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Effective Accident Avoidance with Multi Zone Secured Implementation

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Abstract: It is well known that walking while using mobile phones will make people more liable to various risks. Existing works to improve smartphone users' safety are mainly limited to detecting incoming vehicles. They fail to concentrate on some more common and equally dangerous accidents such as trips, falling from stairs, platforms, or falling into an open manhole. We are implementing an alert system to the mobile user. In the event that individuals are riding bikes, the approaching air decibels are recorded and promptly notification is given to the user. If people texting while they are moving on steps an notification is sent. Also, if any potholes are found while they are strolling on street, the ultrasonic sensor that is fixed on our device will distinguish the potholes and issues a notification. Movie Piracy is likewise avoided by estimating the sound decibels and notification is sent.
Keywords: Global Positioning System, Ultrasonic Sensor, Pothole Analysis, MEMS Sensor,.

I. INTRODUCTION

A selfie is defined as a photograph that one has taken of oneself, typically taken with a smartphone or webcam and shared via social media. In 2015, Google estimated that 24 billion selfies were uploaded to Google Photos and the number of selfies posted on Instagram increased by 900 times between 2012 and 2014. Selfie, nowadays has become a ubiquitous tool for self-representation on social media. However, in some cases, selfie culture may promote dangerous behavior posing significant moral, mental and physical health implications on the individuals clicking selfies. Users click multiple selfies and post on social media aesthetically altered versions that make them look more attractive. In extreme cases, users engage in behaviors that portray them to be adventurous or enhance their appearance to others while risking their own physical well-being. As many as 137 individuals have been reported to be killed since 2014 till December 2016 while attempting to take selfies. Considering the hazardous implications of taking selfies, Russian authorities published public posters, indicating the dangers of taking selfies, and Indian authorities including Mumbai police and Indian Railways issued warning for taking selfies at dangerous locations. Despite the increase in incidents where selfies were the reason behind physical harm caused to individuals, few research works explore factors that may result into dangerous selfies. Studies have indicated clicking selfies at dangerous locations as one of the reasons for selfie-related casualties. It is crucial to characterize and predict the behavior of taking/posting dangerous selfies on social media.

II. LITERATURE SURVEY

A. [1] J. D. H.-Ramos and P. Irani, "Crashalert: Enhancing peripheral alertness for eyes-busy mobile interaction while walking," in Proc. SIGCHI Conf. Human Factors Comput. Syst., 2013, pp. 3385–3388.

A mobile device augmented with a depth sensing camera that shows users out-of-periphery objects in their path while walking. CrashAlert shows salient information such as distance and position about potential obstacles. The information is displayed on a minimal footprint ambient band on top of the device's display. Study results show that users took simpler corrective actions early on in their path upon noticing an obstacle, felt safer with our system and use it in unexpected ways to help navigate around the environment. This improvement came with no negative impact on performance, showing that even minimal environment information outside the user's periphery can provide for safer usage of mobiles while walking. low energy value, even underneath the adverse conditions of half-hour node failures combined with V-J Day link message losses.

B. [2] B. J. Wen, J. Cao, and X. Liu, "We help you watch your steps: Unobtrusive alertness system for pedestrian mobile phone users," in Proc. IEEE Int. Conf. Pervasive Comput. Commun., 2015, pp. 105–113.

The first system that is able to detect sudden change of ground for pedestrian mobile phone users. UltraSee augments smartphones with a small ultrasonic sensor which can detect the abrupt change of distance ahead. UltraSee also leverages the context information of smartphone usage such as screen status and holding orientation to improve detection accuracy and reduce energy consumption as well as unnecessary alarms. We have carried out extensive experiments in different scenarios and by different users. The results show that UltraSee can achieve accident detection rate of 94% with false positive rate of 4.4% and reduce unnecessary alarms by 90%. In terms of energy consumption, UltraSee costs only about 20% energy compared to the existing works that only rely on smartphone cameras.

