

An NFC Smart License Management & Accident perception using GPS

Varun Kannan¹, Nisha.R²

B.E, Dept. of CSE, Valliammai Engineering College, Kattankulathur, Tamil Nadu, India^{1,2}

ABSTRACT:With the increase of vehicles in today's world, fatalities occurring has attained its peak with more death rates. To reduce the recovery time and emergency personnel arrives, and to make mandatory use of license we propose a system that includes more detailed instant services to notify the injuries. Locating the exact incident may be a challenging task, but using GPS integrated with an embedded license has made it possible to reach out to the position, which has extended along with a profile of the user. This proposed system helps to alert the emerging requirements after an accident (like police stations and ambulance) service through GSM including the user condition with regard to extremity. Further the smart license control being suggested uses the NFC (Near-Field Communication) tag where the user may be allowed for a secure handling of the license using PIN Authentication and to make modifications in the license for legal punishments (if any) to the user given by the traffic authorities and a constant maintenance of the profile.

KEYWORDS:Vehicles, emergency personnel, location, extremity, smart license, punishments.

I. INTRODUCTION

The proposed system uses NFC card that helps in identifying the exact location of the accident that occurs, transferring it to the emergency services within the surroundings and also to prevent the malpractice in the license. Applications of NFC's can be seen in contactless payments 'Tap and Pay' that is developed through ICICI bank [1]. Integrating with the license to manage the accident will help the system to be efficiently controlled by authority. Also in study shows that there is sustained road accidents[2] in recent years.

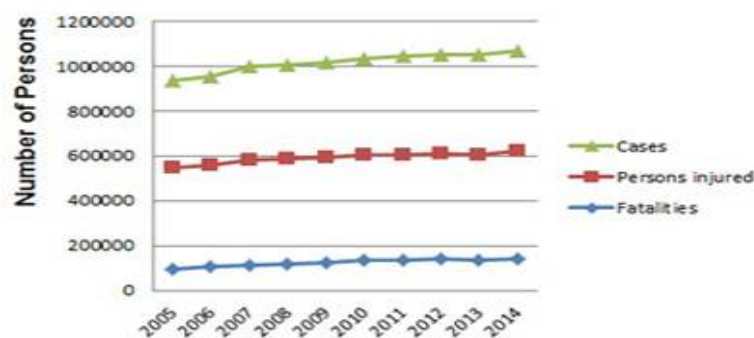


Fig 1. Survey of Road Accidents in India (2005-2014)

II. RELATED WORK

Similar to the system, there are various uses of the NFC in public ticketing system on android device where NFC devices in proximity are used to sense the passenger and for deducting the fare for distance [3]. The controlled uses of NFC enabled smart phones, benefits and its process with certain examples of NFC in transport are provided [4]. It also

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ensures a secured transaction from the wallet, a betterment to the RFID tags, by just waving the card over the reader and has a wide application.

	NFC	RFID
Set-up time	<0.1ms	<0.1ms
Range	Up to 10cm	Up to 3m
Usability	Human centric Easy, intuitive, fast	Item centric Easy
Selectivity	High, given, security	Partly given
Use cases	Pay, get access, share, initiate service, easy set up	Item tracking
Consumer experience	Touch, wave, simply connect	Get information

Fig 2a. Comparison of NFC Vs RFID Card



Fig 2b. Applications of NFC

There are use of biometric techniques of Iris Scanning approach also experimented in the smart license management[5].

III. PROPOSED SYSTEM AND METHODOLOGY

A. DESCRIPTION

Integrating the license with NFC technology [6] in order to develop a system that will be a smart proposal for the nation and in maintaining a sharp database of the user that will clinch authority in order not to mountebank. Further, there are two advantages of it:

(i) It makes mandatory use of a license that will be continuously scanned and in case of emergency it will redirect notification to the services for help.

(ii) In the preferred system, the profile of the user is also forwarded to the emergency services that contains a blood group for the immediate (mobile) treatment in case of blood loss.

It also gauges the impact of the mishap using the flex sensor. For each accident, there is a modification of the user license, since the NFC is dynamically modified, if any violation of the traffic rule. Finally, after reaching certain limits in punishments, the license is automatically disabled.

Thus the user might have to reappear legally to get the license that is maintained under authority database. Hence it is arduous to fabricate a fake one. If created, will be invalid during inspecting it.



