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Survey on Smart Ambulance with Traffic Management

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Abstract - The growth of industrialization and urbanization has result in associate huge increase within the population invariably leading to rise within the variety of vehicles on road. The ensuing traffic congestion and traffic jams are the most important hurdles for emergency vehicles like ambulance carrying important patients as these emergency vehicles aren't able to reach their destination in time, ensuing into a loss of human life. To solve this drawback to some extent we've got apparently come back up with Smart ambulance using IR sensors for ambulance. The proposed system clears the tie up by turning all the red lights to green on the trail of the ambulance, hence helping in clearing the traffic and providing means towards its destination. The system consists of associate android application which registers the ambulance on its network. In case of emergency scenario, if the car halts on its means, the application sends associate emergency command to the traffic signal server and additionally the direction wherever it needs to move with this position with the assistance of world Positioning System (GPS). The closest signal is known based upon this position of the ambulance. And that particular signal is formed green until the ambulance passes by and later it regains its original flow of management. During this way it acts sort of a lifesaver project because it saves time throughout emergency by dominant the traffic lights.

Keywords: *Software-Defined Networking, Internet of Things, Quality-of-Service, Routing.*

1. INTRODUCTION

The pace at that the globe is developing is extremely high these days. Re-formations in technology each day is evolving and improving efficiency in tending sector is one amongst the foremost difficult and difficult jobs conjointly with the appearance of Industrialization and Urbanization, because the population increases day by day the quantity of vehicles conjointly will increase on the roads. This ends up in high traffic jams in massive cities. Traffic congestion causes several somebody on countries transportation. One of the wide affected services because of traffic jams is that of an ambulance. Many another times, ambulance contains emergency or essential patients that have to be taken to the hospital in minimum amount of time providing correct treatment to the patient so probabilities of extant will increase in critical condition. A Patient could lose his life if there's delay in reaching of ambulance to the hospital. In line with the surveys ninety fifth of the guts attacks cases will be treated, if the ambulance will reach the hospital at current time while not stuck into the traffic. For this, it's required that the vehicles on the road to form approach for the ambulance. However typically, the ambulance gets stuck within the traffic that successively wastes a great deal of your time looking ahead to the traffic to get clear. We are able to overcome these limitations by the rising technology like IOT i.e. internet of Things. Varied package implementations and hardware devices will be connected with the assistance of wireless networking tools or wired tools. In IOT the parts are connected and controlled by the web. Therefore the impact of IOT in today's era is important because it helps to represent the article digitally and makes itself one thing larger than the object by itself.

2. LITERATURE SURVEY

Paper Name: Recommendations of the DG eCall for the introduction of the pan-European eCall

Authors: eCall Driving Group

Description: With fatalities on the road across the EU of more than 40.000 people every year, the European Commission recognizes that the current measures towards reducing the fatality number is not enough. In the White Paper on European transport police from 2001, the European Commission proposed that the European Union should set itself the target of halving the number of road fatalities by 2010. One of the initiatives from the European Commission is the establishment of the eSafety Forum, which is a joint industry/public initiative for improving road safety by using new Information and Communications Technologies. The overall objective is to join forces and to build up a European strategy to accelerate the research and development, deployment and use of Intelligent Integrated Safety Systems including Advanced Driver Assistance Systems (ADAS) for increasing road safety in Europe.

Paper Name: Towards Vehicular Sensor Networks with Android Smartphones for Road Surface Monitoring.

Authors: Girts Strazdins, Artis Mednis, Georgijs Kanonirs, Reinholds Zviedris and Leo Selavo

Description: Android is one of the most popular smartphone platforms at the moment, and the popularity is even rising. Additionally, it is one of the most open and flexible platforms providing software developers easy access to phone hardware and rich software API. We envision Android-based smartphones as a powerful and widely used participatory sensing platform in near future. In this paper we examine Android smartphones in the context of road surface quality monitoring. We evaluated a set of pothole detection algorithms on Android phones with a sensing application while driving a car in urban environment. The

results provide first insight into hardware differences between various smartphone models and suggestions for further investigation and optimization of the algorithm, sensor choices and signal processing.

Paper Name: Providing Accident Detection in Vehicular Networks Through OBD-II Devices and Android-based Smartphones.

