Research paper on Impetcher Maps - Navigation for Road Safety

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Abstract - The project is based on Road Safety. In today's world, a lot of accidents occur due to the unawareness of the physical condition of the road and mostly these accidents occur at night time as the road is not visible. The project will help the users to get a better idea of the physical conditions of the selected route i.e. during the real-time navigation the application will warn the user by speaking about the upcoming obstacle, any dangerous turn, speed breaker, potholes, or dead-end, etc.

Keywords: Flutter,Spring Boot,Hibernate, Text To Speech Conversion, React.js, Google Maps APIs
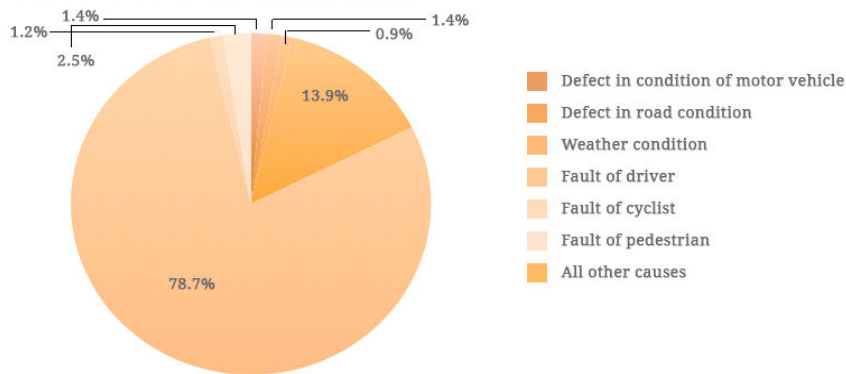
1. INTRODUCTION

Road safety is an issue of national concern, considering its negative impacts on the public health,economy and on the people Directly. In today's time, Road Traffic Injuries are one of the leading causes of hospitalizations, disabilities and fatal accidents and with severe socioeconomic costs, around the world. Road traffic safety includes the safety measures to be taken up to put a stop to the road users from being hit or injured. people who use road are mainly pedestrians, passengers, drivers, cyclists, etc. It must be ensured that the road safety system's strategy in an event of a accident, the consequence is not so much as to cause death or any serious injury. The victims are very healthy just before the crash in any road accident is even ore depressing. According to the WHO (World Health Organization), more than a million people die in the road accidents ever year and road traffic injuries are the leading cause of death among young people, aged 15–29 years. In India, for the first time in two consecutive years, i.e. 2012 and 2013, it was reported that there was a 2.9% decline in the number of road accidents, the number of persons killed and the number of persons The project idea came from the observation of the current scenario. As the lots of accidents occur due poor physical conditions of road i.e. upcoming obstacle, any dangerous turn, speed breaker, potholes, or dead-end, etc. This project will help in reducing road accidents due to obstacles and also due to unawareness of the upcoming vehicle. Data aggregation- As data of the roads will be uploaded manually. Update of previous data and new data.

2. BODY OF PAPER

2.1 METHODOLOGY

Road traffic accident remain an important epidemiology at international, regional and national levels. While steps are being taken in many countries to improve road safety, much still needs to be done if the rising strech in road traffic fatal injuries is to be halted or reversed. Over the past few years a range of methods has been used by different organizations to estimate the number of worldwide road traffic fatalities. The WHO Global Burden of Disease project (2004), which uses vital registration (death certificate) data irrespective of the time period between collision and death, estimates that 1.27 million people died as a result of a road fatal injuries in that year . The total number of deaths reported in this survey is round about 660 000 (using a 30-day definition), indicating vast underreporting. When these data are modelled (see Statistical Annex) the total 30-day number for the 178 countries included in the study is 1.23 million. Almost all data sources show that about three-quarters of road traffic deaths are among men and that the highest impact is in the economically active age ranges Over 90% of the world's fatalities on the roads occur in low-income and middle-income countries, which have less than half of the world's vehicles.

