

# TEAM INSPECTELEMENTS

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# PROBLEM STATEMENT

ROAD ACCIDENTS ARE A SERIOUS PUBLIC HEALTH PROBLEM IN INDIA, WITH OVER 150,000 FACULTIES AND 500,000 INJURED EACH YEAR. DESPITE ATTEMPTS TO ENHANCE ROAD SAFETY, THE PROBLEM REMAINS, WITH SERIOUS CONSEQUENCES FOR PUBLIC HEALTH AND THE ECONOMY AS IT CAN BE CHALLENGING FOR MUNICIPAL AUTHORITIES TO IDENTIFY AND FIX ALL THE PROBLEMATIC ROADS IN THEIR JURISDICTION.

AS ROAD SAFETY REMAINS A SERIOUS PUBLIC SAFETY PROBLEM, PARTICULARLY IN DEVELOPING NATIONS, THERE IS AN URGENT NEED FOR NEW INVENTIONS AND AN UPWARD TREND IN TECHNOLOGY TO REFORM THE ROAD AND TRANSPORTATION ARENA. ROAD ACCIDENTS ARE A PERSISTENT SOURCE OF WORRY FOR PUBLIC SAFETY.

AS A RESULT, THERE IS AN URGENT NEED TO POSSIBLY OVERHAUL THE LANDSCAPE OF ROAD SAFETY IN ORDER TO CREATE A SAFER INDIA ON THE ROADS.

# IDEA AND APPROACH

WE DEvised THIS PRODUCT TO ADDRESS THIS ISSUE.

THE PURPOSE OF GOSAFE IS TO FIND THE MOST EFFICIENT OR BEST ROUTE BETWEEN TWO SITES BY COMBINING CRITERIA SUCH AS DISTANCE, TRAVEL DURATION, TRAFFIC CONDITIONS, AND, MOST SIGNIFICANTLY, THE ROAD QUALITY INDEX.

INCORPORATING THE ROAD QUALITY ELEMENT INTO THE ROUTING ALGORITHM IS ONE METHOD TO IMPROVE ON THIS. USING MACHINE LEARNING CONCEPTS, ROAD QUALITY MAY BE ASSESSED USING A RANGE OF METRICS, SUCH AS THE SMOOTHNESS OF THE SURFACE, THE PRESENCE OF POTHOLEs, OR OTHER SORTS OF DAMAGE.

GOSAFE CAN RECOMMEND ROUTES THAT ARE NOT ONLY SHORTER OR FASTER, BUT ALSO SAFER AND MORE COMFORTABLE TO DRIVE ON, BY UTILISING THE ROAD QUALITY INDEX.

GOSAFE ENABLES USERS TO INFORM THE BRIHAN MUMBAI MUNICIPAL CORPORATION (BMC) DIRECTLY ABOUT PROBLEMATIC ROADS. GOSAFE'S USER INTERFACE IS STRAIGHTFORWARD, ALLOWING USERS TO QUICKLY IDENTIFY AND DESCRIBE THE LOCATION OF A DANGEROUS ROAD, AS WELL AS ATTACH A PHOTO OF THE ROAD CONDITIONS.

AFTER SUBMITTING A REPORT, THE BMC MAY UTILISE THE INFORMATION TO PRIORITISE REPAIRS AND MAINTENANCE WORK ON THE REPORTED ROADS. GOSAFE ALSO SENDS USERS UPDATES ON THE STATUS OF THE REPAIRS, AS WELL AS ANY OTHER PERTINENT ROAD INFORMATION.

OVERALL, SUCH AN APP MIGHT ASSIST THE BMC IN MORE EFFICIENTLY IDENTIFYING AND ADDRESSING ROAD CONDITION CONCERNS, THEREBY IMPROVING THE DRIVING EXPERIENCE FOR ALL CITY USERS.

