ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)
Vol 5, Issue 3, March 2018

Automatic Detection of potholes and humps for controlling the vehicle speed

[1] Marimuthu B, [2] Solaiyappan S, [3] N.Gowthami
[1][2][3] Information Technology, National Engineering College, Kovilpatti.

***Abstract* – Automatic detection of potholes and humps for alerting vehicle drivers to drive safely. The mobile application used in this system is an additional advantage as it provides timely alerts about potholes and humps. Identification types of surface distress such as potholes and humps to avoid accidents and vehicle damages. Ultrasonic sensors are used to identify the potholes and humps and also to measure the depth and height, respectively. It recorded the geographical location coordinates of the potholes and humps using a Global Positioning System receiver. The sensed-data includes pothole depth, height of hump, and geographic location, which is stored in the database. This serves as a valuable source of information to the government authorities and vehicle drivers. Once the fault will be rectified the database updated automatically. Alerts are given in the form of an audio.**

Key Terms: Android application, Alert Message, GPS location, potholes, Ultrasonic sensors,

INTRODUCTION

INDIA, the second most populous Country in the World and a fast growing economy, is known to have a gigantic network of roads. Roads are the dominant means of transportation in India today. They carry almost 90 percent of country's passenger traffic and 65 percent of its freight. However, most of the roads in India are narrow and congested with poor surface quality And road maintenance needs are not satisfactorily met. No matter where you are in India, driving is a breath-holding, multi-mirror involving, potentially life threatening affair. Over the last two decades, there has been a tremendous Increase in the vehicle population. This proliferation of vehicles has led to problems such as traffic congestion and increase in the number of road accidents. Pathetic condition of roads is a boosting factor for traffic congestion and accidents. Roads in India normally have speed breakers so that the vehicle's speed can be controlled to avoid accidents. However, these speed breakers are unevenly distributed with uneven and unscientific heights. Potholes, formed due to heavy rains and movement of heavy vehicles, also become a major reason for traumatic accidents and loss of human lives.
According to the survey report "Road Accidents in India, 2011", by the ministry of road transport and highways, a total of 1,42,485 people had lost their lives due to fatal road accidents. Of these, nearly 1.5 per cent or nearly 2,200 fatalities were due to poor condition of roads. Portrays the condition of roads with killer potholes. To address the above mentioned problems, a cost effective solution is needed that collects the information about the severity of potholes and humps and also helps drivers to drive safely. With the proposed system an attempt has been made to endorse drivers to ward off the accidents caused due to potholes and raised humps.

LITERATURE SURVEY

[1] Rajeshwari Madli, Santosh Hebbar & all, this paper offers a cost effective solution for detecting potholes and humps on roads and notifying drivers about their presence. Also discusses previous pothole detection methods that have been developed and proposes a cost-effective solution to identify the potholes and humps on roads and provide timely alerts to drivers to avoid accidents or vehicle damages. Ultrasonic sensors are used to identify the potholes and humps and also to measure their depth and height, respectively. This system captures the geographical location coordinates of the potholes and humps using a global positioning system receiver. An android application is used to alert drivers so that precautionary measures can be taken to evade accidents. Alerts are given in the form of a flash message with an audio beep.

[3]Swagata Devi, Soumik Roy. January 2017 this paper proposes a physiological signal processing platform, which measures two physiological parameters: heart or pulse rate and oxygen saturation level. The physiological signals are processed using a graphical user interface (GUI) and the results are saved as text files in the current directory of MATLAB. These saved results are monitored with the help of an Android application (Android app). The application is designed in such a way, that it can read the saved results in the text files on the laptop or PC where they have been saved. The files are accessed through wireless network. In case the accessed results have any abnormal readings, then an alarm starts buzzing

which alerts the user. Additionally, a text message is sent to the physician or the caregiver immediately, so as to alert him/her about the abnormal health conditions of the patient.

[4] Alan Chern, Ying-Hui Lai & all. In this paper, smartphone-based hearing assistive system (termed SmartHear) to facilitate speech recognition for various target users, who could benefit from enhanced listening clarity in the classroom. The SmartHear system consists of transmitter and receiver devices (e.g., smartphone and Bluetooth headset) for voice transmission, and an Android mobile application that controls and connects the different devices via Bluetooth or Wi-Fi technology. The main functionalities of SmartHear include: 1) configurable transmitter/receiver assignment, to allow flexible designation of transmitter/receiver roles; 2) advanced noise-reduction techniques; 3) audio recording; and 4) voice-to-text conversion, show the effectiveness of SmartHear in maintaining voice-to-text conversion accuracy regardless of the distance between the speaker and listener.

