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NFC Enabled Smart License System

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***Abstract* - Road accident is the major reason for death in India. Rash driving and carrying no license while driving causes safety drawback on the road. This project enhances road safety and vehicle security by using Authenticated driver's license card. The smart driving license will use NFC technology. Every rider/driver will be provided with an NFC card which will have a unique identification number. NFC (Near Field Communication) emerges as one of the converging technologies and transportation plays an important role in urbanization. NFC is one of the key catalysts playing a significant role in it. NFC plays major role in auto ID applications like NFC contactless smart cards used by bus riders, in Super market, Textiles and logistics chain management. This project aims to understand the benefits of NFC technology possibilities to make compulsion on carrying the driving license. Population explosion is the actual reason for lot of problems; one in all them is transport. In this project, we propose a novel method to tackle transport related issues.**

Keywords: NFC, Embedded System, License, Smart Card.

I. INTRODUCTION

The increased usage of vehicles has led to increased chaos on the roads. This increased chaos has led to increased number of accidents. According to the Global status report of WHO having information from about 180 countries, shows that worldwide the total number of deaths occurring in road accidents has attained to 1.25 million p.a., with the highest road traffic fatality rates in low-income countries.

This arte fact talks about various devices and various technologies which help in preventing accidents and detecting them immediately to avoid any causality on-site. The main intention is to ensure safety and security of the driver in road accidents.

According to a survey, the middle-class population in India is 268 million. Such huge population does not have enough resources to buy a four-wheeler; hence they tend to buy two wheeler as they are affordable. Four-wheelers have many parameters which look after the safety of the driver such as seat belts, Airbags, etc. While in case of bikes, safety measures are to be added from external source like helmets. Accidents involving ineligible drivers are huge in number. These incompetent people, to a larger extent, comprised of teenagers with age between 15-18yrs. Teens go through their adolescence period where they are pumped up with emotions hence this leads to rash and reckless driving. They try to show off by doing stunts on the bike which leads to disastrous results. This system also monitors and deals with such circumstances also. The number of people breaking the law has also increased over the past 5 years. The project deals with the improvisation of the traffic rules in India.

In India, a license is a document allowing its holder to control varied kinds of motorized vehicles on road. The Motor vehicles act of 1988 states that no individual without a driving license is authorized to drive a motor vehicle in a public place. Most of the road accidents are caused in India by the under-age people i.e. the youth of the country who ride/drive without a driving license. Hence, the proposed system includes the detection of the license before starting the bike. In today's digital age, driver's license is issued as a smart card. These cards have their own set of benefits. One of the benefits of this card can be by installing a system in the vehicle that detects this chip card. This will ensure that the driver does not drive without a license.

II. LITERATURE REVIEW

There isn't any existing system in India, at least, in the automobiles that detects the license of the driver. Hence this system will prove out to be an innovative and effective way of reducing the number of illegal drivers in the country, accident ratios and will ensure none of the drivers drive without a license. There are similar systems which are used to ensure security and detection of chips on smart cards which include the NFC tags and chips. Some of the existing systems used by making NFC and RFID tags have been stated.

Paper [1] states NFC parking application facilitates user to collect parking information on his/her NFC cell phone by just touching cell phone to NFC tag that gives you the parking service information i.e. location to park your vehicle, parking duration, parking rent. It saves user's lot of time and decreases the queue time in parking lots. You can install this application by SMS and can pay the parking fee through the GSM operator. Paper [2] provides information on NFC shopping

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application that provides you the facility to manage your shopping cart by using NFC cell phone. By bringing your NFC phone closer to the product tag you can get product information (size, color, manufacturing date, expiry date, price weight etc.). Several products could be added to cart and at the end, user can view the total price. Even user can keep all the record of previous shopping and can perform comparison like price compare etc. Amount can be paid instantly through NFC phone and user can further store shopping receipt on his/her cell phone. This technology also helps shopkeeper to manage the shelf.

III. PROBLEM STATEMENT

To develop a Smart License System which has the following features:

1. The licenses should be NFC enabled.
2. The system should ask for authentication for starting a vehicle.
3. If NFC based license is not validated the vehicle shouldn't start.
4. License of only authorized users can start a particular vehicle.

IV. PROPOSED METHODOLOGY

This project uses Arduino Nano as the microcontroller to which RC522 NFC reader has been connected. RC522- NFC reader will be used for NFC based authentication. The license is equipped with 13.56MHz NFC sticker tags. The user taps his NFC license on the NFC reader to start a vehicle. If the user is unable to verify his/her identity then the bike wouldn't start. If he/she is a verified rider then the vehicle ignition system starts. The first to use the system on a particular vehicle becomes the admin whereas other users become normal users.

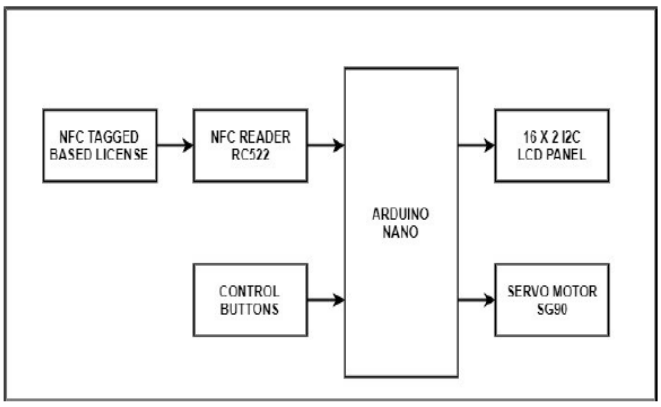

Figure 1: System Architecture

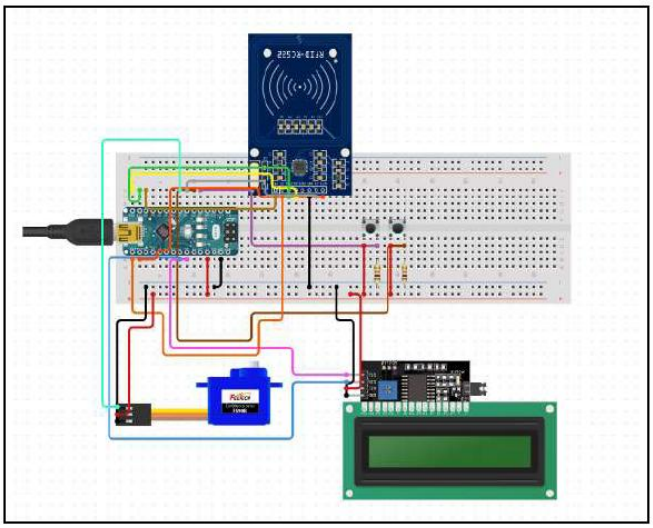

Figure 2: Circuit Diagram

A new user can be added by admin by first tapping his/her own license and then tapping the other users license. An LCD panel is provided for displaying this data. A servo motor is used in order to replicate an engine start.

V. CONCLUSION

As all the components used in this system are easily available the system can be implemented. It will provide the safety to drivers and change the way of their driving as well as system controlling the vehicles. It has been presented the original design of the NFC License System with an extremely reduced cost. It is reliable system with fast and straight forward installation. The system might be easily extended. It will improve system scalability and reduce misuse of vehicles.

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