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Transportation Payment by using Smart Card

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***Abstract:** It is often notice in a public transportation that the conductor face a lot of problems in collecting the fare from the passengers. Money handling and returning the access amount to the passengers after deducting the fare amount, inspecting a travel pass becomes complex when the congestion that is the number of passengers are very large in numbers is high and this complexity cannot be managed effectively. Productivity in the urban areas is much dependent on how efficient the transport system is to move a travelling groups from multiple origins to multiple destinations. Importance of this smart system helps in enhancing the process and increases the efficiency of fare collection and congestion management. The system consist of a scanner system to scan the smart card which can be topped up by the recharge centers and GPS module to track the distance travel by the passengers. Thus amount gets deducted from the passenger's smart card for only the distance travel. This enhances the proper utilization of the resources , reduces time and serves to be economic for the citizens.*

I. INTRODUCTION

Transport demand in most of the Indian cities has increased substantially due to increase in population as a result of both natural increase and migration from rural areas and small towns. Unfortunately, public transport systems in Indian cities have not been able to keep pace with the rapid and substantial increase in travel demand. Rail based public transport services and well organized bus transport services are limited to few big cities only.

Quantitatively, the available public transport services are overcrowded particularly during peak hours and involve long waiting periods. As a result, there is a massive shift towards personalized transport, specially cars and two wheelers, and also proliferation of various types of intermediate public transport modes, such as auto rickshaws and taxis.

It is often noticed in the public transportation that the conductors face a lot of problem in collecting the fare from the passengers. Money handling and returning the excess amount to the passengers after deducting the fare amount, inspecting a travel pass becomes complex when the congestion that is the number of passengers are very large in numbers is high and this complexity cannot be managed effectively.

Productivity in the urban areas is much dependent on how efficient the transport system is to move a travelling. group from multiple origins to multiple destinations. People travelling from one place to another for their work have to travel daily and they face this kind of problem.

This paper addresses a fare mentioned problem by designing a smart mechanism to handle the fare collection problems. Importance of this smart system helps in enhancing the process and increases the efficiency of fare collection and congestion management. The system consists of a scanner subsystem to scan the smart cards which can be topped up by the recharge centers and a GPS module to track the distance travelled by the passengers.

Thus amount gets deducted from the passenger's smart card for only the distance travelled. This enhances the proper utilization of the resources, reduces time and serves to be economic for the citizens. problems.

Importance of this smart system helps in enhancing the process and increases the efficiency of fare collection and congestion management.

II. LITERATURE SURVEY

Transportation planners in developing countries face a number of problems that require innovative solutions .Large increases in urban population and pollution have seriously compromised existing transportation systems and significantly increased the challenge of creating future transportation systems. Despite extensive spending on urban transportation systems, the problems seem to only get worse. India is urbanizing. Its urban population is growing at an average rate of around 3% per year. The average rate of growth of the urban population is not expected to change significantly during the next ten years or so. Assuming decadal increase of around 32%, India's urban population is expected to increase from 377 million in 2011 to 500 million in 2021. In terms of percentage of total population, the urban population has gone up from 17% in 1951 to 31.8% in 2011 and is expected to increase up to around 35% by the year 2021.

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During the 2000s, 91 million people joined the ranks of urban dwellers – which implies that the growth rate in urban areas remains almost the same during the last Corresponding author: Sanjay Kumar Singh European Transport \ Trasporti Europei (2012) Issue 52, Paper n° 5, ISSN 1825-3997 2 twenty years; urban population increased by 31.5% from 1991 to 2001 and 31.8% from 2001 to 2011. However, the number of metropolitan cities – those with a million plus population – has increased sharply over this period.