[5] Mohsen Toorani A. Beheshti . The SSMS provides the end-to-end security and is based on the first solution. It provides an elliptic curve-based public key solution that uses public keys for the secret key establishment of a symmetric encryption. It also provides the attributes of public verification and forward secrecy. It efficiently makes the SMS messaging suitable for the m-payment applications where the security is the great concern.

[6] Manisha Madhwani & all. Most popular shortest and cheapest textual form of communication is short message service (SMS).To ensure the security of the texts which is sent, many algorithm are available. In this paper proposed an efficient algorithm for cryptography which is based on static Look Up table and Dynamic Key. Symmetric encryption and decryption is used in this algorithm. The proposed algorithm is more secure and simple to implement. This application makes use of built in android Intents and SMS Manager to send and receive messages. This proposed scheme is based on static Look Up table and Dynamic Key. It makes use of symmetric key encryption and decryption. The scheme is cost effective, simple and easy to implement. It is applied on message application to provide security to texts being sent from an android mobile to another.

[8] Peng Zhao, Kaigui Bian & all. In this paper, Secret-Question based Authentication system, called "Secret-QA" that creates a set of secret questions on basic of people's smartphone usage. To develop a prototype on Android smartphones, and evaluate the security of the secret questions by asking the acquaintance/stranger who participates in our user study to guess the answers with and without the help of online tools; meanwhile, user observe the questions' reliability by asking participants to answer their own questions. Our experimental results reveal that the secret questions related to motion sensors, calendar, app installment, and part of legacy app usage history (e.g., phone calls) have the best memorability for users as well as the highest robustness to attacks.

[9] Satien Janplaa, Phattara Bumrugrada & all. In this paper, traffic-sign knowledge application on Android system. The objective of this system is to support and advice user to learn and test traffic signs and driving rules in Thailand based on mobile application. It makes benefits for users to learn and know the means of traffic signs and how to drive correctly in Thailand. In this project, it was divided the result by the research purposes into 2 parts: developing the Mobile application for traffic-sign knowledge and testing and evaluating the system. Questionnaires were used to measure user satisfaction with system usability by specialists and users. Further analysis showed that the quality of a traffic-sign knowledge system was also at a good level as well.

[10] Wenjia Wu, Jianan Wu & all. In this paper, the combination of implicit identifiers that cannot identify a device individually. Device first investigates 38 implicit identifiers that are acquired without requesting any permission. Then, a feature selection algorithm is used to choose effective identifiers as the device fingerprint, and three algorithms are designed to identify the devices finally, we conduct experimental evaluations on 50 830 fingerprints from 2239 different Android devices. The empirical results demonstrate the effectiveness and efficiency of our algorithms.

[13] Mauro Conti, Senior Member, IEEE & all. In this paper, investigate to what extent such an external attacker can identify the specific actions that a user is performing on her mobile apps. Design a system that achieves this goal using advanced machine learning techniques. Compared our solution with the three state-of-the-art algorithms, and confirming that our system outperforms all these direct competitors.

[15] Le Yu, Tao Zhang, Xiapu Luo & all. In this paper, to propose and develop a novel system named AutoPPG to automatically construct correct and readable

ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)
Vol 5, Issue 3, March 2018

descriptions to facilitate the generation of privacy policy for Android applications (i.e., apps). Given an app, AutoPPG first conducts static code analysis to characterize its behaviors related to users' personal information, and then applies natural language processing techniques to generating correct and accessible sentences for describing these behaviors. The experimental results using real apps and crowdsourcing indicate that: 1) AutoPPG creates correct and easy-to-understand descriptions for privacy policies; 2) the privacy policies constructed by AutoPPG usually reveal more operations related to users' personal information than existing privacy policies; and 3) most developers, who reply us, would like to use AutoPPG to facilitate them.

PROPOSED SYSTEM

In this project has only focusing on android application to alert the notification. The user can install android application to alert where potholes are present in the road surface. This system can be further improved to consider the above fact and update server database accordingly. Large numbers of potholes are present in the particular way or road surface it will generate the text document that will reported to corresponding authorities to rectify the fault.

Algorithm 1

Potholes and humps detection

Input: Ultra sonic Sensed Data set H(In cm)

Threshold value in TS

Output: Get Potholes and humps value

1. TS ← 10
2. Height ← H
3. If Height > TS

   Pothole ← Height – TS

   return Pothole
4. Else if Height < TS

   Hump ← TS – Height

   return Hump

   end if

end if

Algorithm 2

Location Notification

Input: Get the location value in data set L,

Unknown location x.

Output: Matched location Y.

