Siddaganga Institute of Technology, Tumkur

Department of Computer Science and Engineering

DeCoders Programming Club

in association with

Tumkur Smart City Ltd. (TSCL)

Presents

HACK- -SMART

2023

A 24 hour Nation Level Hackathon

TEAM AND PROBLEM STATEMENT

- **Problem Statement**

HELP ON THE WAY

Tumkur is facing several urban challenges related to infrastructure, transportation, and waste management. The city is rapidly growing, and its infrastructure is struggling to keep up with the pace of development. Traffic congestion is a major problem, with limited public transportation options and inadequate road infrastructure.

- **Team Name**

Tech Titans

- **Team Leader Name**

Anubhav

- **College Name**

SIDDAGANGA INSTITUTE OF TECHNOLOGY, TUMKUR

PROBLEM STATEMENT DESCRIPTION

- Road safety is crucial for all road users, including drivers, passengers, cyclists, and pedestrians.
- An accident notifier system can improve road safety by using sensors to detect and report accidents in real-time.
- The notifier can alert emergency services such as ambulances and police to the accident location, enabling quick assistance.
- An emergency call system integrated into vehicles can enable drivers to make emergency calls and provide their location to emergency services.
- Additional safety features such as automatic collision detection and alerts can be added to the emergency call system.
- Implementing these systems can create safer roads and transportation systems, ensuring the wellbeing of all road users.

- To improve road safety, it's also essential to educate drivers, pedestrians, and cyclists on safe road behaviour and the rules of the road.
- Encouraging the use of public transportation, ride-sharing, and biking/walking can reduce the number of vehicles on the road, thereby reducing congestion and the risk of accidents.
- Using data analytics and artificial intelligence (AI) to identify accident-prone areas and predict potential accidents can help authorities take proactive measures to improve road safety.
- Collaborating with car manufacturers to integrate advanced safety features such as automatic emergency braking, lane departure warning, and blind-spot detection can help reduce accidents and save lives.

PROPOSED SOLUTION

- **Accident notifier system**: We will install sensors on roads and in vehicles to detect and report accidents in real-time. The notifier will alert emergency services to the accident location, enabling them to arrive at the scene quickly and provide assistance.
- **Emergency call system**: We will integrate an emergency call system into vehicles that will allow drivers to make emergency calls and provide their location to emergency services. The system will also include additional safety features such as automatic collision detection and alerts.

- **Data analytics and AI**: We will use data analytics and AI to assist people by informing their locations to the nearest police station and hospital. This will help authorities take proactive measures to improve road safety.
- **Advanced safety features**: We will collaborate with car manufacturers to integrate advanced safety features such as automatic emergency braking, lane departure warning, and blind-spot detection to reduce accidents and save lives.
- By implementing this comprehensive system, we can create safer roads and transportation systems that protect the lives and wellbeing of all road users.

