TOLL TICKETING USING RF-ID IN TRANSPORTATION

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ABSTRACT

The mechanical toll collecting system followed in the metro cities are not effective and results in traffic jam, distortion, unwanted arguments among the people and the authority. This system fails to recognize the vehicle theft. An alternative solution is suggested here to make the system user friendly and automated by using RFID. It will provide easy transaction of money and brings regularity to the daily users. The database gets updated for every single use.

RFID: Radio Frequency Identification Detection

INTRODUCTION

It has been an extensive tool for the tracing of transports and toll ticketing systems mutually, in the side of RFID application. This system is successfully implemented in places like US, Moscow, Shanghai, London, Porto and several other countries.

In the metro city Pune, the conservative system of public transport is based on the railway ticketing that ultimately make the environmental problem, most of the all traffic jam and also make dishonest that is responsible for a large amount of time wastage.

There is no any prior information about appearance and exit of the transports are making a lot of misunderstanding among the passengers resulting a violent argument between them and the bus supervisors.

The tracking and ticketing system using RFID can be combined to resolve the current problem. We offer this RFID based tickets for its low cost ,easy operation, portability, durability, reliability and being much more user friendly.

Mobile ticketing systems based on the use of the passenger's mobile phone for the payment of travel cost. Mobile tickets are being issued using SMS (short text message) or mobile barcodes. The ticket selection is performed by sending an SMS to the background system, either accompanied by a specifying text or by sending it to a specific phone number for each possible ticket. An electronic ticket is then returned via SMS to the user. Users can also use mobile phones to purchase tickets in the same way as they do with contactless smartcards by placing the RFID technology into the battery casing of the device.

SYSTEM EXPLANATION

The working of radio frequency identification is based on radio waves. The technology includes the tag which is fundamentally micro chip provided with an antenna and interrogator or reader.

Initially, RFID applications were used to process and track the flow of goods, e.g. in the retail sector, supply chain management and warehouse management, logistics and manufacturing. But also the tourism sector can profit from RFID applications, e.g. several museums have already implemented RFID to inform their users about the exhibited pieces, hotels offer keyless entry, or casino chips are tagged with RFID. There is only very little security during the communication with the reader. Typically RFID tags can be read from distances of several centimetres to several meters. For the purpose of transport ticketing, a reader will be informed about the passenger's departure and destination. The tags are usually attached to smart cards carried by the passengers. This allows passengers to be charged automatically, according to the zones or the time they have travelled.

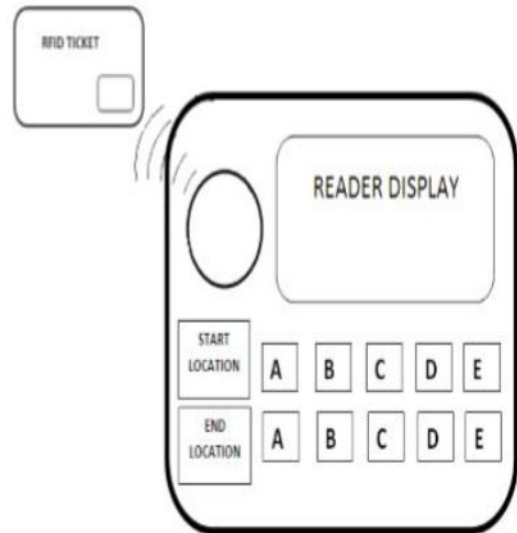Figure 1- typical RFID system components

Figure 2- reader with keypad for selecting location attached to each bus

The function of micro chip is to modulate the waves which are sent back by the tag to the reader and later the new waves are converted in to digital data. To implement this in the purpose of toll ticketing needs the attachment of tags to unique cards possessed by the user from which the reader obtain the information from them.

COMPARISON & MERITIES

Referring to standards when defining e-ticketing specifications offer several advantages in terms of sustainability of systems, modularity of its components, interoperability of systems, provision of information to travellers, cost saving, etc. However, these benefits will be lesser when technological revolution will imply to replace equipments or some part of them.

Wave resulting from RFID technology are not hazardous alike to those rays generated from our car radio. For listening different channels our car red tunes in to verity of frequencies similarly, RFID tags and readers are tuned to same frequency for communication. Similar to smart tickets,

the receipts collected from the RFID system are not easy to duplicate when compare to magnetic receipts. This will decrease the possibility of cheating.