# THERES A MONSTER AMONG US

7 PEOPLE DIES EVERYDAY  
DUE TO THIS MONSTER  
**AND THATS 2555 DEATHS PER YEAR**

WE **LOSS** OVER A **MILLION**  
**GALLONS OF FUEL** AND ESSETIAL  
RESOURCES DUE TO THIS MONSTER

THIS MONSTER CREATES AN  
AVERAGE RISE OF **60%** IN  
**HARMFUL EMISSIONS**



A DIRECT **40% INCREASE** IN  
**TIME TRAVEL**

# THIS MONSTER IS KNOWN AS A **BAD ROAD**

## BUT WHAT DEFINES A BAD ROAD?

A **BAD ROAD** is simply a road or street which is flooded with potholes, degenerated construction and overloaded traffic which results in a bad user experience and many tragic events

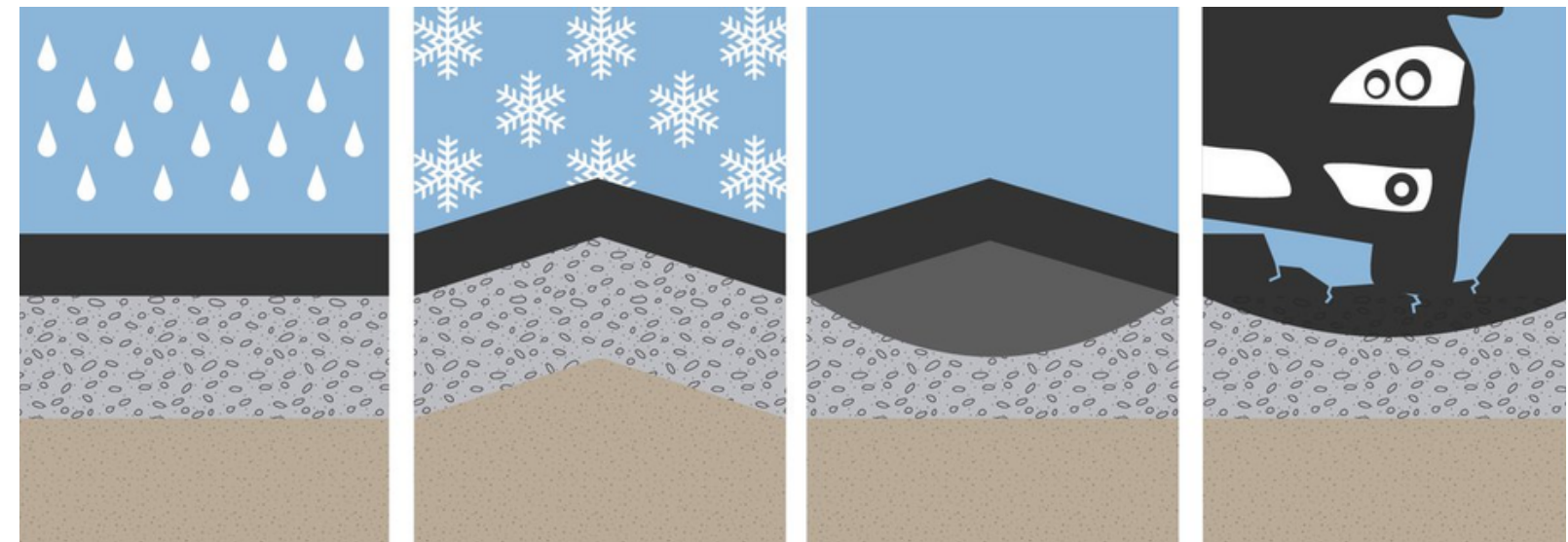


## BUT WHAT CAUSES SUCH TERRIBLE CONDITIONS OF ROAD?

THE MAJOR CAUSE WHICH WE CAN IN THE  
ABOVE STATED EXAMPLES AND PICTURES  
ARE ONE THING "**A POT HOLE**"

BUT WHAT IS A **POT HOLE** AND HOW IT IS CAUSED !!