TECHNOLOGY STACK

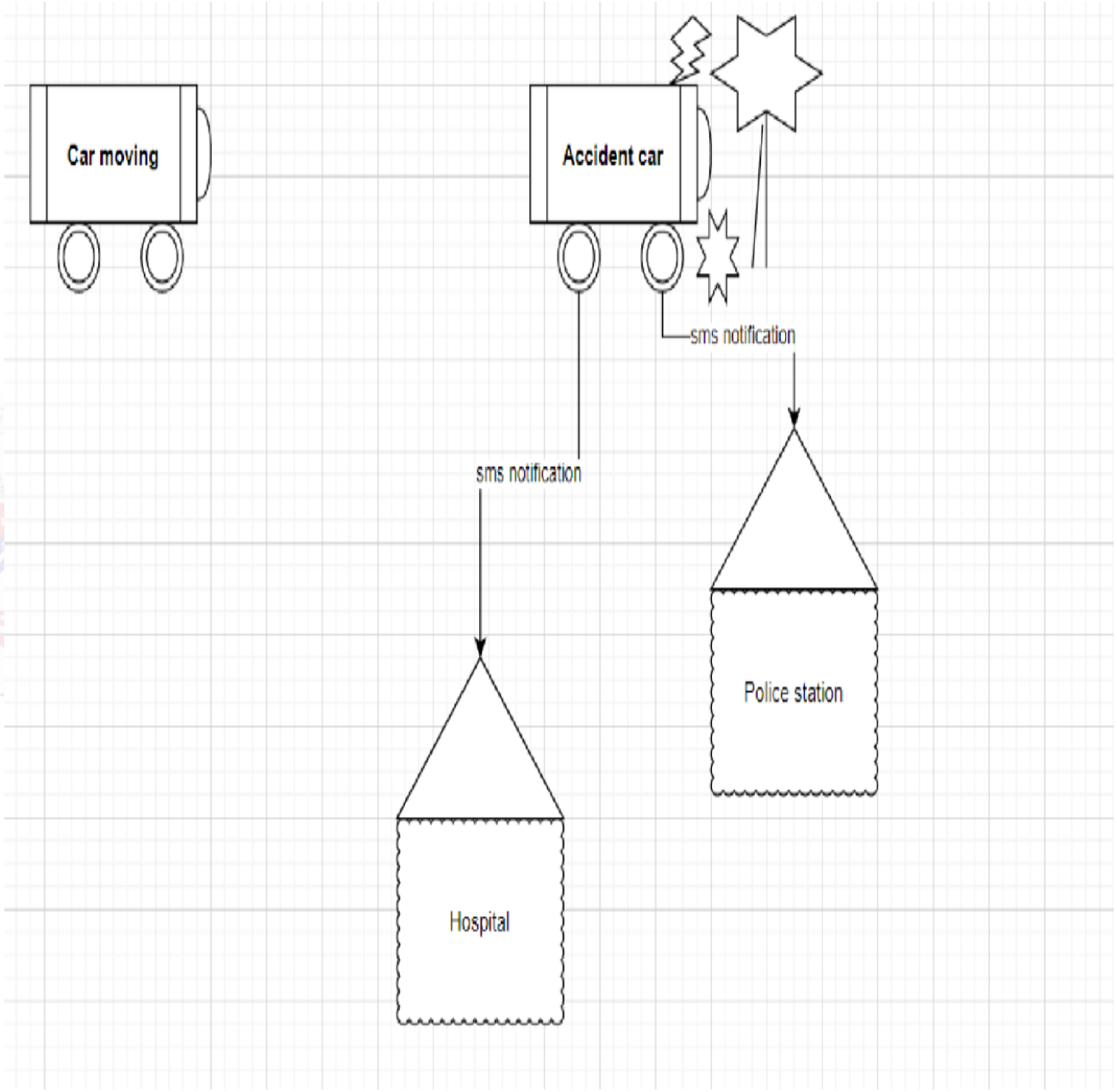
- **Front-end development**: ReactJS can be used for building responsive and dynamic user interfaces for web applications.
- **Back-end development**: Python can be used for building scalable and efficient server-side applications, APIs, and microservices.
- **Database**: SQL can be used for storing and managing large volumes of data generated by sensors and devices.
- **Algorithms**: Dijkstra's Algorithm

HARDWARE INTERFACE:

- Power supply with processor
- ARDUINO UNO
- Accelerometer with processor
- GSM with Processor as input and output.
- GPS with processor as input and output and device tracker .

USE CASE

- **User** : The user or driver with co-passenger can get emergency help in case of accident.
- **Police Station** : Can get notification about the accident and track device using GPS tracker.
- **Hospital** : Hospitals can provide instant emergency support in case of accident to the victim.
- **Family** : They can be notified about the damage.



IMPACT OF YOUR SOLUTION

- **Improved Quality of Life**: Smart traffic management systems can improve the quality of life for citizens by reducing traffic congestion, air pollution, and environmental pollution. This can lead to a healthier and more comfortable living environment for people in the city.
- **Economic Benefits**: Smart solutions can also bring economic benefits to the city. For example, by reducing traffic congestion, smart traffic management systems can help to reduce fuel consumption and transportation costs for businesses and individuals.
- **Efficient Resource Utilization**: Smart solutions can help cities to utilize their resources more efficiently.
- **Sustainability**: Smart solutions can contribute to sustainability by promoting responsible resource management and reducing environmental pollution.

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