1. Y ← null
2. For sample ∈ L do

   If sample and x are matched then

   Y ← x

   Return Y

   End if

End for

Return y

Block Diagram

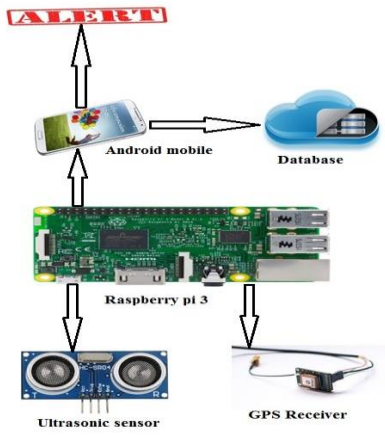

Fig 1: Architecture of the proposed system.

Flow Diagram

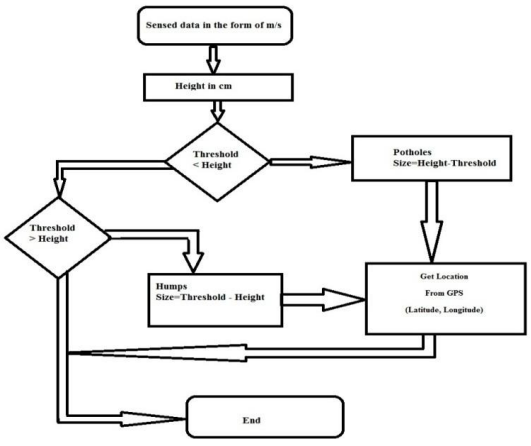

Fig 2: Detection of Potholes and Humps

ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)
Vol 5, Issue 3, March 2018