This method lowers wear and tear and achieves high reliability since smart ticket terminals have the absence of moving parts not like the magnetic readers. It's economically feasible and requires low maintenance costs.

WORKING PRINCIPLE OF PROPOSED SYSTEM

Microcontroller act as a small computer. It is a single integrated circuit. It consists of a Processor core, memory, and programmable input/output peripherals. It designed for embedded applications. Microcontrollers are used in automatically controlled products and devices, such as automobile engine control systems, implantable medical devices, remote controls, office machines, appliances, power tools, toys and other embedded systems. There are three type of architecture, i)Von Neumann Architecture, ii)Harvard Architecture, iii)Super Harvard Architecture. Some microcontrollers may use 4-bit words and operate at clock rate frequencies as low as 4 kHz , for low power consumption. They will generally have the ability to retain functionality while waiting for an event such as a button press or other interrupt; power consumption while sleeping may be just Nano watts, making many of them well suited for long lasting battery applications. Other microcontrollers may serve performance-critical roles, where they may need to act more like a digital signal processor (DSP), with higher clock speeds and power consumption. Microcontrollers must provide response to events in the embedded system they are controlling. When certain events occur, an interrupt system can signal the processor to suspend processing the current instruction sequence and to begin an interrupt service routine which will perform any processing required based on the source of the interrupt, before returning to the original instruction sequence. Possible interrupt sources are device dependent, and often include events such as an internal timer overflow, completing an analog to digital conversion, a logic level change on an input such as from a button being pressed, and data received on a communication link.

An IR transmitter/LED is a device that emits infrared light outside the visible spectrum. It emits the light near infrared energy at about 880nm. The device that detects or receives the IR light is called infrared sensor which sense aspects of its surroundings to show fig 3. In our example, the IR sensor is used to detect arriving vehicles. The SE555P Timer by Texas Instruments is used in the mono stable mode. When IR radiation is received triggering occurs, resulting in a high output. When a vehicle arrives at a toll plaza, the IR ray are blocked by the vehicle, and the output of the timer to toggle to low. The change in output of the timer is sensed by the microcontroller, which is programmed to turn on the IR transmitter. The IR sensor at the entry and exit check is used to make the controller wait until it receives the acknowledgement signal and to block the vehicle when automatic transaction failed.
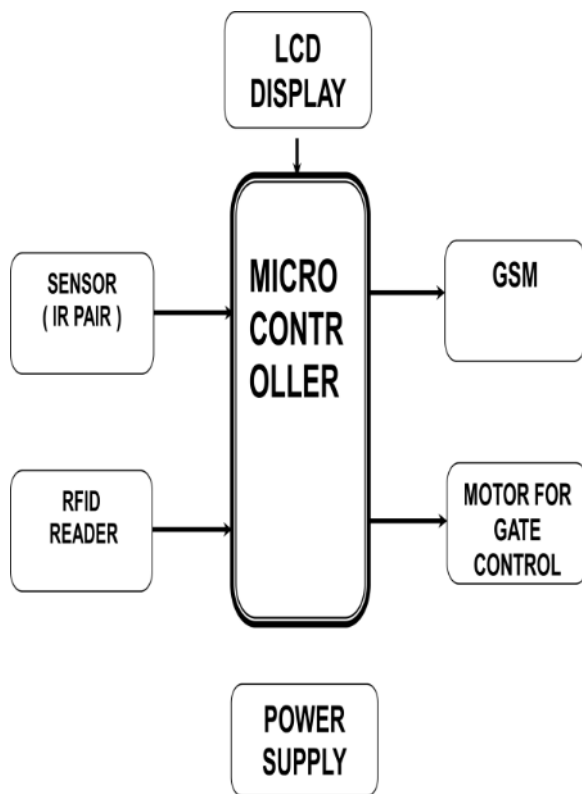
CONCLUSION

RFID technology is taking off in transportation at an enhancing speedy space. There are few transportation companies employing this technology today, but due to its customizable characteristic and continuing improvement the communities are starting to obtain concerned in its development. It is easy to imagine that, the RFID tags contents will boost in power, prices are predictable to decline and tag will dramatically get better its effectiveness, security and accuracy. Also major concerns need to be addressed for successfully implementing this technology .So that it will change our personal and work lives in transportation and adorns the conventional transportation management with a new idea and user for a bright future.

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