C. [3] J. Nasar, P. Hecht, and R. Wener, "Mobile telephones, distracted attention, and pedestrian safety," Accident Anal. Prevention, vol. 40, no. 1, pp. 69–75, 2008.

Driver distraction is a major cause of traffic accidents, with mobile telephones as a key source of distraction. In two studies, we examined distraction of pedestrians associated with mobile phone use. The first had 60 participants walk along a prescribed route, with half of them conversing on a mobile phone, and the other half holding the phone awaiting a potential call, which never came. Comparison of the performance of the groups in recalling objects planted along the route revealed that pedestrians conversing recalled fewer objects than did those not conversing. The second study had three observers record pedestrian behavior of mobile phone users, i-pod users, and pedestrians with neither one at three crosswalks. Mobile phone users crossed unsafely into oncoming traffic significantly more than did either of the other groups. For pedestrians as with drivers, cognitive distraction from mobile phone use reduces situation awareness, increases unsafe behavior, putting pedestrians at greater risk for accidents, and crimes.

D. [4] S. Jain, C. Borgiattino, Y. Ren, M. Gruteser, and Y. Chen, "On the limits of positioning-based pedestrian risk awareness," in Proc. Workshop Mobile Augmented Reality Robotic Technol.-Based Syst., 2014, pp. 23–28.

The use of positioning techniques for sensing when pedestrians are at an increased risk of a traffic accident. Such sensing techniques could support augmented reality applications that increase pedestrian safety. We discuss requirements for pedestrian risk detection from rural to urban environments and consider algorithms relying on inertial and positioning sensors for distinguishing safe and unsafe walking locations. We study the limits of this approach through walking trials in different environments.

E. [5] T. Wang, G. Cardone, A. Corradi, L. Torresani, and A. T Campbell, "Walksafe: A pedestrian safety app for mobile phone users who walk and talk while crossing roads," in Proc. 12th Workshop Mobile Comput. Syst. Appl., 2012, p. 5 Softw. echnol., 2013, pp. 291–300.

An Android smartphone application that aids people that walk and talk, improving the safety of pedestrian mobile phone users. WalkSafe uses the back camera of the mobile phone to detect vehicles approaching the user, alerting the user of a potentially unsafe situation; more specifically WalkSafe uses machine learning algorithms implemented on the phone to detect the front views and back views of moving vehicles and exploits phone APIs to save energy by running the vehicle detection algorithm only during active calls. We present our initial design, implementation and evaluation of the WalkSafe App that is capable of real-time detection of the front and back views of cars, indicating cars are approaching or moving away from the user, respectively. WalkSafe is implemented on Android phones and alerts the user of unsafe conditions using sound and vibration from the phone. WalkSafe is available on Android Market.

F. [6] X.-D. Yang, K. Hasan, N. Bruce, and P. Irani, "Surround-see: Enabling peripheral vision on smartphones during active use," in Proc. 26th Annu. ACM Symp. User Interface Softw. echnol., 2013, pp. 291–300.

The concept of enabling mobile devices to 'see' their surroundings during active use. We created a proof-of-concept system, Surround-See, by mounting an omni-directional lens on the device's front facing camera. We explored Surround-See's capabilities, and implemented a number of interaction techniques to demonstrate its unique features. In an informal setting, users welcomed the idea of having smartphones with advanced 'seeing' abilities. This capability facilitates novel mobile tasks such as, pointing at objects in the environment to interact with content, operating the mobile device at a physical distance and allowing the device to detect user activity, even when the user is not holding it. We describe Surround-See's architecture, and demonstrate applications that exploit peripheral 'seeing' capabilities during active use of a mobile device. Users confirm the value of embedding peripheral vision.