2.1.1 Accidents and Injuries Caused by Bad Road Conditions

Badly-maintained roads bring about half of the fatal injuries that come off each year in the United States. A survey has been conducted by The Pacific Institute for Research and Evaluation information from the National Highway Traffic Safety Authority, Federal Motor Carrier Safety Authority and other government agencies and come to an end that road problems like potholes and iced-over stretches of highway cause more than 42,000 deaths a year.

2.1.2 Causes & Effects of Bad Roads

Corrupt and poor automobile driving rises are often triggered by a coalition of seasonal and traffic conditions. In Tennessee, we experience intense cyclic modifications. These changes in climate outlook can cause risks like slippery surfaces genesis by rain and ice and oil spots caused by our vehicles. Construction zones with unequal and irregular pavement are a principal cause of fatal road accidents as well.

2.1.3 How Accidents are Caused

badly and poorly perpetuate highways cause fatal injuries in numerous ways. Mostly due to the fact that they create an enormous threat to drivers in countless illustrations. a certain situation can set out to be avoided by a driver like a pothole or pooling water which could cause a significant accident.

Some hazards include:

- Clear zone issues
- Confusing signage
- Inadequate signage
- Sudden driver maneuvers

2.3 Types of Bad Road Conditions

There are several types of bad driving situations which exist throughout the state of Tennessee, including:

- potholes: Grievous injuries can fall out when asphalt or flagstone are missing in sizeable hunks from the road.
- Ice patches: Without any rain or snow, ice patches could be caused. They unexceptionally moulded in off the beaten track zone on the roads.
- Shoulder drop-off: this region can be a interim threat to drives.
- Oil and chip: These are interim fixes on roads before they are reappeared. Chips and oil areas can be lubricious when it is abandoned for lengthen periods.

- Construction work zones: Shifting of lanes and unequal roads are some of the concern involved in construction areas.
- Adroit roads: Slick surface cause hydroplaning to occur.

2.4 MODLING AND ANALYSIS

There are steps you the civilians and the government can undertake can take to help prevent accidents. Many accidents can be prevented and in those that are not preventable, the damage could be lessened.

- Proper road design
- Safety and warning signs
- Traffic signals
- Fines and penalties
- Public awareness programmes

These are some of the steps that can prevent accidents on roads. These are the steps that are to be taken by mankind but we can not sure about uncertainty such as potholes, speed breakers, sharp turns and here our impetcher map-navigation system (app) come into the role.yet there is no such a type of technology available out there to save lives from uncertainty .

There aren't any system available that provides the information of the physical condition of roads during real time navigation but there is a similar system –

EXISTING SYSTEM/SOFTW-ARE	Features	Benefits	Limitations
intentGO	Real time coverage navigation,covered large geographical area	Shows obstacles on road, automatic data uploading	Does not show the distance to the obstacle, type of the obstacle, positioning of obstacle is not accurate and there is not voice navigation

2.4 THE PROPOSED IMPETCHER MAP-NAVIGATION FOR ROAD SAFETY APP FUNCTIONAL REQUIREMENT

This section presents a full description for the proposed and the through presenting the structure of the navigation app and functionality of the proposed navigation app.