A pothole is formed when a circular current of water carrying small pebbles and sediment begins to wear away a rock surface. The force of water and the sediment it carries is greater than the resistance of the rock. Once the process has begun, it continues and the rock in that location continues to erode away.





# SO NOW WE KNOW THE PROBLEM AND WHAT CAUSES THE PROBLEM

BUT IS THERE A SOLUTION FOR IT ??

As potholes was and is a major issues there were a lot of new techniques that were built to tackle this problem some of them worked some of them failed some was expensive some was tedious.

## 01. LASER/ULTRASONIC SENSOR

The 3D laser scanner uses a technique that employs reflected laser pulses to create accurate digital models of existing objects.

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## 02. DRONE MAPPING

Drone Mapping work along with the technology of photogrammetry which is the science of making measurements from photographs.

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## 03. VIBRATION SENSOR

Vibration based method employs accelerometers as sensors. This is a device that measures total specific external force on the sensor.

## 04. IP

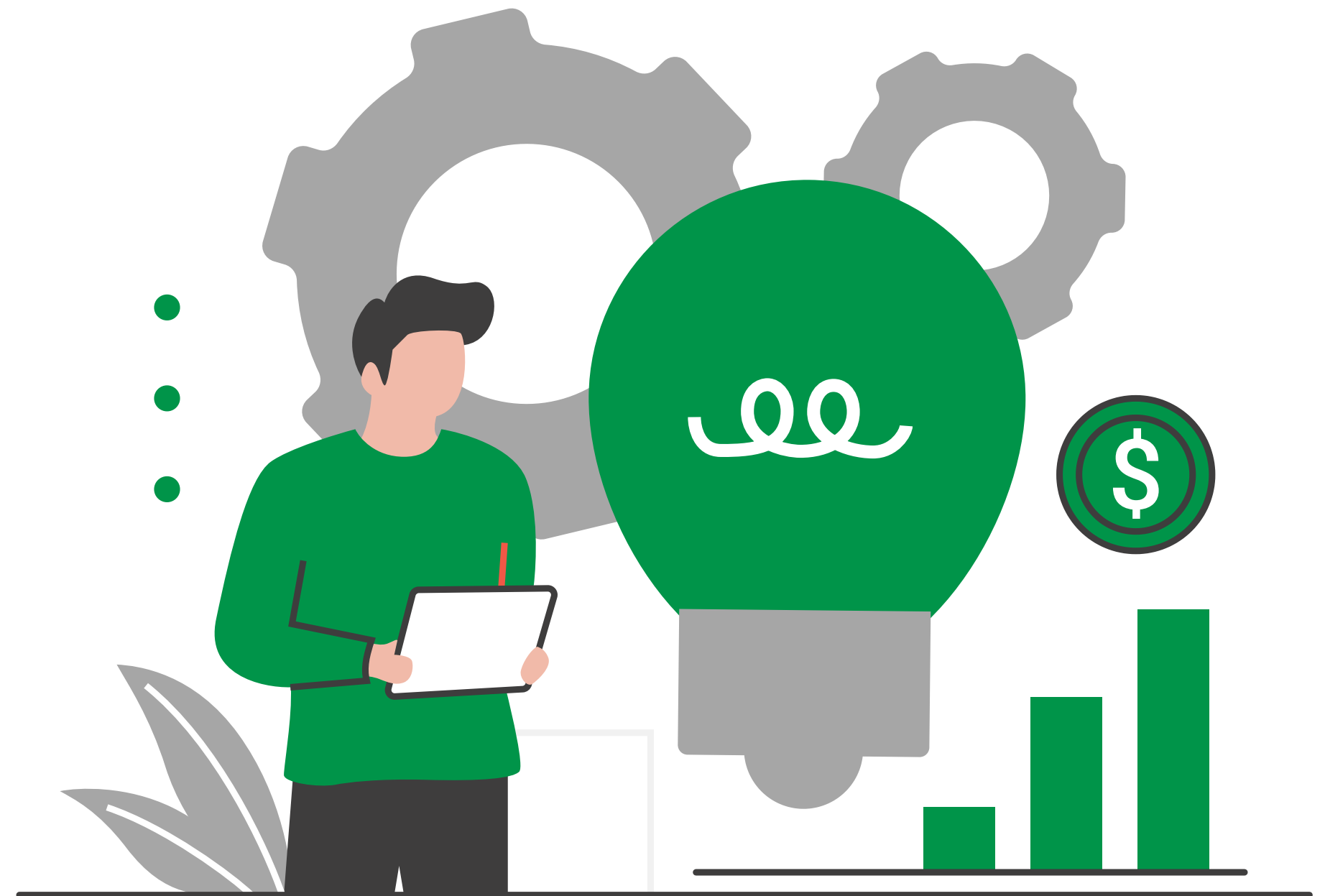
Image processing is a method to perform some operations on an image, in order to get an enhanced image or to extract some useful information from it.