Fig 3a. Driving License in NFC Card



Fig 3b. Profile and Notification

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B. SYSTEM ARCHITECTURE

The system has the following components involved in it where the NFC reader is used to read the tag and forward it to the controller where the further process of validation of the card and forwards the message alert along with the location.

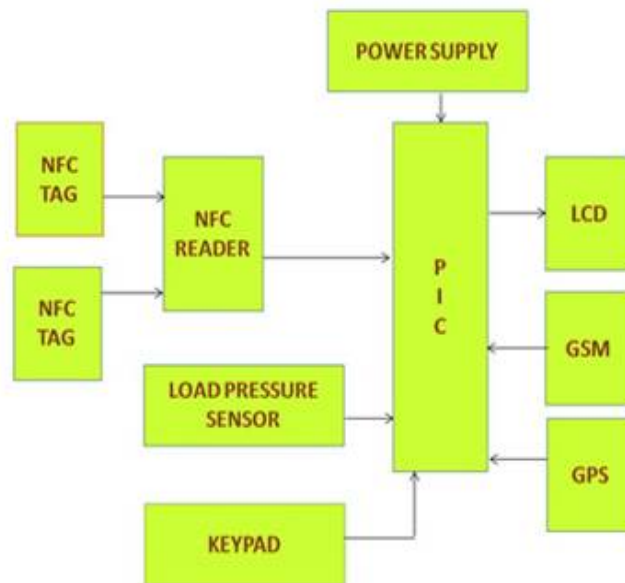


Fig 4. Architecture Diagram

C. PROSPECTIVE GROWTH

Further, the technology can be enhanced using Zwipe technology, used in credit card system with a fingerprint sensor providing the secured transaction to the user through online [7]. Here the PIN numbers are replaced by the fingerprints retained over the electronic chips and only if authorized will provide the payment. This would be of great benefit where the license can be automated providing high reliability with zwipe fingerprint cards [8].

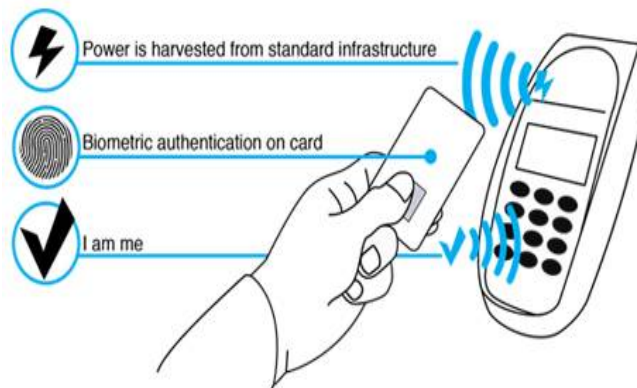


Fig 5. NFC with Zwipe technology

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IV. EXPERIMENTAL RESULTS

A sample of the system explained has been implemented, in Fig 6, using an Arduino kit with NFC, GSM modem, GPS locator and Flex Sensor noting the level of accident.