Authors: Jorge Zaldivar, Carlos T. Calafate, Juan Carlos Cano, Pietro Manzoni

Description: By combining smartphones with existing vehicles through an appropriate interface we are able to move closer to the smart vehicle paradigm, offering the user new functionalities and services when driving. In this paper we propose an Android based application that monitors the vehicle through an On Board Diagnostics (OBD-II) interface, being able to detect accidents. Our proposed application estimates the G force experienced by the passengers in case of a frontal collision, which is used together with airbag triggers to detect accidents. The application reacts to positive detection by sending details about the accident through either e-mail or SMS to predefined destinations, immediately followed by an automatic phone call to the emergency services. Experimental results using a real vehicle show that the application is able to react to accident events in less than 3 seconds, a very low time, validating the feasibility of smartphone based solutions for improving safety on the road.

Paper Name: Development of the Traceability System which Secures the Safety of Fishery Products using the QR Code and a Digital Signature

Authors: Katsunori Seino', Shinji Kuwabara', Sadayoshi Mikami2, Yuta Takahashi', Mayumi Yoshikawa', Hideto Narumi3, Kiyoto Koganezaki3, Takashi Wakabayashi4, Akira Nagano'

Description: Technologies that enable traceability for fishery products are increasing their demands. Recently proposed technologies are mainly based on disposal RF(IC) tags which are able to record information directly onto them. However, the current systems based on RF tags have problems of expensive price of tags, and weakness of reading information if applied onto surface of products containing much water, which prevents to construct practically feasible systems using the RF tags. To provide a traceability system that uses much inexpensive media and that assures as high security as the RF tags, we propose a system based on a combination of printed **2D** codes and internet connection, with security control similar to on-line electronic transactions. The proposed system identifies a fishery product by giving it a unique serial **ID,** which is issued by a database server, and printed in 2D code onto a paper or a plastic plate, which is directly put on the product. All the trace information sent from client (producer, transporters, and retailer) via internet is associated to the **ID** and stored to the server. Since **2D** code is able to be read by such as mobile phones with built-in camera, a consumer is able to get history of the product with a single scanning operation. For the weakness of printed codes against duplication by copying, we propose a method to identify its validity by digital encryption, along with identification by weight information. The system is assured its usability by a series of experiments conducted for the distribution of cultured flounder in Hakodate, Japan.

Paper Name: Accident identification system with SMS notification

Authors: Supriya vidhate, mamta tadavi, manisha jagtap, rajratan janrao

Description: In today's world highway accident have become a common occurrence. Many people die each year due improper medical care after the accident happen. There is no effective method by which the correct authorities can be informed in time so that the person's life can be saved. We are designing such a device which will not only detect any accident that happens to the car but also inform the appropriate authorities immediately as soon as the accident occurs. We have attached 8 digital sensors to the µc which are placed at various location of the vehicle. As soon as any accident is detected a pulse is given to µc. The µc then operates a buzzer and sends an emergency SMS (using AT commands) to the concerned persons.

Paper Name: Applying QR Code and Mobile Application to Improve Service Process in Thai Hospital

Authors: Chayakrit Charoensiriwath, Navaporn Surasvadi, Suporn Pongnumkul, Thunyasit Pholprasit

Description: Hospital overcrowding has been a problem in Thai public healthcare system. The main cause of this problem is the limited available resources, including a limited number of doctors, nurses, and limited capacity and availability of medical devices. There have been attempts to alleviate the problem through various strategies. In this paper, a low-cost system was developed and tested in a public hospital with limited budget. The system utilized QR code and smartphone application to capture as-is hospital processes and the time spent on individual activities. With the available activity data, two algorithms were developed to identify two quantities that are valuable to conduct process improvement: the most congested time and bottleneck activities. The system was implemented in a public hospital and results were presented.

Paper Name: Cloud Computing and Accident Handling Systems

Authors: Jabar H Yousif, Dinesh Kumar Saini

Description: An attempt is made to study the current issues of the cloud computing solutions for the life critical system- car accident systems in the Gulf region. Gulf region has high death rate because of car accidents and there is

little or no proper accident handling facilities in the region. This Research paper includes the review of development in the field of cloud computing in the service industries which provide some assistance to the accident handling systems including the hospitals and the drivers using latest technologies such as Mobile computing, SaaS, Cloud Computing etc.

