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Location based Anomalies Detection on Geographical Map using Data Mining Techniques

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Abstract: Road traffic is the most important issue not only for the Indian government but also for common people. Most of the road accidents and crimes are happening in Nashik City on specific locations that are represented in the form of a black spot. These black spots can help in identifying the road Accidents and Crime area using this system. We apply data mining algorithms such as the Eclat algorithm on the road Accident and Crime dataset as an attempt to locations this problem. In the Data mining Association rule, clustering is that identify the causes of Accident & Crime. In this project, we first applied the Eclat algorithm to group the Accidents & Crime locations into three levels such as first level, second level and, third level Accident & Crime location. The rules show different factors associated with road Accidents & Crimes at different locations. For all this, we provide Accident & Crime data that are issue from the Nashik city commissioner office.

Keywords: Eclat Algorithm, Clustering, GPS tracking, Geofencing technique.

I. INTRODUCTION

Normally, humans are facing road accidents and crime in specific locations mostly because they are not aware of new roads and accidents and crime-prone zones. Hence, Every minute, at least one person faces the problem of a vehicle accident and any other type of crime. The main objective of the system is to provide emergency facilities to the victims. In our country rapes are happened in the amount of infinity. This project is mainly built for women's safety that can decrease rape crimes. Whenever someone or woman is in danger state this application sends the message to their families and nearby police station. When tourists can travels the number of locations but they are not aware of the accidental and criminal locations, so they can use this map to finding the route that they wish for traveling. If they are in accidental and criminal location then they get the voice notification also they can see on the map danger levels like level 'A', level 'B', level 'C' by representing by the colors. Such as red color shows the most dangerous level, orange color shows the minimum danger level and yellow color shows the lowest level. In our web application, admin can add accidental locations and crime zone. The Admin can also add the police which they can add the locations in which accidents and crimes are happening with full details. It includes the reason like where and when the accident/crime happens and the purpose of crimes. In this Web application Transport ministry Officer can log in onto the system and checks the accident and crime rates. Our project helps women safety and tourist also. If the Data set which is provided by Nashik district commissioner does not support data mining techniques. Therefore Admin must be careful while selecting Data. Detection of the black spot of Nashik city will help government authorities and common citizens also. This project will also help to another city.

II. PROBLEM STATEMENT

To develop a project for identifying the black spots on roads of Nashik city where frequently Accident & Crimes happened. The attributes of Eclat algorithm like execution time, depth-first search reduces memory requirement like this attributes of Eclat algorithm matches to our data set. The data set collected from Commissioner of Nashik. Using data mining techniques such as the Eclat algorithm, we are identifying the black spot on roads and identify the geographical location where frequently Accidents & Crime occur. After the identification of black spots, the user gets information through user application.

III. RELATED WORK

We have analyzed many papers regarding the detection of accidental and crime locations for travel safety. The papers we have taken will be in different years up to the present year and the latest technologies, our main goal is to get more accuracy than the previous work. In the last few years, the crime rates have been increasing in India and it is resulting their India is the most unsafe country for women and it is difficult to provide the security of people. Thus, it a provocation for researchers to find out all the minute factors that can affect the rate of detecting crime spots to make a predictive model by taking into consideration all the aspects.

IV. MOTIVATION OF THE PROJECT

Road Accident and Crimes is the most important issue for the Indian government but also for common people. Accidents and crimes become a major problem in some specific locations. Every day lots of vehicles driving on the road, and traffic Accidents & Crimes happen at any time and anywhere. Some people die in Accident & Crime also. A human being, we all want to avoid Accidents & Crime and stay safe. Data mining algorithms could be applied on the road Accident and Crime dataset to find out some valuable information.

V.MATHEMATICAL MODEL

Let S is the system;

$S = \{I, O, F, DD, NDD, Success, Failure\}$

I = Input to the system

$I = \{username, password, accidental\ spot, crime\ spot, all\ black\ spot\ description\}$

O = Output of the system

$O = \{accident\ spots, criminal\ spots, description\ of\ all\ spots\}$

F = Fusion in system

$F = \{adminreg(), adminlogin(), addPoliceAdmin(), addBlackSpot(), addBlackSpotDescription(), alertAccordingtoBlackSpot()\}$

DD = Deterministic data

$DD = \{Null\}$

NDD = Non Deterministic data

$NDD = \{I, O\}$

A. Success

Voice notification on the nearby black spots.