# SO THERE ARE IDEAS AND SOLUTION TO CURE THIS PROBLEM RIGHT ??

yes there were but some of them were just very tedious  
some required advanced technology  
and some were just utterly expensive  
and many of them are just not feasible

**SO WE REALLY NEED A SOLUTION !!**



# SO HERE WE PRESENT **GOSAFE**

**GOSAFE IS A PWA BUILT WITH THE  
HELP OF.**

## **SO WHAT IS GO SAFE ?**

GOSAFE is basically a p2p app which helps  
user to find the best route  
To coordinate with people easily in case of  
emergency.  
And to make this world a better place



# BUT HOW? LETS SEE ...

 **SO WE PROVIDE OUR USER  
WITH 3 MAJOR FEATURES**

## **REPORT POTHOLE/ ANY OTHER INCONVENIENCE**

Its an webapp for the people by the people and from the people. Basically you can now report an inconvenience (for eg. a pothole ) by clicking a live picture of it . that data will be checked and collected and then it will get forwarded to the required govt. facilities. But you'll ask why will you do that ??? so guys heres the deal for every pothole or issue you register you basically contribute to the well being of the society and that will end up rewarding you for the same

## **MAP WITH BETTER NAVIGATION**

For giving a better analysis of area we are using the gradient system of the map with our own made algorithm (in progress) which will help us define areas on the basis of zone system (green, yellow and red) which will help user to navigate through the best route.

