

# RFID based Ticket ATM System

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**Abstract**— The objective of this paper is to issue tickets. Tickets are issue in public transportation using smart card. In general when people are traveling from public transportation that time conductor collected money and issues the ticket to each passenger. This process will take more time as well as create more error. To overcome this problem, a new system is proposed. In this proposed system, RFID is used. Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to objects. The tags contain electronically stored information. Here RFID smart card is used and this card is rechargeable. RFID reader is used to read all information in the RFID tag. And after that message will send passengers mobile. Passenger enter the location and according to that the money will be deducted from smart card.

**Key words:** RFID, Data Mining, Pattern Matching

## I. INTRODUCTION

The public transportation is one of major source of income in developing countries like India. But now day's transportation system faces many problem. The conductor will faces several problem in issuing tickets and also he/she cannot verify if proper change is given to the passenger .But the new system will provide ticket automatically with the help of RFID card and deduct the fare for the distance travelled from source to destination. RFID by not produced the ticket in the form of paper and it also reduced the consumption of papers that are for printing tickets. Instead of that passenger carry RFID card. It is also used for customer identification and used for security purpose.

RFID technology is mostly used in recent years. RFID consists two components, RFID Reader and RFID Tag. RFID Tag stored the information about passenger such as name, address and mobile number etc. RFID Reader is device used to gather information from an RFID tag, which is used to track individual object. Radio waves are used to transfer data from the tags to reader. If suppose one of accident is occur then with the of rfid card system can easily found out which passengers are present inside the bus. It also saves the transportation operator's time.

## II. RELATED WORK

Communication environment for RFID systems is in wireless it increases the insecurity among the three roles. We need to achieve message security, anonymity, availability and protection of information from being stolen or tampered with. Under such infrastructure, handheld device, such as mobile phone, embedded RFID reader modules will be situated everywhere and operated with many RFID tags in various RFID application systems. In the meantime, it is more difficult to secure the privacy of a mobile RFID-enabled device with the change in consumption habits, trending

practices have changed from the traditional to the entity stores patterns

However, with the traditional trading protocol, the credit card number and code (three digit code), can be faked by cardholders to carry out all transactions. When the card is lost, the system cannot detect the implementation of the transaction, whether it is by the legitimate credit card Holder or not. Recently the use of mobile devices has become very Holder or not. Recently the use of mobile devices has become very common in the world. They have the functionality to read RFID tags and they also have higher computing performance. During transactions process they take less time for encryption, decryption and certification. RFID based smart stick prototype has been developed to aid.

## III. EXISTING SYSTEM

In the general way, every bus is controlled by a conductor. The conductor will collect money from each passenger and issue ticket. Initially, printed papers or tokens are used as tickets. Nowadays, handheld machines are used to print tickets. This system has many disadvantages. The passenger have to carry the ticket till the end of travel, the conductor should ensure that everyone has got the ticket, the time taken for ticketing is comparatively more and more amount of paper is needed to print the Ticket. Nowadays conductors are trained to operate the handheld ticketing machine. For example, if a passenger wish to travel in bus. He has to carry money with him. Then conductor will collect the money and he will give ticket. This has to repeat for all passengers. This will take more time and waste of human resource as well as energy. Even handheld ticketing machine is comparatively slow and need trained person to operate it. In Existing system RFID Reader is used to read the RFID tag but destination should be entered by passenger in keyboard , So that amount will be debited automatically from the tag. Here if once destination is arrived, bus stops automatically and intimate with buzzer sound. Fairly such arrangement consumes more time in case of accessing of tag by every individual, so to overcome that, implementation of ticketing system without access is developed in this proposal with addition of application to transfer information about accident occurrence.

## IV. RESULTS & DISCUSSION

### A. RFID

Implementation of RFID requires two major component: RFID Reader and RFID Tag or RFID SMART CARD.

#### 1) How RFID Works

RFID belongs to a group of technologies referred to as Automatic Identification and Data Capture (AIDC). AIDC methods automatically identify objects, collect data about them, and enter those data directly into computer systems with little or human intervention. RFID methods utilize radio waves to accomplish this. At a simple level, RFID systems

consist of three components: an RFID tag or smart label, an RFID reader, and an antenna. RFID tags contain an integrated circuit and an antenna, which are used to transmit data to the RFID reader (also called an interrogator). The reader then converts the radio waves to a more usable form of data. Information collected from the tags is then transferred through a communications interface to a host computer system, where the data can be stored in a database and analyzed at a later time.