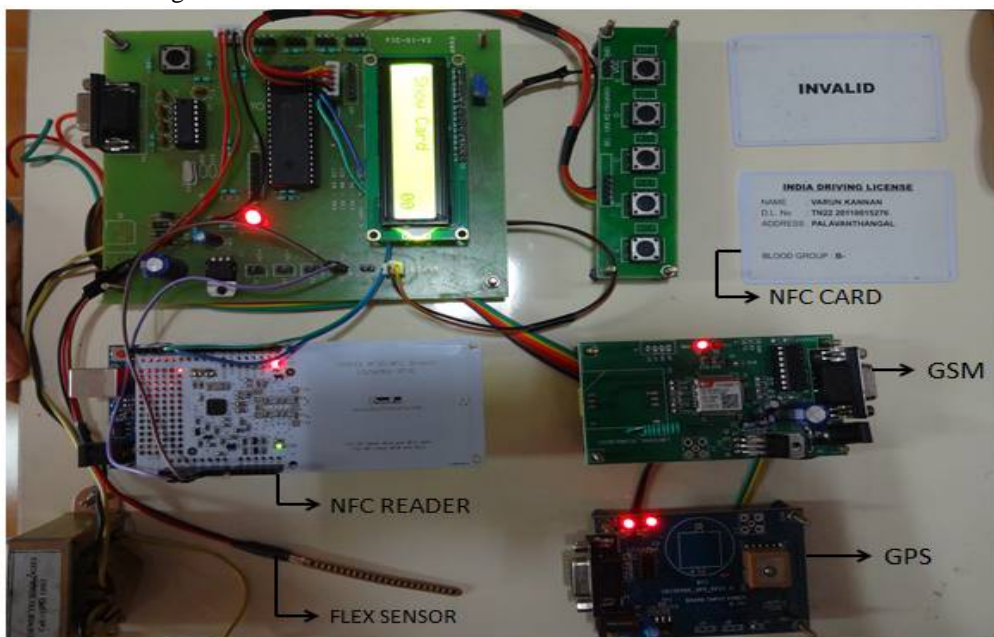


Fig 6a. Arduino Kit for the system

Detecting the valid NFC license of the user through various cases such as invalid card, during theft cases and authentic user login as shown as in Fig 6b.

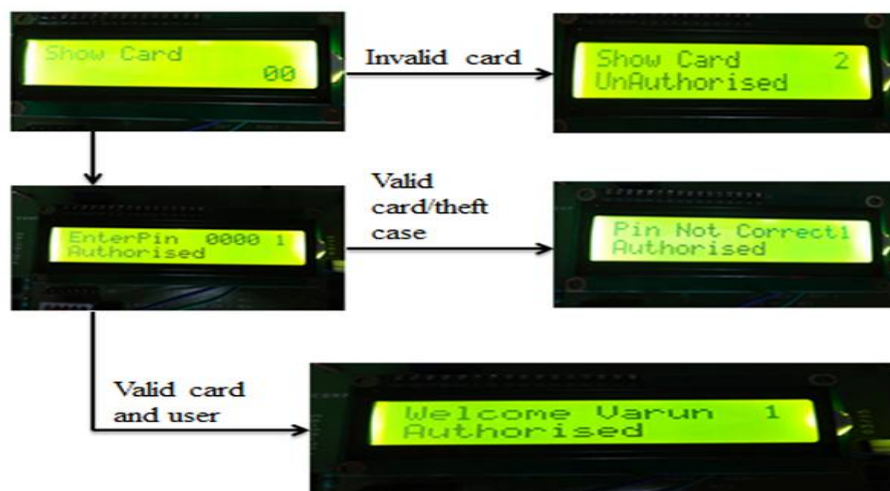


Fig 6b. Detecting and Validating user

The possible events in recording the incidents in the dynamic NFC can be observed as displayed in Fig 6c.

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Fig 6c. Punching incidents of valid user

For each incident, considering the level, the notification will be forwarded to the emergency services provided and after certain limit the license will get disabled.