From 35 in 2001, the number of metropolitan cities rose to 50 according to the Census of India, 2011. Out of these 50, eight cities – Mumbai, Delhi, Kolkata, Chennai, Hyderabad, Bangalore, Ahmadabad, and Pune – have population more than 5 million. India's big cities now account for a larger share of total urban population – a trend that has been observed since independence. In 2011, the share of metropolitan cities was 42.3%, up from 37.8% in 2001 and 27.7% in 1991. The distribution of urban population by city size widely varies and is skewed towards larger cities. One specific feature of India's urbanization is the increasing m, that is, growth in the number and size of cities with a million plus population. The trends indicate the continued urbanization and metropolitanization in the years to come.

It is now felt that urbanization is necessary for the benefits of sharing modern technology for the growth and development of the entire national economy. In India, urban areas contribute more than sixty percent of the national income. In the coming years, as India becomes more and more urbanized, urban areas will play a critical role in sustaining high rates of economic growth. But, economic growth momentum can be sustained if and only if cities function efficiently - that their resources are used to maximize the cities' contribution to national income.

Economic efficiency of cities and well-being of urban inhabitants are directly influenced by mobility or the lack of it. City efficiency largely depends upon the effectiveness of its transport systems, that is, efficacy with which people and goods are moved throughout the city.

Poor transport systems stifle economic growth and development, and the net effect may be a loss of competitiveness in both domestic as well as international markets.. Public transport systems in cities have not been able to keep pace with the rapid and substantial increases in demand over the past few years. As Cities cannot afford to cater only to the private vehicles and there has to be a general recognition that policy should be designed in such a way that reduces the need to travel by personalized modes and boosts public transport particularly bus transport system. Much needs to be done if public transport is to play a significant role in the life of a city. Measures need to be taken to enhance the quality as well as quantity of public transport services and to impose constraints on the use of private vehicles.

III. SOFTWARE REQUIREMENTS FOR SYSTEM

The software requirement specification can produce at the culmination of the analysis task. The function and performance allocated to software as part of system engineering are refined by established a complete information description, a detailed functional description, a representation of system behavior, and indication of performance and design constrain, appropriate validate criteria, and other information pertinent to requirements.

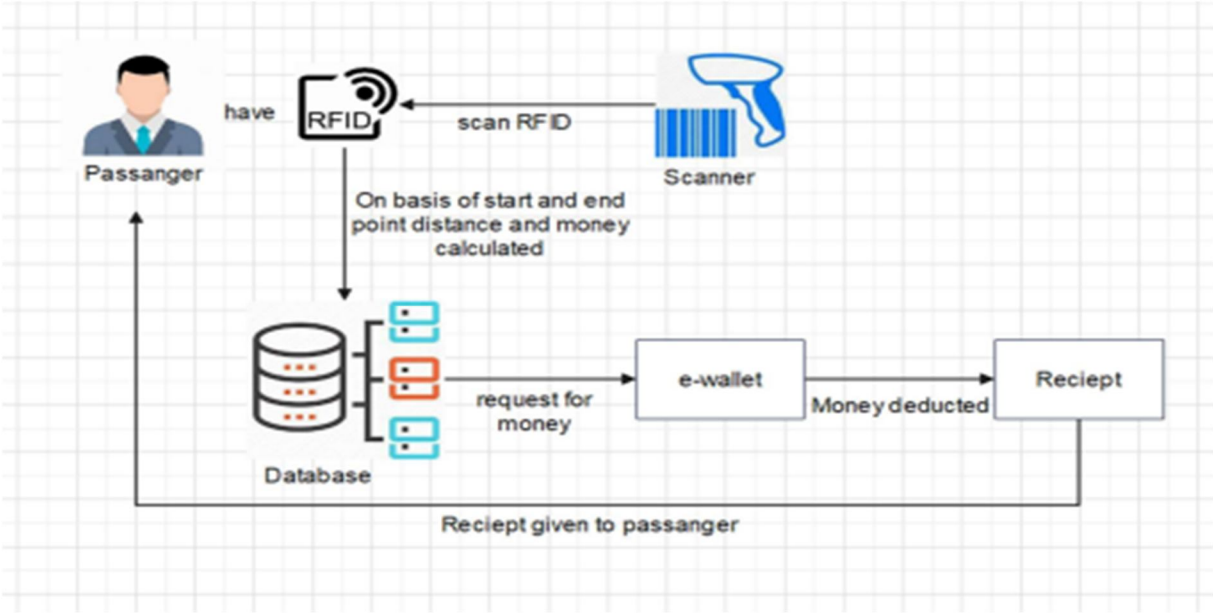
1) GPS module (SIM28ML)
2) Scanner (Android apk)
3) Bluetooth module (HC05)
4) Ethernet Shield
5) Counter (Pushup Switch)
6) QR Codes
7) RFID
8) Internet connection