III. EXISTING SYSTEM

A comprehensive analysis of the selfie-related casualties and infer various reasons behind these deaths have been made. The inferences from incidents and from our understanding of the features, a system is created to make people more aware of the dangerous situations in which these selfies are taken. A combination of text-based, image-based and location-based features are used

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to classify a particular selfie as dangerous or not. This method ran on 3,155 annotated selfies collected on Twitter gave 73% accuracy. Individually the image-based features were the most informative for the prediction task.The number of disadvantages of Existing System are:

A. Camera will not close at dangerous places
B. There's no alert system
C. Unreliable
D. High Battery consumption
E. Less effective

IV. PROPOSED SYSTEM

Smart phone users' safety are mainly limited for detecting incoming vehicles. They are not able to address some more common and equally dangerous accidents such as trips, falling from stairs, platforms, or falling into an open manhole. These hazards are generally caused by a sudden change of ground .We are implementing, an alert system to the mobile user. If people texting are while they are moving on steps an notification will be initiated to the user. And if any potholes are found while they are walking on road ultrasonic sensor that fixed on our mobile will identify the potholes and alert user by notification.

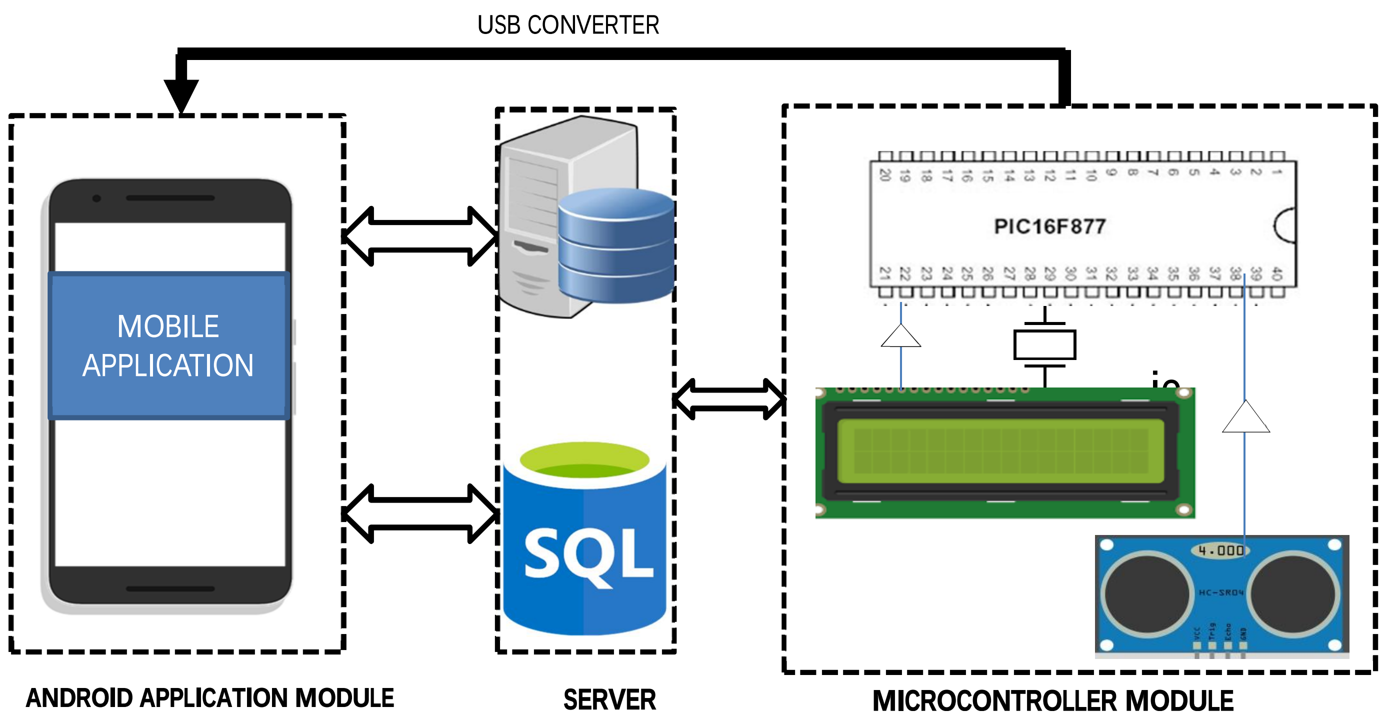

Fig 1. System Architecture

Some of the Advantages are:

A. Limits the number of accidents
B. Camera will close in dangerous places
C. Low battery consumption
D. High Reliability

V. MODULES

A. Android Application

Android application is deployed for smart accessing of mobile. Android is an open source operating system. Anyone can update the open source application. We create camera application for taking selfie. Normally all camera application come with some additional editing styles. But this application came with some restriction to take selfie for security purpose as well as safety purpose. This

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application also has registration. So the users need to register their details. We'll produce the User Login Page by Button and Text Field category within the robot. whereas making the robot Application, we have to design the page by dragging the tools like Button, Text field, and Radio Button. Once we have a tendency to designed the page we've got to jot down the codes for every. Once we have a tendency to produce the total mobile application, it'll generated as robot Platform Kit (APK) file. This APK file are going to be put in within the User's mobile.

B. Pothole Detection

An Ultrasonic sensor is a device that can measure the distance to an object by using sound waves. It measures distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back. We are identifying the potholes , when we walk on the road if any potholes identified on the road ultrasonic sensor will give alert to the user. The sensors which include G-sensors, electronic compass, gyroscope, global positioning system (GPS), microphone, and cameras are equipped in mobile device (e.g., smartphone and iPad). Several applications use these sensors in mobile devices and combine mobile sensing techniques to solve problems such as social network, healthcare, environment monitoring, and traffic information. Therefore, using the mobile device based on mobile sensing techniques to detect potholes is suitable and convenient.

C. Location Based Camera Stoppage

In this module, an application had some set of location information like longitude and latitude in database. Those locations are restricted area. People had no permission to take photos on those locations. So when the mobile users try to take selfie in those locations our app automatically stop the camera. The Location object represents a geographic location which can consist of a latitude, longitude, time stamp, and other information such as bearing, altitude and velocity.

D. Theatre Alert and Decibel Detection

In this module, an application listen decibel level in sound. If the sound is high it assumed as theatre. At that time user is restricted from using camera. Most smartphone microphones are aligned to human voice (300-3400Hz, 40-60dB). Voice calls do not require high-performance microphones. Therefore the maximum value is LIMITED by manufacturers, and very loud sound(100+ dB) cannot be recognized.