Proposed Model

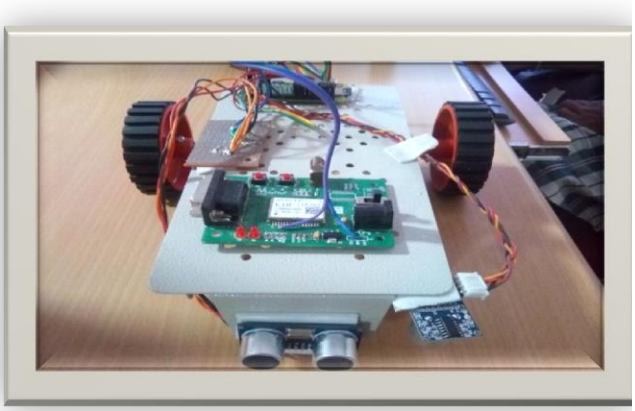

Fig 3: Working of the proposed Model

Output

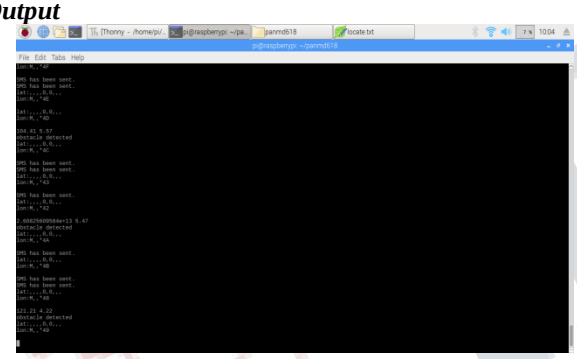

Fig 4: Terminal Output it represents the gps value and sms send alert

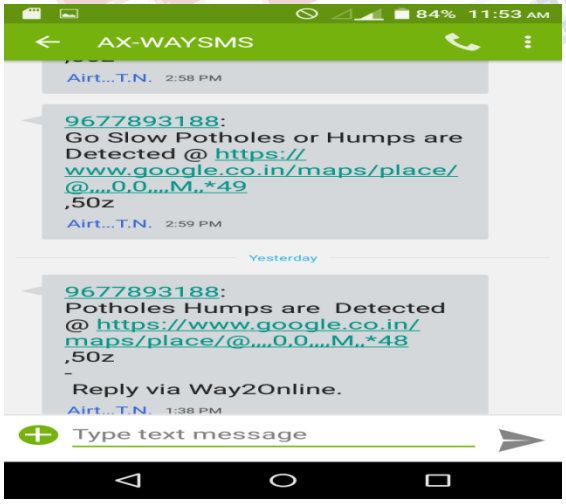

Fig 5: SMS Send through register mobile number

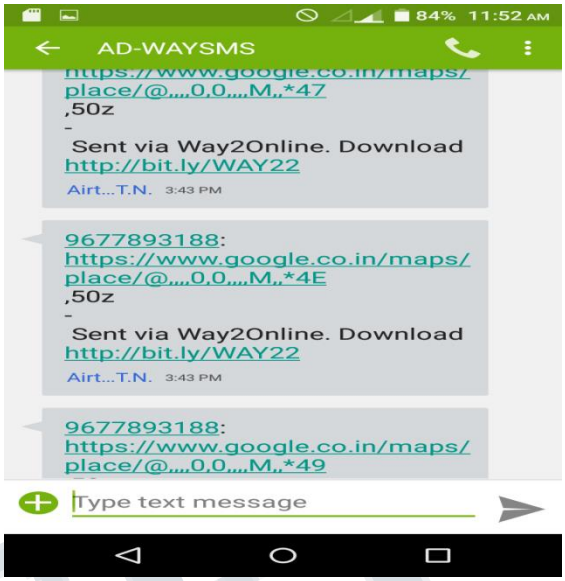

Fig 6: Represent obstacle detection location can send via sms

CONCLUSION

The model proposed in this paper provides two important purposes; automatic detection of potholes and humps and alerting vehicle drivers to evade potential accidents. The proposed approach is an economic solution for detection of dreadful potholes and uneven humps, as it uses low cost ultrasonic sensors. The mobile application used in this system is an additional advantage as it provides timely alerts about potholes and humps. We feel that the solution provided in this paper can save many lives and ailing patients who suffer from tragic accidents. This system can be further improved to consider the above fact and update server database accordingly.

REFERENCES

[1] Rajeshwari Madli, Santosh Hebbar, Praveenraj Pattar, and Varaprasad Golla "Automatic Detection and Notification of Potholes and Humps on Roads to Aid Drivers" IEEE Sensors Journal, Vol. 15, No. 8, August 2015.

[2] Vishwakarma R Ganesh "Android College Management System" International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume 5, Issue 4, April 2016

[3] Swagata Devi, Soumik Roy "Physiological measurement platform using wireless network with Android Application" Informatics in Medicine Unlocked 7 (2017) 1–13

[4] Alan Chern, Ying-Hui Lai, (Member, IEEE), Yi-Ping Chang Yu Tsao, (Member, IEEE), Ronald Y. Chang, (Member, IEE), and Hsiu-Wen Chang "A Smartphone-Based Multi-Functional Hearing Assistive System to Facilitate Speech Recognition in the Classroom" IEEE Access date of current version June 27, 2017.

[5] Mohsen Toorani A. Beheshti "SSMS - A Secure SMS Messaging Protocol for the M-Payment Systems" 2015

[6] Manisha Madhwani, Kavyashree C.V, Dr. Jossy P. George "Cryptography on Android Message Application Using Look up Table and Dynamic Key (CAMA)" IOSR Journal of Computer Engineering (IOSRJCE) ISSN: 2278-0661, ISBN: 2278-8727 Volume 6, Issue 2 (Sep-Oct. 2012), PP 54-59

[7] Adam Skillen and Mohammad Mannan "Mobiflage: Deniable Storage Encryption for Mobile Devices" IEEE Transactions On Dependable And Secure Computing, Vol. 11, No. 3, May-June 2014

[8] Peng Zhao, Kaigui Bian, Tong Zhao, Xintong Song, Jung-Min ''Jerry'' Park, Xiaoming Li, Fan Ye, and Wei Yan "Understanding Smartphone Sensor and App Data for Enhancing the Security of Secret Questions" IEEE transactions on mobile computing, Vol. 16, No. 2, February 2017

[9] Satien Janplaa, Phattara Bumrugrada, Kunyanuth Kularbphettonga "Developing a Traffic-Sign Knowledge Application on Android System" Procedia - Social and Behavioral Sciences 191 (2015) 680 – 685

[10] Wenjia Wu, Jianan Wu, Yanhao Wang, Zhen Ling, and Ming Yang "Efficient Fingerprinting-Based Android Device Identification with Zero-Permission Identifiers" date of current version November 28, 2016. Digital Object Identifier 10.1109/ACCESS.2016.2626395

[11] Weiran Liu, Jianwei Liu, Qianhong Wu, Bo Qin "ANDROID A Pairing based Cryptography Toolkit for android platform" year 2014

[12] Jinghua Jiang, Yifeng Zheng, Xingliang Yuan, Zhenkui Shi, Xiaolin Gui1, Cong Wang, and Jing Yao "Towards Secure and Accurate Targeted Mobile Coupon Delivery" November 28, 2016. Digital Object Identifier 10.1109/ACCESS.2016.2624779

[13] Mauro Conti, Senior Member, IEEE, Luigi Vincenzo Mancini, Riccardo Spolaor, And Nino Vincenzo Verde "Analyzing Android Encrypted Network Traffic to Identify User Actions" IEEE transactions on information forensics and security, Vol. 11, No. 1, January 2016

[14] Lichun Li, Rongxing Lu, Senior Member, IEEE, and Cheng Huang "EPLQ: Efficient Privacy-Preserving Location-Based Query Over Outsourced Encrypted Data" IEEE Internet of things Journal, Vol. 3, No. 2, April 2016

[15] Le Yu, Tao Zhang, Xiapu Luo, Lei Xue, and Henry Chang "Toward Automatically Generating Privacy Policy for Android Apps" IEEE Transactions on information forensics and security, Vol. 12, No. 4, April 2017