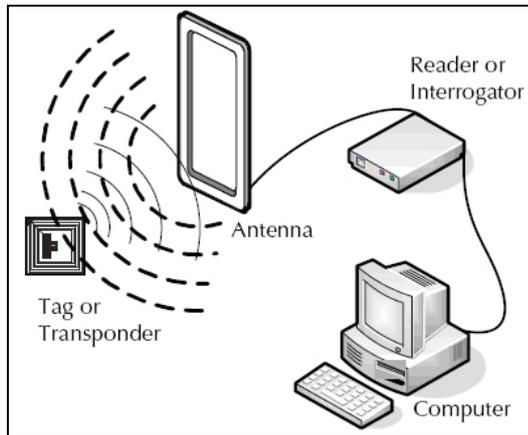


Fig. 1:

## B. RFID Smart Card

### 1) Passive Tag

A passive tag is cheaper and smaller because it has no battery; instead, the tag uses the radio energy transmitted by the reader. However, to operate a passive tag, it must be illuminated with a power level roughly a thousand times stronger than for signal transmission. That makes a difference in interference and in exposure to radiation. An RFID tag consists of an integrated circuit and an antenna. The tag is also composed of a protective material that holds the pieces together and shields them from various environmental conditions. The protective material depends on the application. For example, employee ID badges containing RFID tags are typically made from durable plastic, and the tag is embedded between the layers of plastic. RFID tags come in a variety of shapes and sizes and are either passive or active. Passive tags are the most widely used, as they are smaller and less expensive to implement. Passive tags must be “powered up” by the RFID reader before they can transmit data.



Fig. 2:

## V. PROPOSAL METHOD & WORKING

Ticketing system without human resource-Conductor is implemented using RFID tag which is rechargeable one. Accident information is intimated to nearest hospital, where as nearest hospital is detected using information transformation is done with the help of GSM Module.

### A. Working

In fare collection system, there are three modes

- Admin mode
- User mode
- Auto mode

#### 1) Admin mode

When admin mode is selected, three options will be displayed

- Distance
- Tag number
- Add number of buses.
- Transaction history.

#### 2) User mode

When enter into the bus, select the destination by showing the digital ticket. And ticket will purchase. User can recharge their account in user mode.

#### 3) Auto Mode

When this mode is selected, fare will be collected automatically by distance calculation. Here distance is calculated when passenger get out of bus without any swiping operation done when exit.

#### 4) Data Mining

Data mining is the semi-automatic discovery of patterns, changes, association, and statistically significant structures and events in data.

##### a) Types of Data Mining Technique

- Association
- Classification
- Prediction
- Sequential Pattern
- Clustering

#### 1) Association

Association (or relation) is probably the most familiar and and better known straightforward data mining technique. Here, you make a simple correlation between two or more items, often of the same type to identify patterns. For example, when tracking people's buying habits, you might identify that a customer always buys cream when they buy strawberries, and therefore suggest that the next time that they buy strawberries they might also want to buy cream.

#### 2) Classification

You can use classification to build up an idea of the type of customer, item, or object by describing multiple attributes to identify a particular class. For example, you can easily classify cars into different types (sedan, 4x4, convertible) by identifying different attributes (number of seats, car shape, driven wheels). You can apply the same principles to customers, for example by classifying them by age and social group. Given a new car, you might apply it into a particular class by comparing the attributes with our known definition.

#### 3) Prediction

Prediction is a wide topic and runs from predicting the failure of components or machinery, to identifying fraud and even the prediction of company profits. By analyzing past events or instances, you can make a prediction about an event. Used in combination with the other data mining techniques, prediction involves analyzing trends, classification, pattern matching, and relation.

#### 4) Sequential Patterns

Often used over longer-term data, sequential patterns are a useful method for identifying trends, or regular occurrences

of similar events. In a shopping basket application, you can use this information to automatically suggest that certain items be added to a basket based on their frequency and past purchasing history. For example, with customer data you can identify that customers buy a particular collection of products together at different times of the year.

### 5) Clustering

Clustering refers to the division of data into groups of similar objects. Clustering is the process of making a group of abstract objects into classes of similar objects. Clustering is the task of dividing the population or data points into a number of groups such that data points in the same groups are more similar to other data points in the same group than those in other groups. Each group, or cluster, consists of objects that are similar to one another and dissimilar to objects in other groups. Representing data by fewer clusters necessarily loses certain fine details (akin to lossy data compression), but achieves simplification. In simple words, the aim is to segregate groups with similar traits and assign them into clusters.

### B. Algorithm

#### 1) Pattern Matching

The algorithm returns the position of the first character of the desired substring in the text. In this paper, we present the pattern matching algorithms mentioned above, the goal of this algorithm in our project. A Pattern matching algorithm aims to find one or several occurrences of a string within another. You have hundreds of thousands of people so it is very difficult to identify which person have highest transaction so that we pattern matching algorithm for searching people, which can be extremely fast relative to other algorithm.