The structure of the proposed impercher map-navigation for road safety app is presented in this section using the basic methods and it is as follows:-
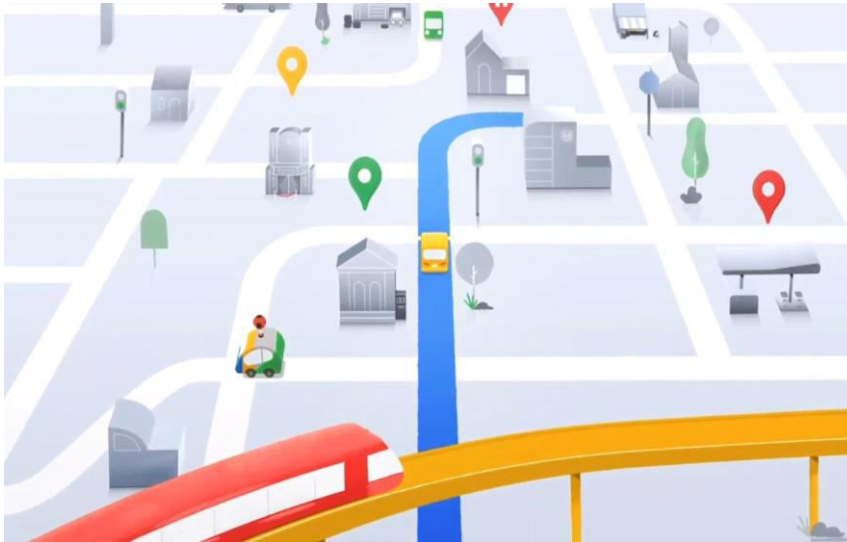
- Firstly we have used Geolocation API which will tell the user's current location, this is from where an user will start his journey by putting his desired location on our system and soon as the user puts his location and clicks on search button then,
- We have used Geocoding API, which will tell the user about his desired location (it will describe whether it is a city,town or any shop).
- And then Direction API will start to work to show the routes to the user's destination and the obstacles by fetching them through our database, which we have developed for obstacles.
- After this Place API will start to work and through our servers it will show the user a pop-up alert message on the screen about the obstacle when the obstacle is 100 metres away from the user's location.
- Our proposed system will also give you information about the type of obstacle (for ex. Potholes, construction work, etc).

2.5 EXPERIMENTAL SETUP AND RESULTS
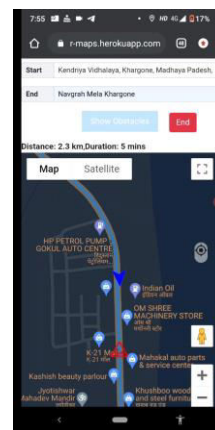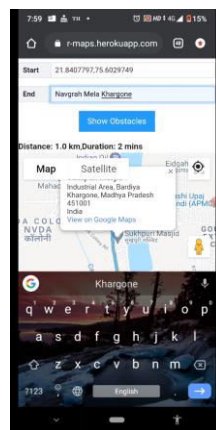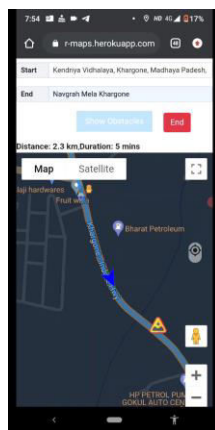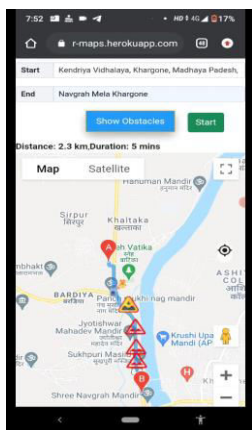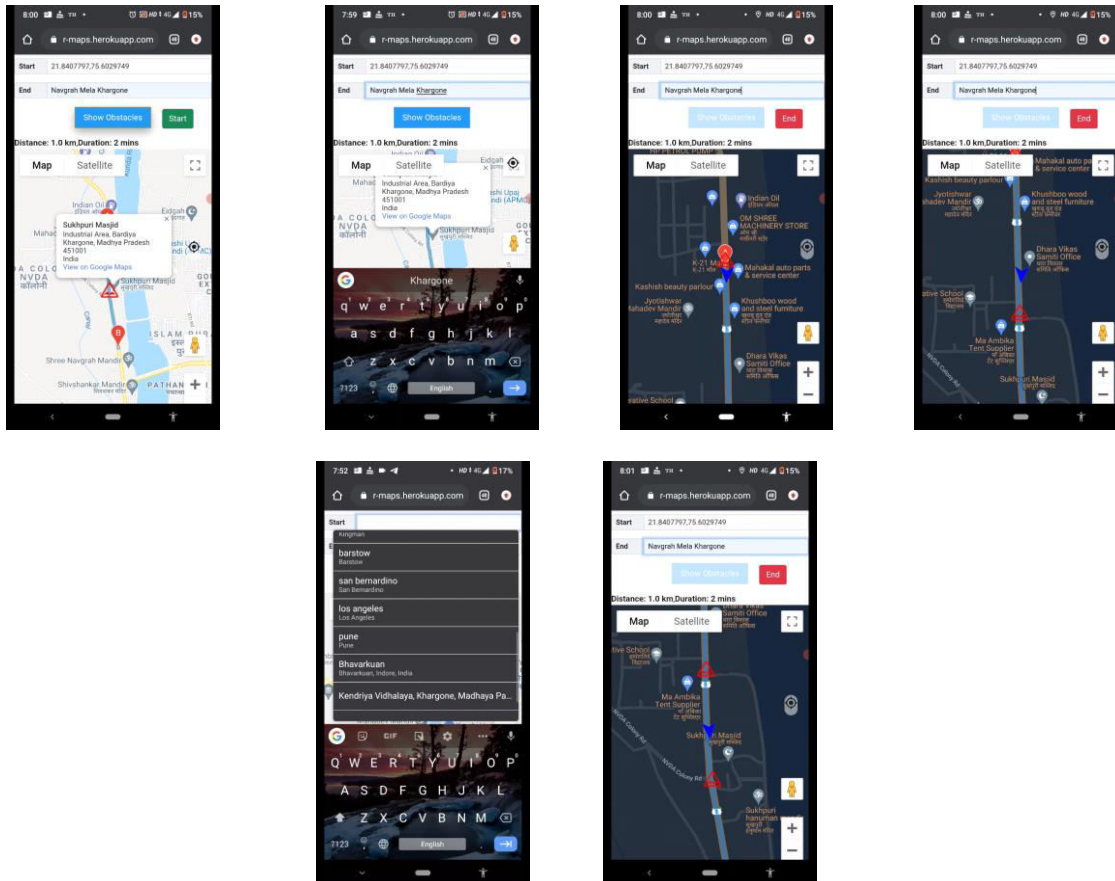
The proposed project was tested in the form of application and we tested the application on the different road platforms using the mobile application after the simulation results had been successfully obtained.