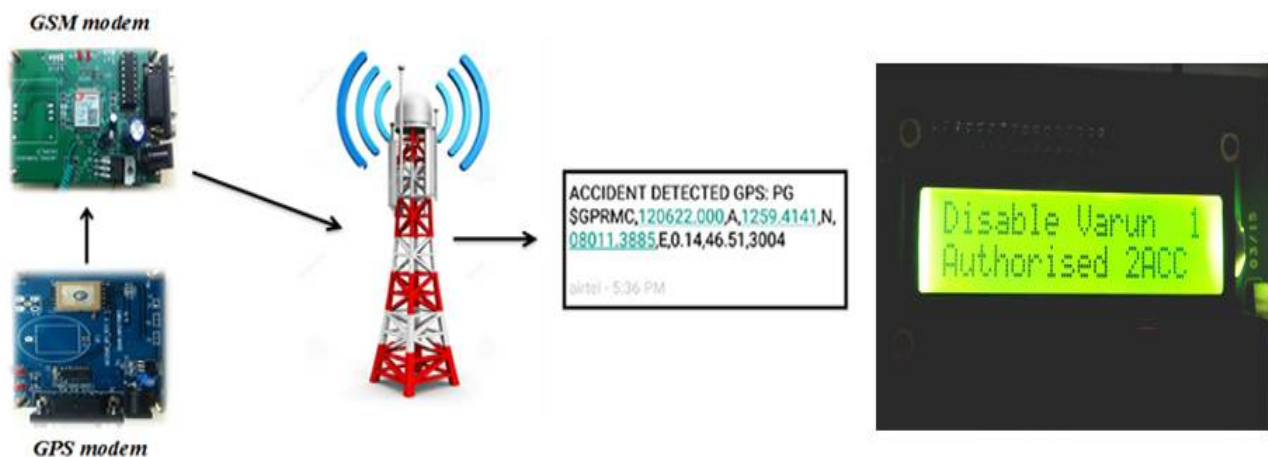


Fig 6d. Notification of the accident and location

V. CONCLUSION

Technological requirements from the scratch of the license management to evade the fraudulent activities and accident perception using the GPS locations are fulfilled. It employs automatic punching of punishments in the NFC license card, so that card gets disabled automatically once it has crossed the count limit. Additionally, the profile of the user with blood group is provided for emergency mobile treatment. Finding the impact of the accident using the flex sensors that describes the force of the accident. This helps to reduce the time factor in traffic point of view.

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REFERENCES

- [1] ICICI Bank Launches 'Tap n Pay' NFC Based Contactless Payments.
<http://trak.in/tags/business/2015/04/20/icici-bank-tapn-pay-nfc-payment/>
- [2] BankarSanket Anil, Kale Aniket Vilas, Prof. S. R.Jagtap ["Intelligent System for Vehicular Accident Detection and Notification" | International Conference on Communication and Signal Processing (ICCSPP) | pp. 1238 – 1240 | 3-5 April 2014.
<http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=6950048&newsearch=true&queryText=intelligent%20system%20for%20vehicular%20accident>
- [3] Khan Amjad, Mohammad Mohsin Sheikh, Shaibaz Arkate, Lutful Islam ["Prototype of Bus Ticketing Application Using NFC on Android Device" | International Journal of Advanced Research in Computer and Communication Engineering (IJARCCCE)| Vol 4, Issue 2 | pp. 53-55 | February 2015.
<http://www.ijarccce.com/upload/2015/february-15/IJARCCCE1L.pdf>
- [4] "NFC in Public Transport" | NFC Forum, Inc | January 2011.
<http://nfc-forum.org/wp-content/uploads/2013/12/NFC-in-Public-Transport.pdf>
- [5] LalinL.Laudis, Amit Kumar Sinha, Saravanan P.D, Anand S ["FPGA implementation: Smart card based license management using iris scanning approach" | International Conference on Science, Engineering and Management Research (ICSEMR) | pp. 1-5 | 27-29 Nov 2014.
<http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=7043580&newsearch=true&queryText=FPGA%20Implementaion%20:%20Smart%20Card%20Based%20License%20Management%20using%20Iris%20Scanning%20Approach>
- [6] B Pradeep Nair, "The Times of India" | "NFC: Everything you want to know" | Feb 26, 2013.
<http://timesofindia.indiatimes.com/tech/computing/NFC-Everything-you-want-to-know/articleshow/18688055.cms>
- [7] Dr.M.Umamaheswari, S.Sivasubramanian, B.Harish Kumar | "Online Credit Card Transaction Using Finger Print Recognition" | International Journal of Engineering and Technology| Vol.2 (5) | pp. 320-322 | 2010.
<http://www.enggjournals.com/ijet/docs/IJET10-02-05-02.pdf>
- [8] Dan Hyde, "The Telegraph" | "Fingerprint credit cards to replace PIN numbers" | 24 Oct 2014.
<http://www.telegraph.co.uk/finance/personalfinance/borrowing/creditcards/11182904/Fingerprint-credit-cards-to-replace-PIN-numbers.html>

BIOGRAPHY



Varun Kannan, a B.E. Graduate in Computer Science and Engineering from Valliammai Engineering College, Kattankulathur-603203, Tamil Nadu, INDIA. He was a member of Computer Society of India (CSI) Students Chapter. He has published a journal paper on QR code technology in an International journal of Innovative Research. His Areas of interest are networking in Routers and Switches, Access Control lists, Computer hardware.



Nisha. R., a B.E. Graduate in Computer Science and Engineering from Valliammai Engineering College, Kattankulathur-603203, Tamil Nadu, INDIA. She was a member of Computer Society of India (CSI) Students Chapter. She has also published a journal of QR code technology in an International journal of Innovative Research with other authors. Her Areas of interest are Computer networking, Database Management Systems.