We formalize the string-matching problem as follows. We assume that the text is an array  $T[1..n]$  of length  $n$  and that the pattern is an array  $P[1..m]$  of length  $m$ . We further assume that the elements of  $P$  and  $T$  are characters drawn from a finite alphabet. For example, we may have  $\Sigma = \{0, 1\}$  or  $\Sigma = \{a, b, \dots, z\}$ . The character arrays  $P$  and  $T$  are often called strings of characters.

We say that pattern  $P$  occurs with shift  $s$  in text  $T$  (or, equivalently, that pattern  $P$  occurs beginning at position  $s + 1$  in text  $T$ ) if  $0 \leq s \leq n - m$  and  $T[s + 1..s + m] = P[1..m]$  (that is, if  $T[s + j] = P[j]$ , for  $1 \leq j \leq m$ ). If  $P$  occurs with shift  $s$  in  $T$ , then we call  $s$  a valid shift; otherwise, we call  $s$  an invalid shift. The string-matching problem is the problem of finding all valid shifts with which a given pattern  $P$  occurs in a given text  $T$ . Figure 34.1 illustrates these example

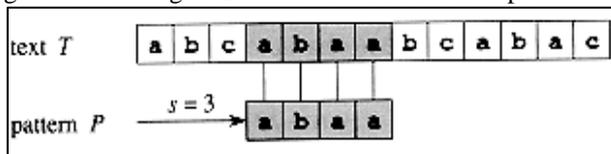


Fig. 3: Pattern Matching

Figure 34.1 The string-matching problem. The goal is to find all occurrences of the pattern  $P = abaa$  in the text  $T = abcababcbac$ . The pattern occurs only once in the text, at shift  $s = 3$ . The shift  $s = 3$  is said to be a valid shift. Each character of the pattern is connected by a vertical line to the matching character in the text, and all matched characters are shown shaded.

### C. System Flow

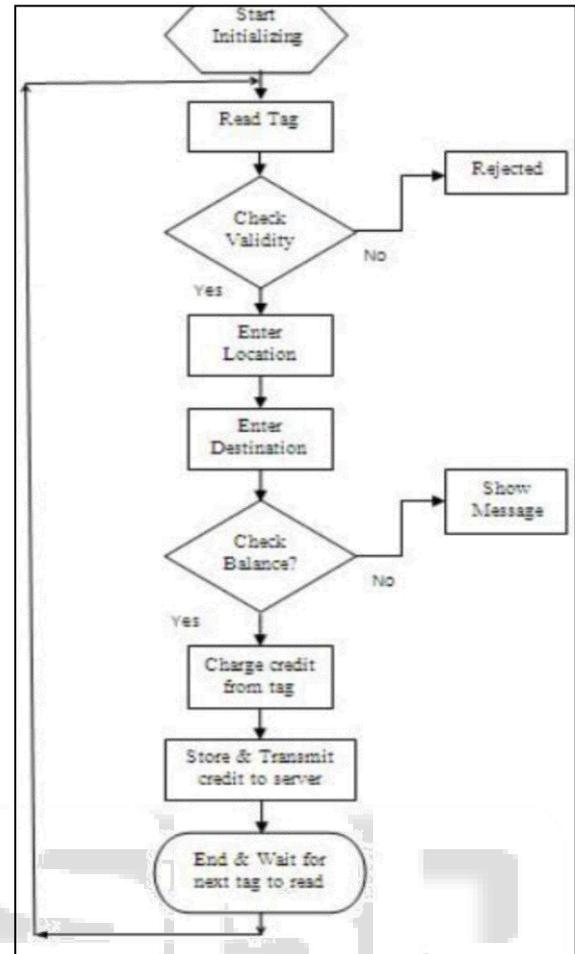


Fig. 4: RFID System Flow

### VI. CONCLUSION & FUTURE SCOPE

A lot of research in the field of RFID has been conducted in the recent years, leading to the many new applications based on RFID. Smart Bus Transit System enables commuters to travel hassle-free. The ticketing is seamless. Making public transport more convenient makes it more accessible, thus leading to increased usage. Traffic is a growing problem in major cities and effective use of public transport is one of the solutions. A convenient and easy-to-use public transport system helps alleviate this problem. It also modernizes the public transport infrastructure. Since everything becomes digital, it becomes possible for service providers to collect data, and thus make business decisions based on the needs. The system also makes a paper-free system possible, which is the general direction all organizations are going in. Since the system works on standard data format for transits, it is extremely easy for service providers to integrate this system into their existing infrastructure.

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