

# SmartAutomation

Team ID : TM001511

Department/Municipal Corporation/DDO Office/Collector

office Name : Collector - Porbandar

Problem ID : PS035031

Problem Statement : Mining Vehicles Tracking Using GPS



Nov 4, 2023

# Overview



1

Problem Statement

2

Transportation Vehicles

3

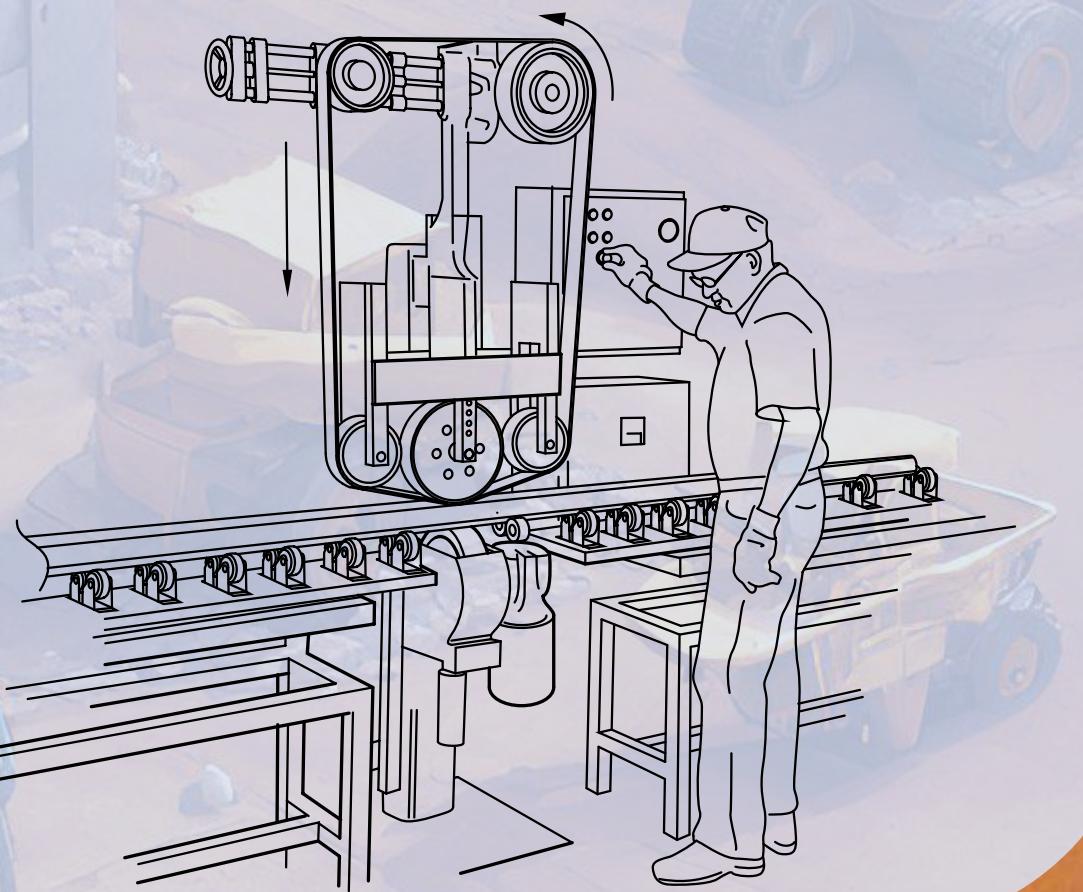
Our device and techniques

4

Conclusion

# PROBLEM STATEMENT

- Illegal mining, also known as unauthorized mining refers to the extraction of valuable minerals, resources, or ores from a mining site without proper permits, licenses, compliance with relevant environmental and safety
- Illegal mining poses a significant and multifaceted challenge that jeopardizes the environmental, social, and economic fabric of communities and nations worldwide