VI. SCREENSHOTS

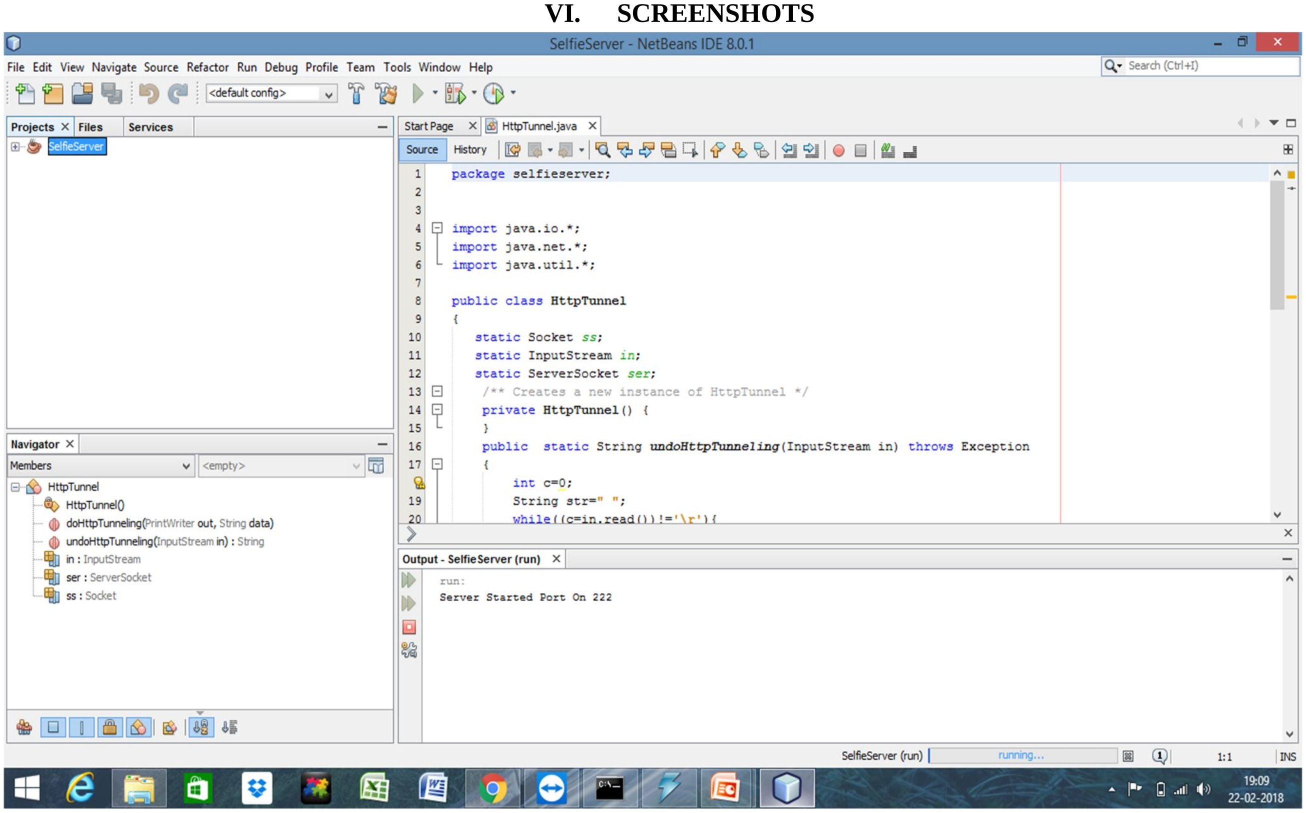

Fig 2. Server Deployment

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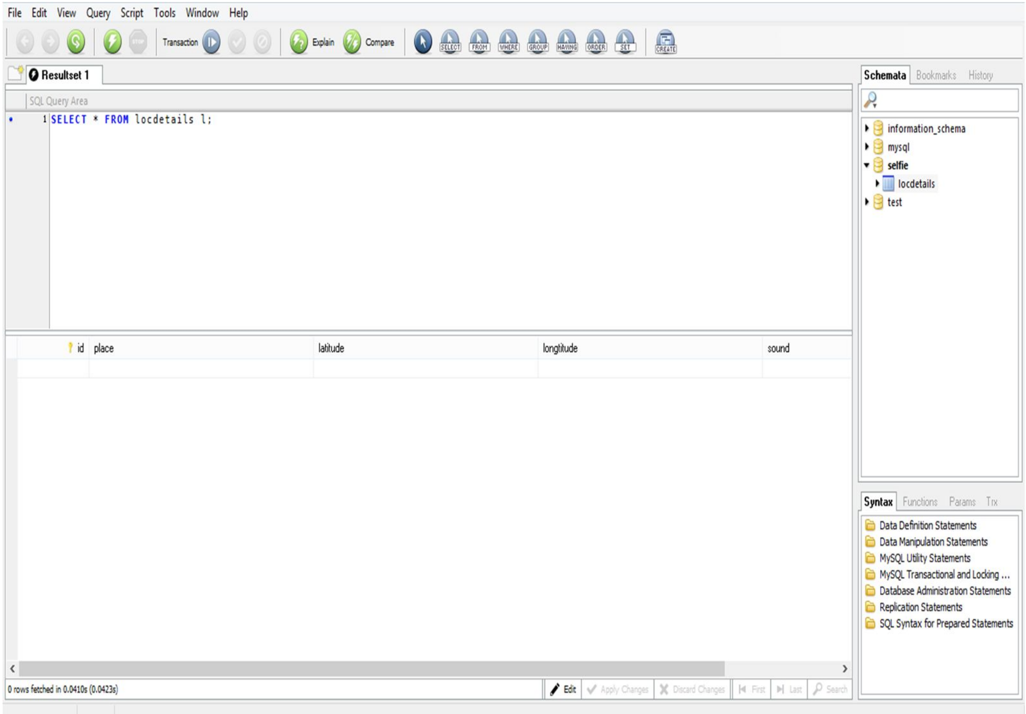