# FLOW OF THE WEB APP

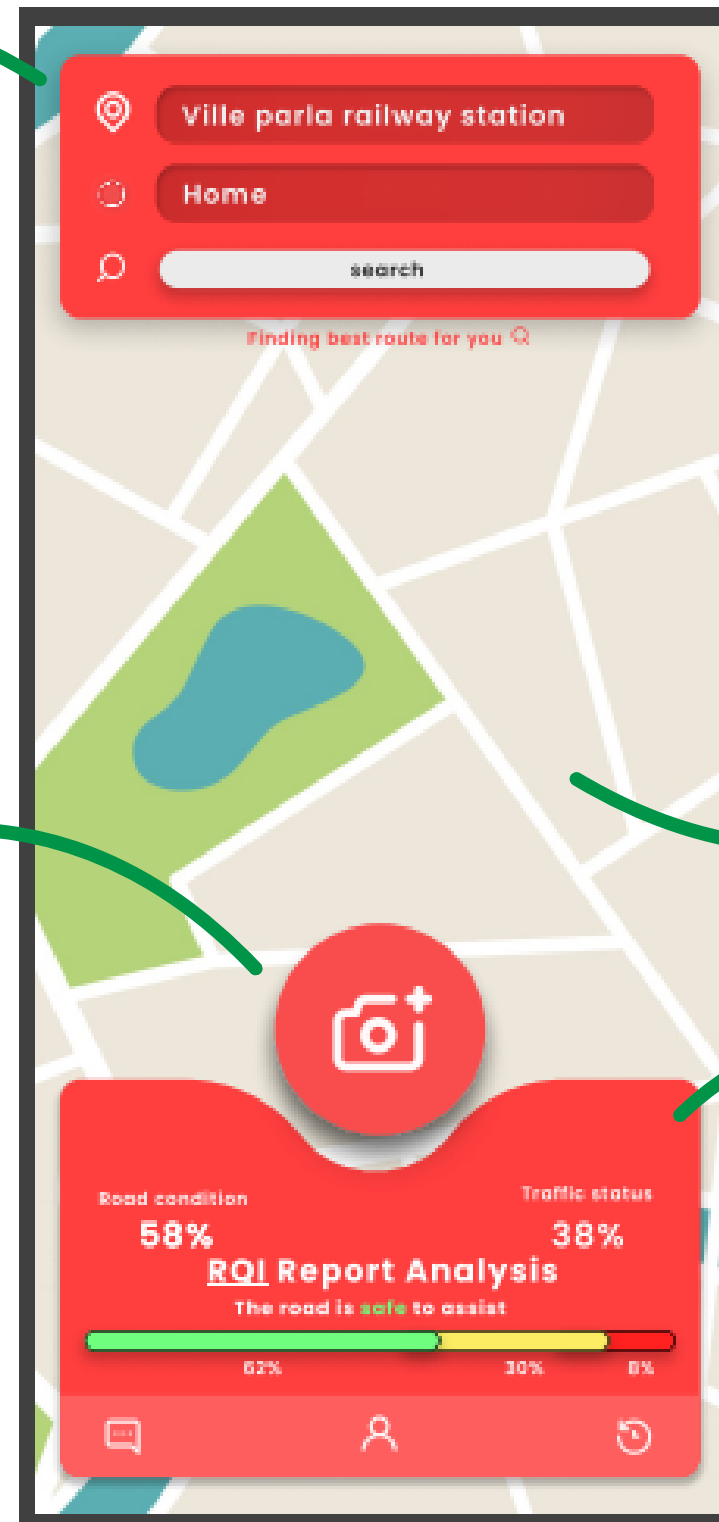
A from too route search button to **navigate** you in **finding the best route**

AFTER YOU LOGIN/SIGN UP YOU WILL BE DIRECTED TO THE DASHBOARD WHERE THE MAIN THING BEGINS

**UNL /MAP-BOX api map** which is used here to show the route + display info of it and pass it to the screen of user.

A **click and upload button** to register any inconvenience you encountered

Based on your search result here it is our detailed analysis of the road and the condition of the road you are taking on the basis of user fed data and **Road Quality Index**



# FEATURES OF PROPOSED SOLUTIONS



## FOR PEOPLE BY PEOPLE

this app is basically you helping yourself and same goes for the others this web app will encourage people to report inconvenience and to make a database that will help to encounter more problems



## REWARD SYSTEM

The app will detect genuine responses and reward its user to boost their moral support and to keep the community going

# APIS, TECH STACK AND ML MODEL USED AND THEIR IMPLEMENTATION PROCEDURE

## MAPS

Using APIs like MAP-BOX and UNL to display correct and relevant path among and also to map the area acc. to zonal view

## TECH STACK

For tech stack we have used the MERN stack ... along with utilities like Material UI and styled and also using TAILWIND CSS

## ML MODEL

ML model based libraries Tensor flow , numpy , open CV , SK learn , OS. The Model parses the image through 55 layers and give the output in form of 0 and 1 to help in further analysis with an accuracy of nearly 90 Percent