B. Failure

No internet connection available

VI.ARCHITECTURE

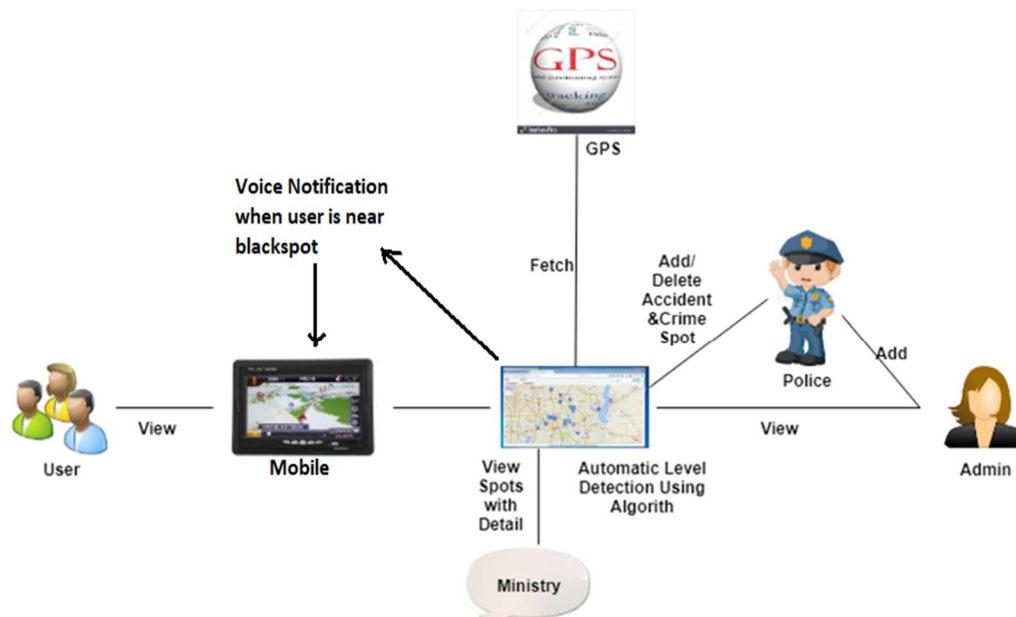


Fig.1. Architecture Diagram

A. Admin

When admin can travel on the route and if they found any location in which accident or crime will be held or possibility to held accident and crime. Hence he added the Police admin.

B. Police

Police will integrate the black spot of accidents and crimes according to suggestion and the automatic decide the level of crime and accident according to an algorithm and decided the danger level of that spot level-wise. All spots are be declared as level-wise like Level A, Level B, Level C. These levels are defined by using DM Algorithm, using this algorithm the accidents and crimes spot will be defined in above three levels of dangerous zone from which our people can be alerted and safely choose their path of travel. The ultrasonic sensor senses the pothole detection while traveling and the by using switch can send the emergency MSG to police admin by using SMS Gateway.

C. User

User can integrate google map in their mobile with the android application. After integrating google map users can see the accident and crime spot on that map, using these spots users can choose their root of traveling which is beneficial for them. On-road traveling, they also see the accident spots. All accident/crime spots are included by the police. Police added accident and crime blacklisted spot on an integrated map which is help tourist to travel. If tourist or people reach on any accident or crime location and they use this android application then our proposed system send a voice message to tourist or people and get alert them and send information about nearby black spot on which accident or crime which will be held hence that spot is counted in black spots.

VII. DESIGN AND IMPLEMENTATION

The system incorporates an onboard system that has GPS and GMS. In a web application, Admin can add the police section in which the police can add that spots where crimes happened. Those black spots are shows by level wise like Level “A”, Level “B”, Level “C”. The Transport Ministry officer can log in on to the system and view the accident report on the system. When a user travels some route using this system the levels show the which is the most dangerous area and also shows the safest are using black spot.



VIII. CONCLUSION

The purpose of this paper is to decrease the number of accidents and crime rates. This is done by sending the voice notification to the user which indicates the danger levels by colors such red color indicates the danger level, orange color indicates the medium level, and yellow color indicates the low level it is also known as black spot. This black spot is detected by using the Google map on mobile. By this, we can save thousands of lives using this project. In this project, the Eclat algorithm is used for detecting the black spots. In this Project, Admin can add the Police and Transport Ministry Officer. Police can log in to the system and add various road accident cases with detailed information and Transport ministry officer view the areas where accidents and crimes happen. This project specially builds for women's safety. If anyone is in danger area this project sends the message to their families or the nearby police station.

IX. ACKNOWLEDGMENT

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