IV. SYSTEM ARCHITECTURE

To overcome the problem of repaying bus ticket change to passengers, this model is proposed . As it can be seen in the above block diagram, transactions of ticket charges are made through smart card, for smart card a database is designed to store the account of individual passenger and smart card can be topped up like mobile prepaid cells. Smart card is flashed across the screen of scanner and then all the details of passenger is recorded. Scanner is connected to the Arduino microcontroller. Through GPS module the position of the passengers can be tracked and the latitude longitude value is stored in the GPS database which is then connected to the Arduino wherein the distance between two places can be calculated and from the distance the ticket charge is calculated . The ticket charge value is deducted from the database through smart card.

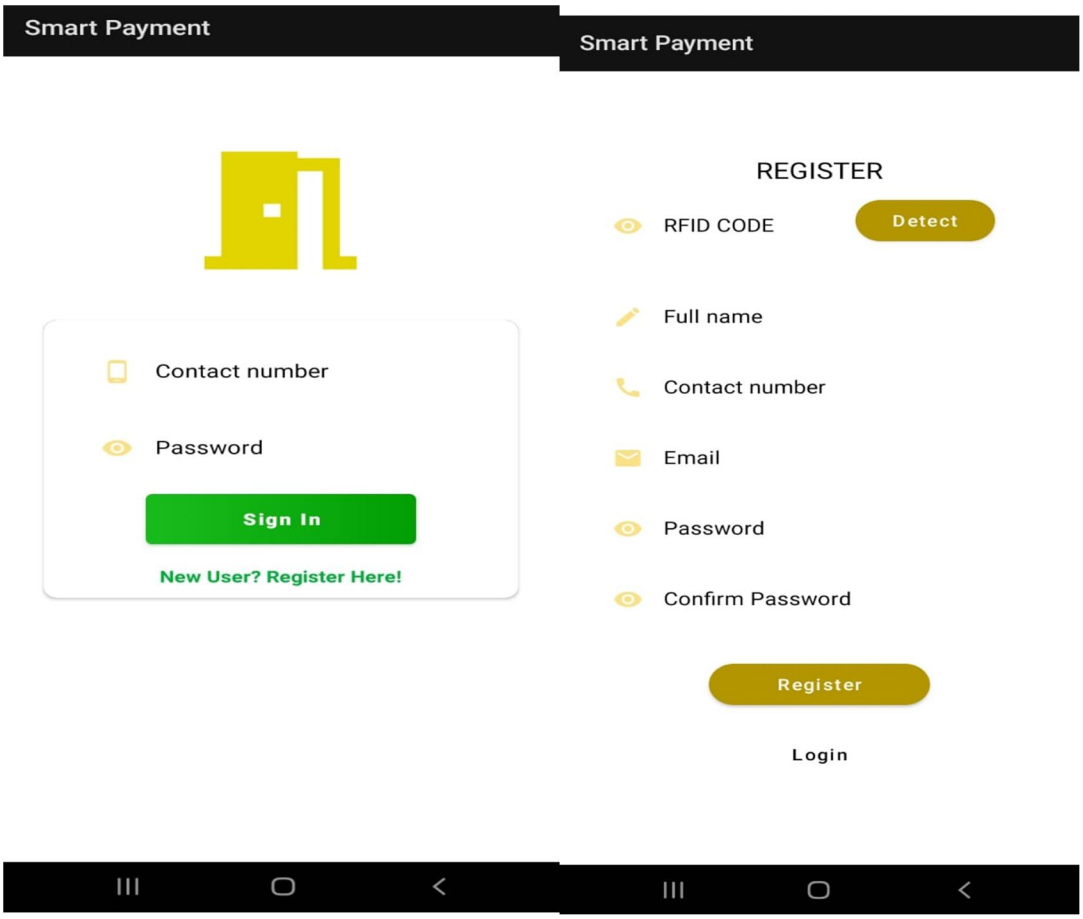
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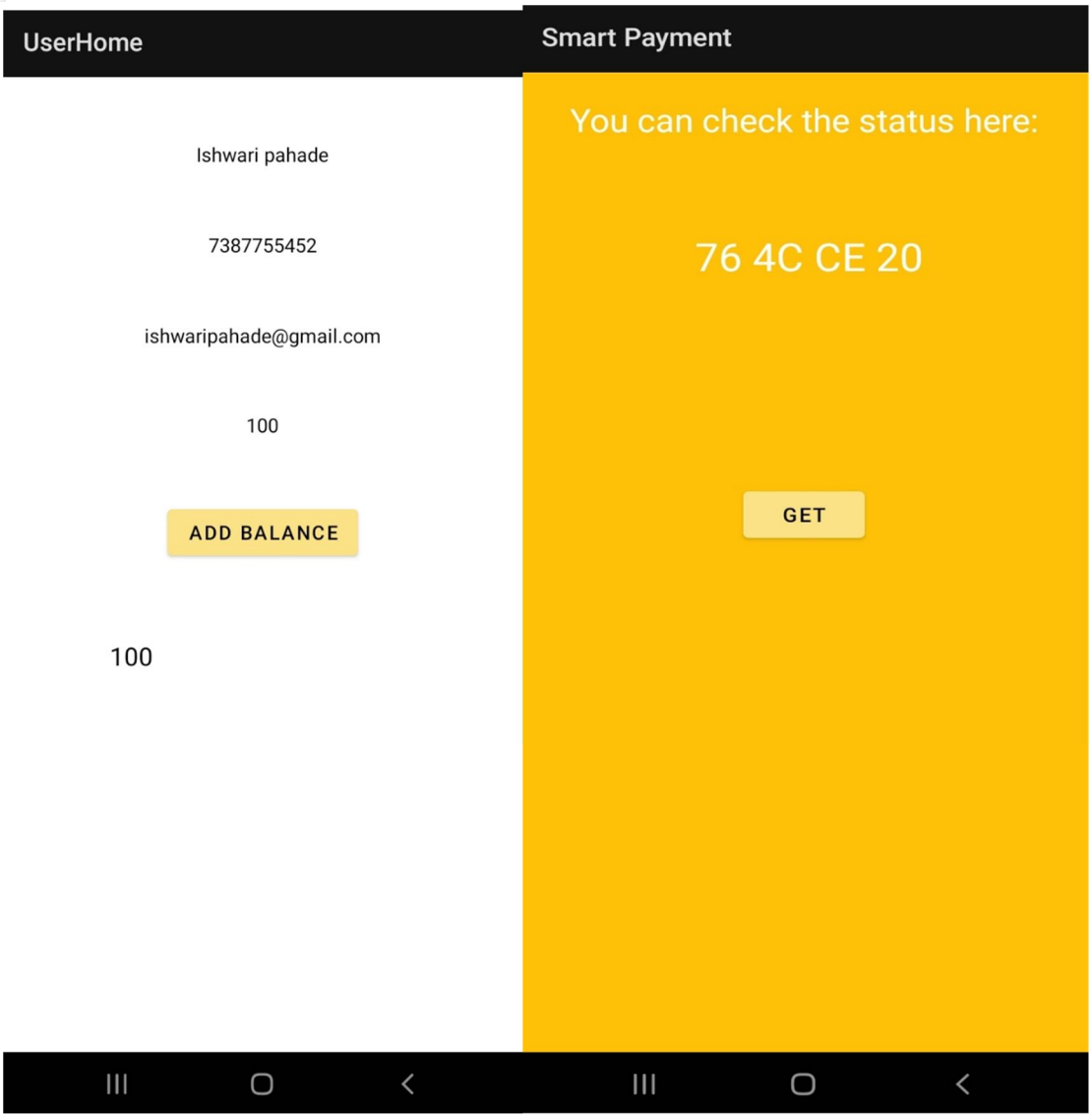