Fig 3. Database for storing Location details

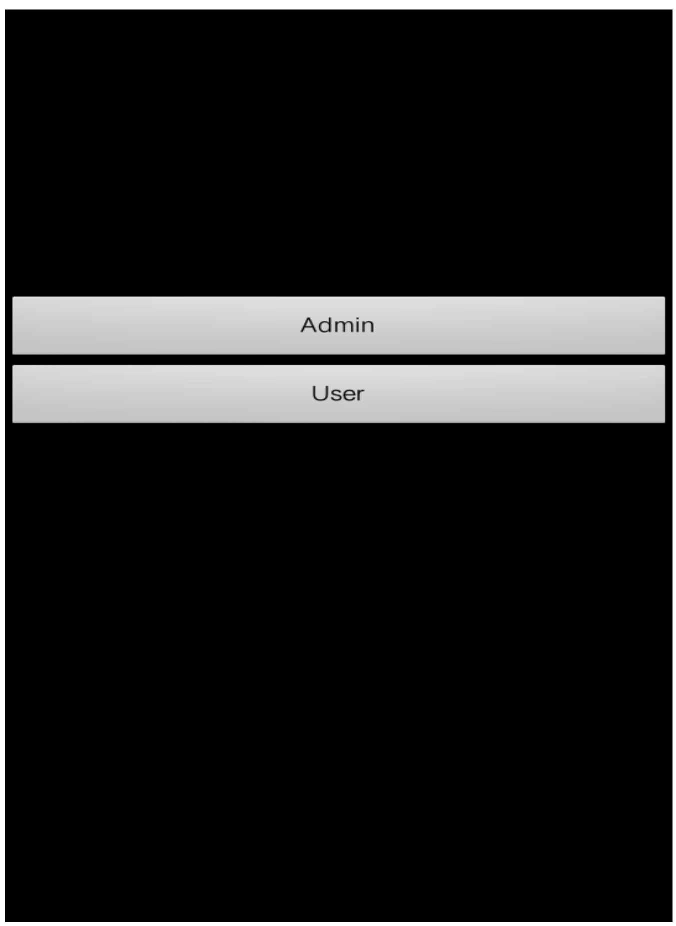

Fig 4. Home page

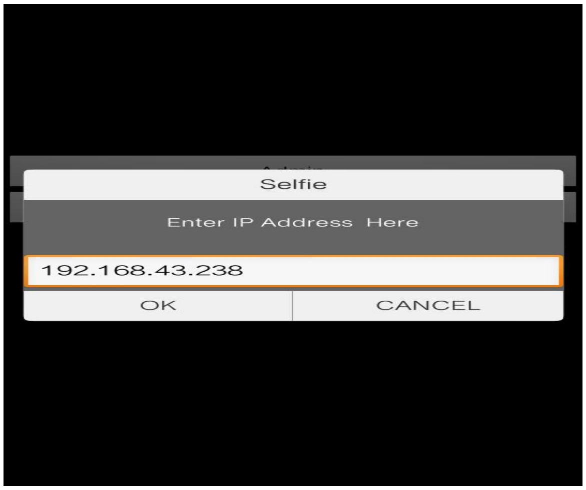

Fig 5. Obtaining IP Address

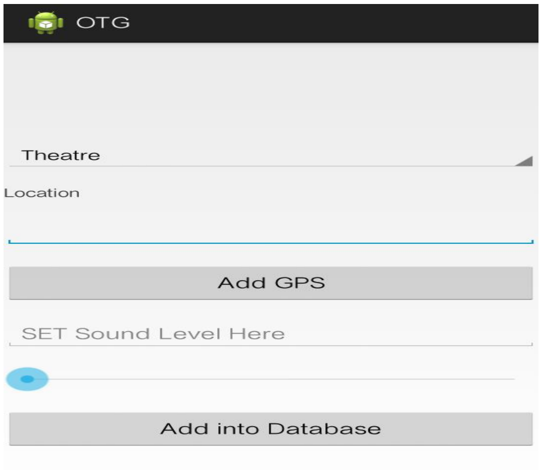

Fig 6. Administrator Page

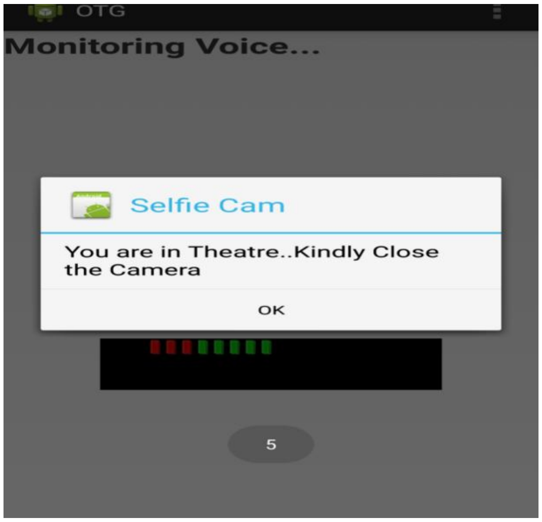

Fig 7. Theatre alert message

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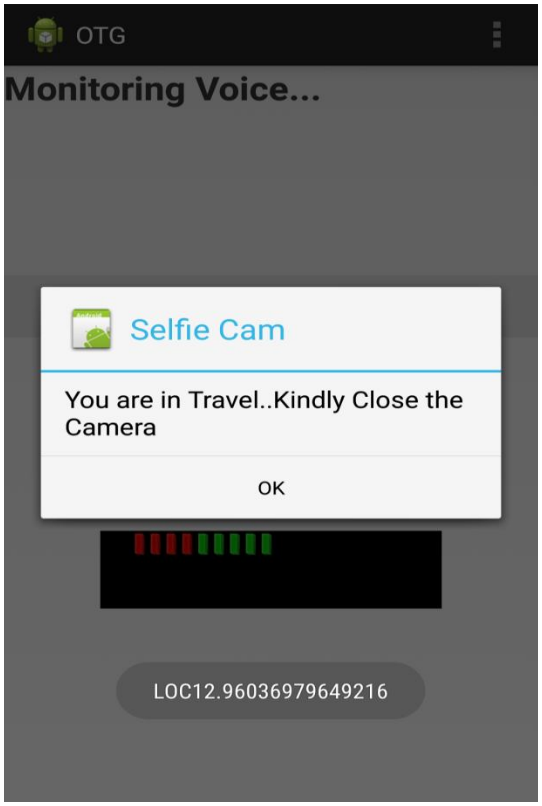

Fig 7. Travel Alert Message

VII. CONCLUSION

Detects when the user is travelling and sends the alert to the user to prevent the user from accidents due to mobile usage. Along with that potholes is also detected to prevent the user from tripping and falling down. The user is also restricted from taking pictures and videos inside the movie theatre. Thereby, providing the effective application to avoid accidents for the mobile using pedestrians.