**OK LETS SEE THE  
IMPLEMENTATION**

**WAIT... I GUESS ITS BETTER  
SHOWN THEN SAID**



# CHALLENGES AND ISSUES FACED

01. RQI ALGORITHMS  
CONTEMPLATING

02. HEATMAP AND  
OTHER WAY TO  
FIXATE THE CORRECT  
PATH

03. ML MODEL LINKING  
PROCESS AND VIRTUAL  
ENVIOURMENT  
TACKALING

04. MAPPING  
ZONES AND  
WORKING WITH  
DUMMY DATA

# SOCIAL IMPACT ANALYSIS

- IMPROVED SAFETY: BY AVOIDING ROADS WITH POOR QUALITY, DRIVERS CAN REDUCE THE RISK OF ACCIDENTS OR OTHER TYPES OF INCIDENTS. THIS COULD HAVE A POSITIVE IMPACT ON THE OVERALL SAFETY OF THE CITY'S ROAD NETWORK.
- ENHANCED COMFORT: A MAP ROUTING PROJECT THAT TAKES ROAD QUALITY INTO ACCOUNT COULD HELP TO MAKE JOURNEYS MORE COMFORTABLE FOR DRIVERS, PARTICULARLY ON LONG TRIPS. THIS COULD IMPROVE THE OVERALL QUALITY OF LIFE FOR RESIDENTS AND VISITORS TO THE CITY.
- GREATER ACCESSIBILITY: POOR ROAD QUALITY CAN BE A BARRIER FOR CERTAIN GROUPS, SUCH AS PEOPLE WITH DISABILITIES OR THOSE USING VEHICLES WITH LOW GROUND CLEARANCE. A MAP ROUTING PROJECT THAT CONSIDERS ROAD QUALITY COULD HELP TO MAKE THE ROAD NETWORK MORE ACCESSIBLE FOR ALL USERS.

- ENHANCED ECONOMIC DEVELOPMENT: GOOD ROAD QUALITY IS IMPORTANT FOR THE ECONOMIC DEVELOPMENT OF A REGION. BY IMPROVING THE QUALITY OF THE ROADS, A MAP ROUTING PROJECT COULD HELP TO ATTRACT BUSINESSES AND TOURISTS TO THE CITY, WHICH COULD HAVE A POSITIVE IMPACT ON THE LOCAL ECONOMY.
- REDUCED ENVIRONMENTAL IMPACT: POOR ROAD QUALITY CAN CONTRIBUTE TO AIR POLLUTION AND GREENHOUSE GAS EMISSIONS BY REQUIRING VEHICLES TO USE MORE FUEL TO NAVIGATE ROUGH OR DAMAGED ROADS. BY IMPROVING ROAD QUALITY, A MAP ROUTING PROJECT COULD HELP TO REDUCE THESE ENVIRONMENTAL IMPACTS.

# FUTURE SCOPE

- USING SOME KIND OF HARDWARE TO MAKE IT MORE PERFECT
- TRAINING OUR AI MODEL BETTER AND MORE VIABLE
- ADDING AN EMERGENCY CONTACTS FEATURE IN CASE OF EMERGENCY
- GENERATING A FULLY FELDGED BUSINESS MODEL OF THE APP.

# REFERENCES

[http://www.geo.mtu.edu/KeweenawGeoheritage/The\\_Fault/Potholes.html#:~:text=A%20pothole%20is%20formed%20when,location%20continues%20to%20erode%20away.](http://www.geo.mtu.edu/KeweenawGeoheritage/The_Fault/Potholes.html#:~:text=A%20pothole%20is%20formed%20when,location%20continues%20to%20erode%20away.)

<https://www.freepik.com/>

<https://www.google.com/search?>

[q=pothole+formation&rlz=1C1CHBD\\_enIN974IN974&oq=POTH&aqs=chrome.0.69i59l4j69i57j69i60l3.1396j0j7&sourceid=chrome&ie=UTF-8](https://www.google.com/search?q=pothole+formation&rlz=1C1CHBD_enIN974IN974&oq=POTH&aqs=chrome.0.69i59l4j69i57j69i60l3.1396j0j7&sourceid=chrome&ie=UTF-8)

<https://unl.global/>

A large green circle is positioned on the left side of a white background, partially cut off by the edge of the frame. The circle's right edge is curved, and it contains the text 'THANK YOU' in white.

**THANK YOU**