In order to run this program or application we first have to fill the required information about starting point and ending point then it fetches shortest path or root using the algorithms and show the obstacles on the screen. It first monitors the user's location while changing location and provides us all the obstacles that comes in our root or path, once we safely reach the destination it ends the process.

Below par road conditions can guide to damage to vehicles and can contribute to motor vehicle accidents. Usually, poor road conditions are caused by the deteriorating conditions caused by the elements.While many things can cause road damage, such as heavy equipment and machinery, severe weather, such as snowstorms, heavy rains, and hurricanes can cause major and sudden damages. Rainstorms and snowfall combined with poor maintenance of roads can also lead to damaged roads

The result of this application is that it reduces the casualty on roads due to poor condition of roads across the world. This impetcher map-navigation for road safety comes in play where the conditions of roads is not good or where there is too much obstacles such as potholes, speed breakers sharpturns and so many like these. It is the new and fresh idology for reducing the accidents on roads and make it safe for other people too who are travelling along together on the very road. This step is take by us to make roads safe and suitable to use for mankind. And this is the first time that this kind of application of is created for road safety it will encourage others to make or create more application like this with updates and numerous changes that will help not only solving this problem but it help us to configure other more problems related to roads safeties when it get solved and this can bring huge change the perspective to look at the problems about road safety.

3. CONCLUSION

This paper presents a comprehensive Navigation system that intends to facilitate people about the safety of theirs and their loved one, and improving the transportation facilities. This "impetcher map navigation system" can be seen as very helpful, useful and beneficial for mankind to manage their everyday challenges. The proposed app provides a set of services such as detecting the potholes, sharp turns and uneven roads.The proposed project is the step to save the life of the people. A lot of accidents occur due to the unawareness of the physical condition of the road. So we have developed a software which will not only help the user to find their routes, but it will also help in navigating them by informing each & every little thing through voice which will come in their path like speed breaker, turn, death end of the roads, potholes, etc. to ensure the safety of the people. So that there should be no chance of accident & no one would lose their loved one by an accident.

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