaction counts are automated.

The operational steps are as follows:

- Swipe the RFID card upon passenger boarding.
- Store GPS location during the swipe.
- Send an SMS to the traveler with the GPS location.
- The passenger swipes the RFID card upon reaching the destination.
- Calculate the distance from the stored GPS location (Step 2).
- Deduct the appropriate fare

IV. IMPLEMENTATION RESULT





V. MODULE DESCRIPTION

The bus is used by regular bus passengers to make frequent intercity travel trips at a profitable cost compared to daily bus fares.

Bus ticketing is done manually with no computerized user detail record. To overcome this, we have decided on our project topic

Every bus is controlled by a conductor. The conductor will collect money from each passenger and issue a ticket. To overcome this, we will create IOT based ticketing system

VI. CONCLUSION

The project will be presented as a fully automated, reliable, transparent and convenient system for ticketing. RFID cards can be reusable, much more convenient than paper-based ticketing systems.

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