System architecture diagram

V. IMPLEMENTATION



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VI. FUTURE WORK

This proposed plan stands in support for Digital India concept and it helps in Demonetization reform that is going on in nowadays. Hence as a part of future scope, we can extend this project and implement in every smart city hence supporting Smart City concept also. Also we can extend this project for any other Transportation system such as private buses and any other unions of transportations.

VII. CONCLUSION

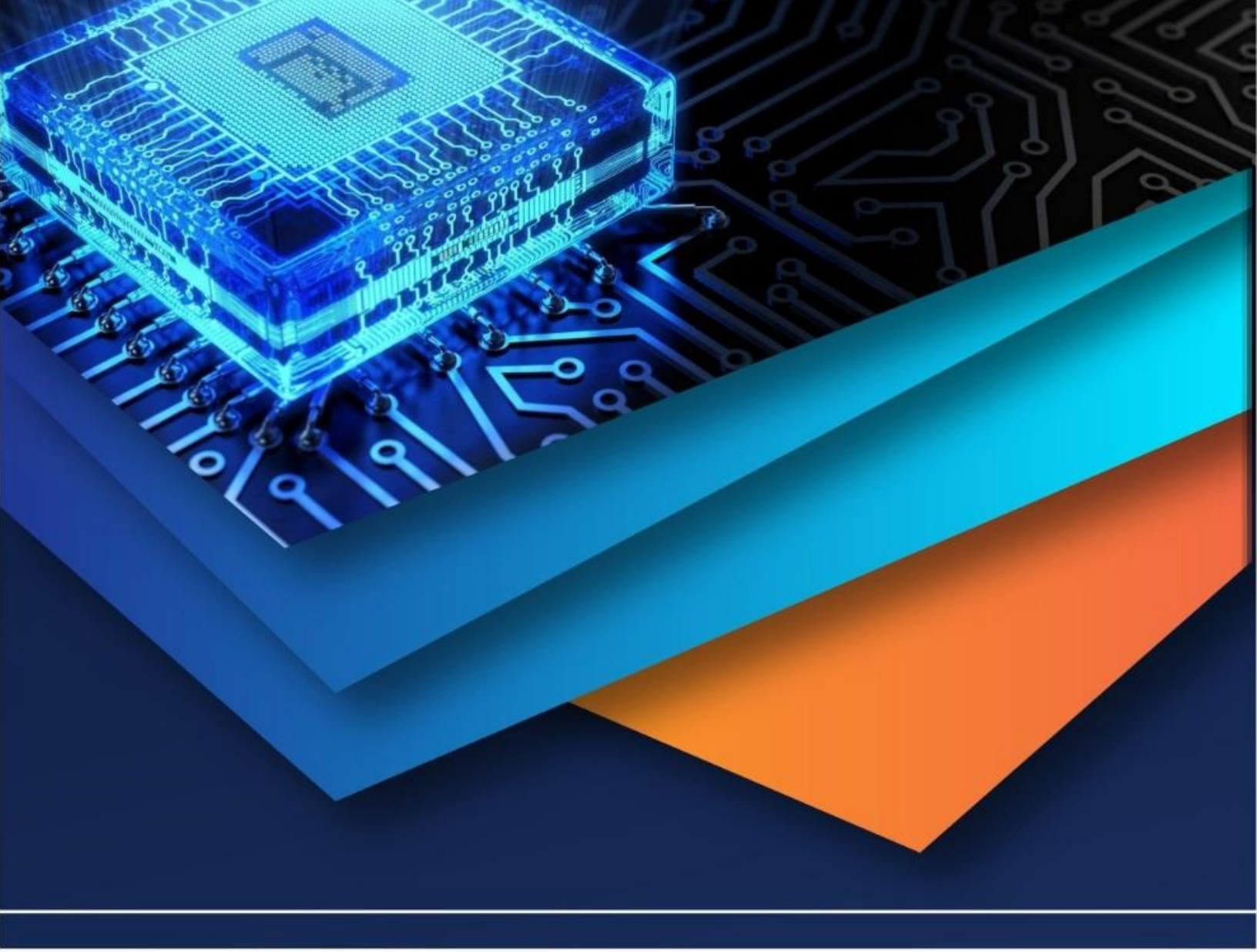
The proposed system solves all the problems existing on bus ticket change problems. The modules used in the systems are easily available and are cost efficient. Less maintenance required and is portable. Model can be easily implemented anywhere. It saves time and sources. And is user friendly can be used easily. This proposed plan stands in support for Digital India concept and it helps in Demonetization reform that is going on in nowadays. Hence as a part of future scope, we can extend this project and implement in every smart cities hence supporting Smart City concept also.