Paper Name: Assessment of medication adherence app features, functionality, and health literacy level and the creation of a searchable Web-based adherence app resource for health care professionals and patients.

Authors: Seth Heldenbrand*, Bradley C. Martin, Paul O. Gubbins, Kristie Hadden, Catherine Renna, Rebecca Shilling, Lindsey Dayer

Description: Objectives: To assess the features and level of health literacy (HL) of available medication adherence apps and to create a searchable website to assist health care providers (HCP) and patients identify quality adherence apps. Practice description: Medication nonadherence continues to be a significant problem and leads to poor health outcomes and avoidable health care expense. The average adherence rate for chronic medications, regardless of disease state, is approximately 50% leaving significant room for improvement. Practice innovation: Smartphone adherence apps are a novel resource to address medication nonadherence. With widespread smartphone use and the growing number of adherence apps, both HCP and patients should be able to identify quality adherence apps to maximize potential benefits. Interventions: Assess the features, functionality and level of HL of available adherence apps and create a searchable website to help both HCP and patients identify quality adherence apps. Evaluation: Online marketplaces (iTunes, Google Play, Blackberry) were searched in June of 2014 to identify available adherence apps. Online descriptions were recorded and scored based on 28 author-identified features across four domains. The 100 highest-scoring apps were usertested with a standardized regimen to evaluate their functionality and level of HL. Results: 461 adherence apps were identified. 367 unique apps were evaluated after removing "Lite/Trial" versions. The median initial score based on descriptions was 15 (max of 68; range: 3 to 47). Only 77 apps of the top 100 highest-scoring apps completed user-testing and HL evaluations. The median overall user-testing score was 30 (max of 73; range: 16 to 55). Conclusion: App design, functionality, and level of HL varies widely among adherence apps. While no app is perfect, several apps scored highly across all domains. The website www.medappfinder.com is a searchable tool that helps HCP and patients identify quality apps in a crowded marketplace.

3. Project Overview

Now a day there's a high traffic at a specific time because of that the traffic signals ought to maintained properly to scale back accidents however at constant time throughout some emergency things car might blocked within the signal it results in major cause. To avoid this, supported all statistics, stoplight ought to be controlled. For that strategy, the proposed system is built in real time. This application is very useful for the world's day to day life to save someone's life. IoT plays the role between car and therefore the traffic signals. This project is based on the IoT to save the human life at critical situation. This project is to ascertain the communication between the stoplights and therefore the car in order that the traffic signal will answer the arrival of the car and respond according to that. When the traffic signals ar changes its states in line with the position of the car it will ready to create a free approach for the car. Thus this project can act as a life saver.

4. CONCLUSION

An algorithmic rule is style to monitor control system to avoid the traffic collision. So that they will save the lifetime of a patient during emergency time. Considering the real time state of affairs the system is improved by embedding GPS navigation system and adding an additional light-weight in control system and putting an alert inside 100m distance throughout ambulance arrival. So we can scale back the possibility of death rate throughout emergencies. The work presents review of the present analysis done in field and tries to develop a system appropriate for developing countries.

5. REFERENCES

[1] C. Perera, C. H. Liu, and S. Jayawardena, "The Emerging Internet of Things Marketplace From an Industrial Perspective: A Survey," IEEE Trans. Emerg. Topics Comput., vol. 3, no. 4, pp. 585–598, 2015.

[2] S. Verma, Y. Kawamoto, Z. M. Fadlullah, H. Nishiyama, and N. Kato, "A Survey on Network Methodologies for Real-Time Analytics of Massive IoT Data and Open Research Issues," IEEE Commun. Surveys Tut., vol. 19, no. 3, pp. 1457–1477, 2017.

[3] J. Jin, J. Gubbi, T. Luo, and M. Palaniswami, "Network Architecture and QoS issues in the Internet of Things for a Smart City," in Proc. Int. Symp. Communications and Information Technologies, 2012, pp. 956–961.

[4] Z. Qin, G. Denker, C. Giannelli, P. Bellavista, and N. Venkatasubramanian, "A Software Defined Networking architecture for the Internet-of-Things," in Proc. IEEE Network Operations and Management Symposium (NOMS), 2014, pp. 1–9.

