**Title: Pothole Detection using smartphone’s accelerometer sensor**

**Tell us what your idea is.**

Abstract:

*Pot-holes on road will make transportation slower and costly. India has a big network of roads to connect the villages and cities, the authority persons cannot travel across the region for identification of holes.As per advancement in machine learning in recent time, we can use this technology for the identification and reporting to road ministry and also to other users so that they can find safe routes.We can use smartphone sensors (such as Accelerometer and Gyroscope) to identify the pot-holes on road and GPS for the location of the pit. The major task of this problem is to capture the data and annotation. I am developing a mobile application for capturing the value of displacement while travelling on road. I can apply different classification algorithms to sensor raw-data. The application will plot pot hole location on map when a pothole is detected. This information can be further given to Ministry of Road Transport and Highways.*

How this app will work?

*Inside the car the mobile phone will be placed on Mobile Holder. User will start the app. The app shows Google Maps in Foreground. In the background, Accelerometer and GPS data is constantly stored in SQLite storage. When a car passes by a Pothole a displacement is observed in Accelerometer data. Using ML Kit, ML algorithm will be performed on this local data. This algorithm will identify potholes by monitoring accelerometer data and if pothole is detected then the GPS location is uploaded to Firebase real time database. This Firebase real time database’s data is plotted on foreground on Google Maps of every other user.*

Who we will capture all this data?

*Taxi drivers in India uses applications like UBER and OLA so if this functionality is given in those applications then we can collect a lot of data regarding where are potholes. The number of times the pothole is registered is the number of times a car is passed through that pothole. Which means we can tell which pothole is major.*

*This can be also implemented in Google Maps’s Directions to provide even faster and safe routes. Google talked about Automatic Accident Detection in Android Dev Summit 2019. That app is also based on Accelerometer data and Microphone so this functionality can be also added into that project.*

*Mission is not to find each and every pothole hole. Mission is to find potholes which are affecting large number of vehicles. So that those roads will be fixed first.*

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**Tell us how you plan on bringing it to life.**

*Currently I have developed an app to store Accelerometer and GPS data into SQLite storage and I have also developed an app in which I have stored some random Latitude , Longitude locations in Firebase real time database and these are marked Google maps. I am doing some research regarding which Machine Learning algorithm should fit best for monitoring accelerometer data and which classification algorithm should I use. I need guidance for performing ML tasks on Mobile processor locally.*

1. ***<https://github.com/shreyash0k/PotholeDetection>*** *is repository where you can find my progress*
2. *I need help and guidance for performing Machine Learning algorithms efficiently on Mobile Processor locally.*
3. *Timeline* 
   * *Dec 2020 work on ML kit for finding best fit algorithm*
   * *Jan 2020 Train model by driving through potholes*
   * *Jan 2020-Feb 2020 Test application in different vehicles*
   * *Mar2020 Modifications based on testing results*
   * *April 2020 uploading on Google Play Store and Beta Testing.*

**Tell us about you.**

*My name is Shreyash Karandikar. I am from Mumbai, India.*

*I am studying Computer Engineering at Vidyalankar Institute of Technology, Mumbai. I am enthusiast who loves to develop android apps and Hybrid apps. I am passionate for UI/UX designing.*

*You can find more about me here,*

<http://shreyashkarandikar.com/>

*You can find more about my projects here,*

<https://github.com/shreyash0k?tab=repositories>