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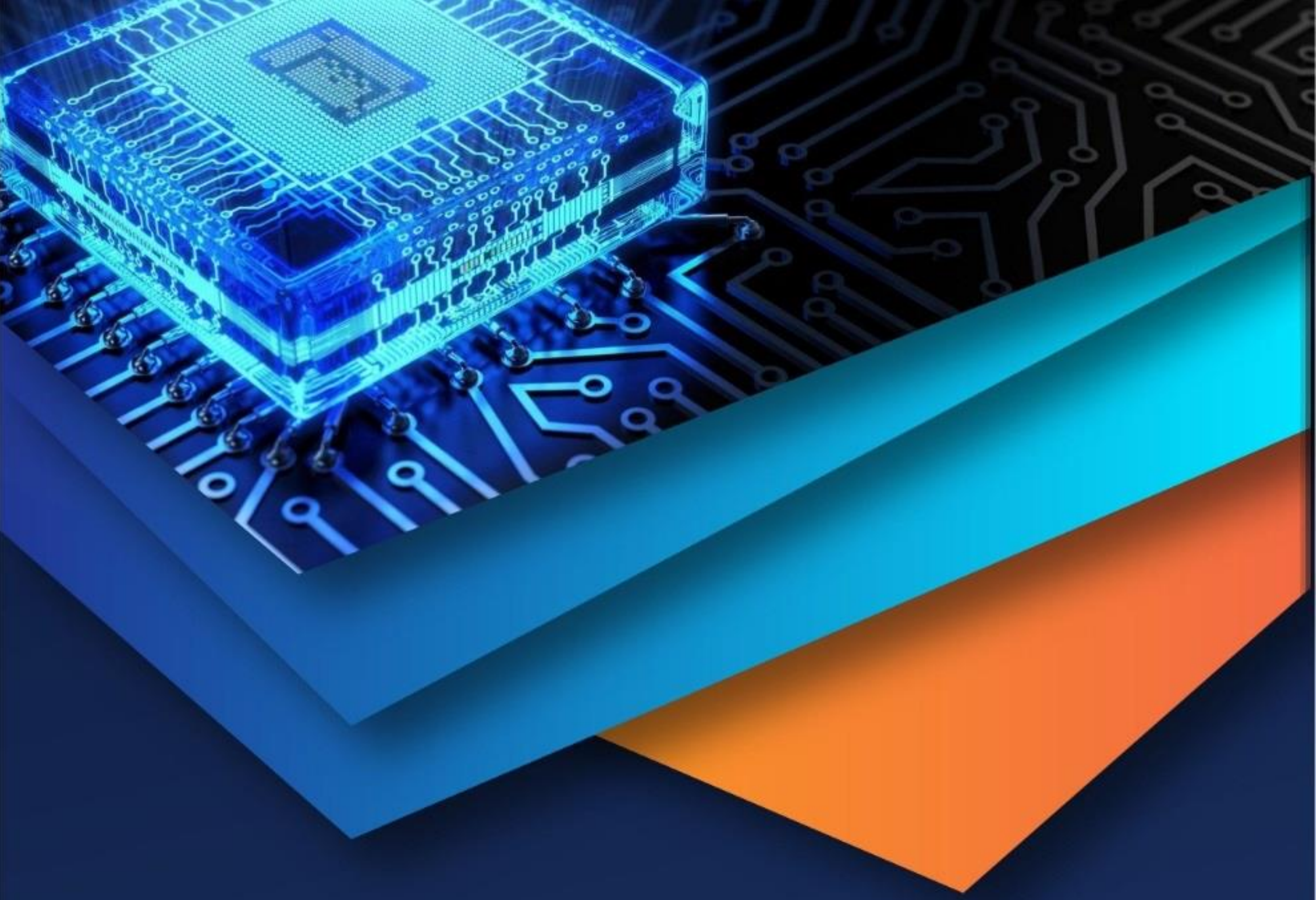

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