[5] L. Li, S. Li, and S. Zhao, "QoS-Aware Scheduling of Services-Oriented Internet of Things," IEEE Trans. Ind. Informat., vol. 10, no. 2, pp. 1497–1505, 2014.

[6] Cisco Systems Inc., "The Zettabyte Era: Trends and Analysis," White Paper, Cisco Visual Networking, 2014.

[7] A. Stanford-Clark and H. L. Truong, "MQTT For Sensor Networks(MQTT-SN)," Protocol Specification Version 1.2, 2013.

[8] Z. Shelby, K. Hartke, and C. Bormann, " The Constrained Application Protocol (CoAP)," Internet Requests for Comments, RFC Editor, RFC 7252, 2014.

[9] P. Schulz, M. Matthe, H. Klessig, M. Simsek, G. Fettweis, J. Ansari, S. A. Ashraf, B. Almeroth, J. Voigt, I. Riedel, A. Puschmann, A. Mitschele-Thiel, M. Muller, T. Elste, and M.Windisch, "Latency Critical IoT Applications in 5G: Perspective on the Design of Radio Interface and Network Architecture," IEEE Commun. Mag., vol. 55, no. 2, pp. 70–78, 2017.

[10] N. McKeown, T. Anderson, H. Balakrishnan, G. Parulkar, L. Peterson, J. Rexford, S. Shenker, and J. Turner, "OpenFlow: Enabling Innovation in Campus Networks," ACM SIGCOMM CCR, vol. 38, no. 2, pp. 69–74, 2008.

[11] H. E. Egilmez, S. Civanlar, and A. M. Tekalp, "An Optimization Framework for QoS-Enabled Adaptive Video Streaming Over OpenFlow Networks," IEEE Trans. Multimedia, vol. 15, no. 3, pp. 710–715, 2013.

[12] J. M. Llopis, J. Pieczerak, and T. Janaszka, "Minimizing Latency of Critical Traffic through SDN," in Proc. IEEE Int. Conf. Networking, Architecture and Storage, 2016, pp. 1–6.

[13] R. Cohen, L. Lewin-Eytan, J. S. Naor, and D. Raz, "On the Effect of Forwarding Table Size on SDN Network Utilization," in Proc. IEEE INFOCOM, 2014, pp. 1734–1742.

[14] H. Huang, S. Guo, P. Li, B. Ye, and I. Stojmenovic, "Joint Optimization of Rule Placement and Traffic Engineering for QoS Provisioning in Software Defined Network," IEEE Trans. Comput., vol. 64, no. 12, pp. 3488–3499, 2015.

[15] Y. Liu, D. Niu, and B. Li, "Delay-Optimized Video Traffic Routing in Software-Defined Interdatacenter Networks," IEEE Trans. Multimedia, vol. 18, no. 5, pp. 865–878, 2016.

[16] Z.Wang and J. Crowcroft, "Quality-of-service routing for supporting multimedia applications," IEEE J. Sel. Areas Commun., vol. 14, no. 7, pp. 1228–1234, 1996.

[17] J. Y. Yen, "Finding the K Shortest Loopless Paths in a Network," Management Science, vol. 17, no. 11, pp. 712–716, 1971.

[18] H. Gupta, S. B. Nath, S. Chakraborty, and S. K. Ghosh. (2016) SDFog: A Software Defined Computing Architecture for QoS Aware Service Orchestration over Edge Devices. [Online]. Available: arXiv:1609.01190

[19] S. Tomovic, K. Yoshigoe, I. Maljevic, and I. Radusinovic, "Software-defined fog network architecture for iot," Springer Wireless Personal Communications, vol. 92, no. 1, pp. 181–196, 2017.

[20] R. Mu˜ noz, R. Vilalta, N. Yoshikane, R. Casellas, R. Martnez, T. Tsuritani, and I. Morita, "Integration of IoT, Transport SDN, and Edge/Cloud Computing for Dynamic Distribution of IoT Analytics and Efficient Use of Network Resources," IEEE/OSA Journal of Lightwave Technology, vol. 36, no. 7, pp. 1420–1428, 2018.