REFERENCES

[1] Andrea Zanella, Nicola Bui, et, al "Internet of things for smart cities" IEEE Internet of things journal vol.1, February 2014.
[2] Salim, et al. "Design and Implementation of Web-Based GPS-GPRS Vehicle Tracking System." IJCSET December 2013.
[3] Zhu, et al. "Intelligent transportation system based on Internet of Things." WAC 2012.

[4] L. Atzori, A. Iera, and G. Morabito, "The internet of things: A survey," Computer. Networks., vol. 54, no. 15, pp. 2787–2805, 2010.
[5] Hasan Omar Al-Sakran "Intelligent traffic information system based on integration of Internet of Things and Agent technology", IJACSA ,vol 6, 2015.
[6] Laisheng Xiao, —Internet of Things: a New Application for Intelligent Traffic Monitoring System, Journal of Networks, vol 6, 2011.
[7] K. Ashton, —That Internet of Things thing, RFiD Journal, 2009.
[8] D. Singh, G. Tripathi and A. J. Jara, —A survey of Internetof-Things: Future Vision, Architecture, Challenges and Services, IEEE World of Forum on Internet of Things.
[9] Anitha Chepuru, Dr. K. Venugopal Rao "A study on security of IoT in Intelligent Transport Systems Applications", IJARCSEE, vol 5, September 2015.
[10] Y. Yin and J. Dalin,(2013) —Research and Application on Intelligent Parking Solution Based on Internet of Things‖, 5th International Conference on Intelligent Human-Machine Systems and Cybernetics (IHMSC).
[11] D. Bandyopadhyay and J. Sen, —The internet of things – applications and challenges in technology and Standardization", Springer International Journal of Wireless Personal Communications, 2011, vol. 58.
[12] V.Katiyar, P. Kumar and N. Chand, —An Intelligent Transportation System Architecture using Wireless Sensor Network, International Journal Computer Applications, vol 14,2011
[13] D. Miorandi, S. Sicari, F. De Pellegrini and I. Chlamtac, —Internet of things: Vision, applications and research challenges,Ad Hoc Networks, vol.10,2012.
[14] T.S. Lo´pez, D.C. Ranasinghe and M. H. Duncan McFarlane, "Adding sense to the Internet of Things An architecture framework for Smart Object systems, Personal Ubiquitous Computing, 2012, vol. 16, pp. 291–308.

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