# TRANSPORTATION VEHICLES: THE BIGGEST THREAT

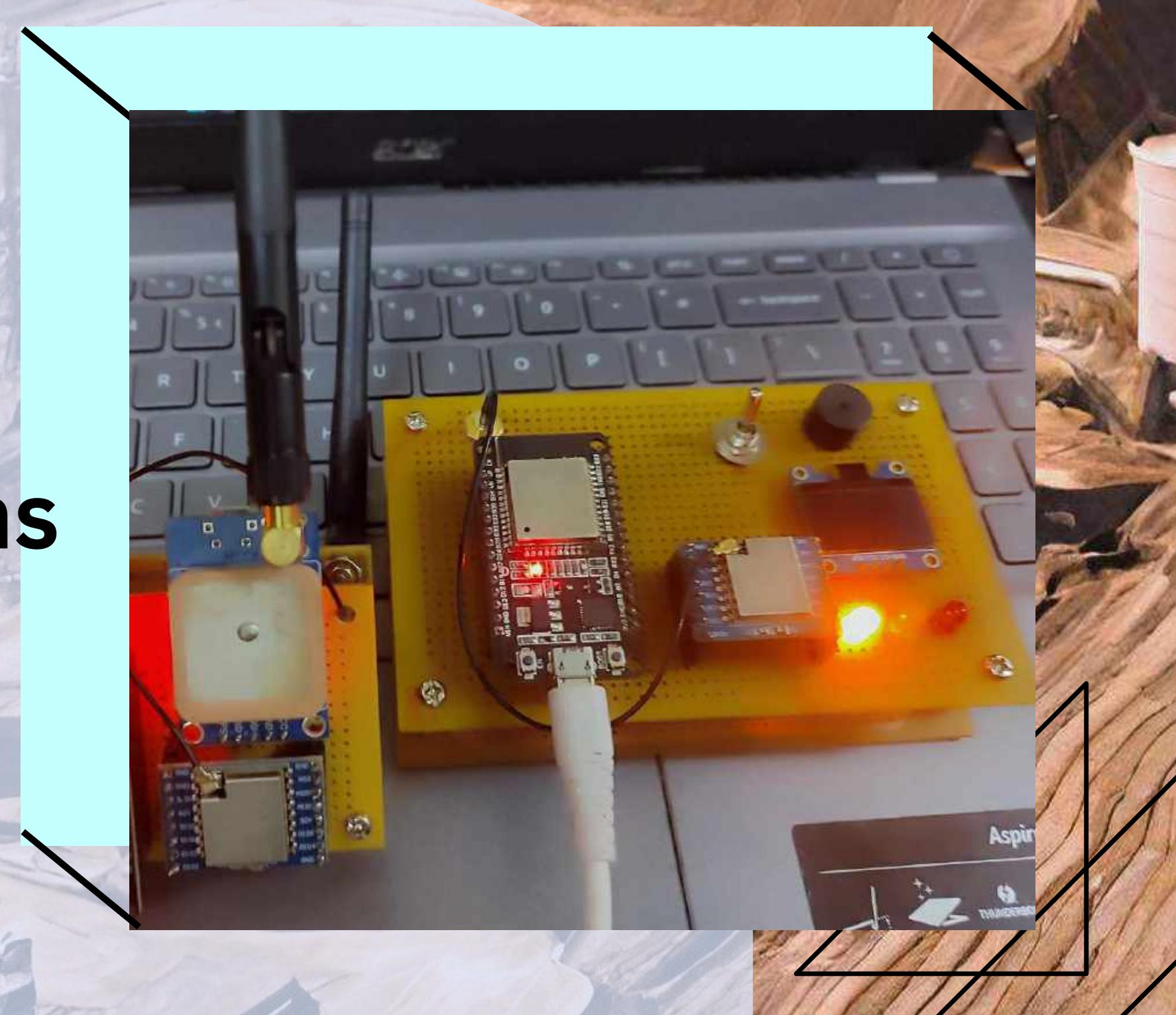
Illegal mining operations employ different tactics related to transportation vehicles. Here are some common ways:

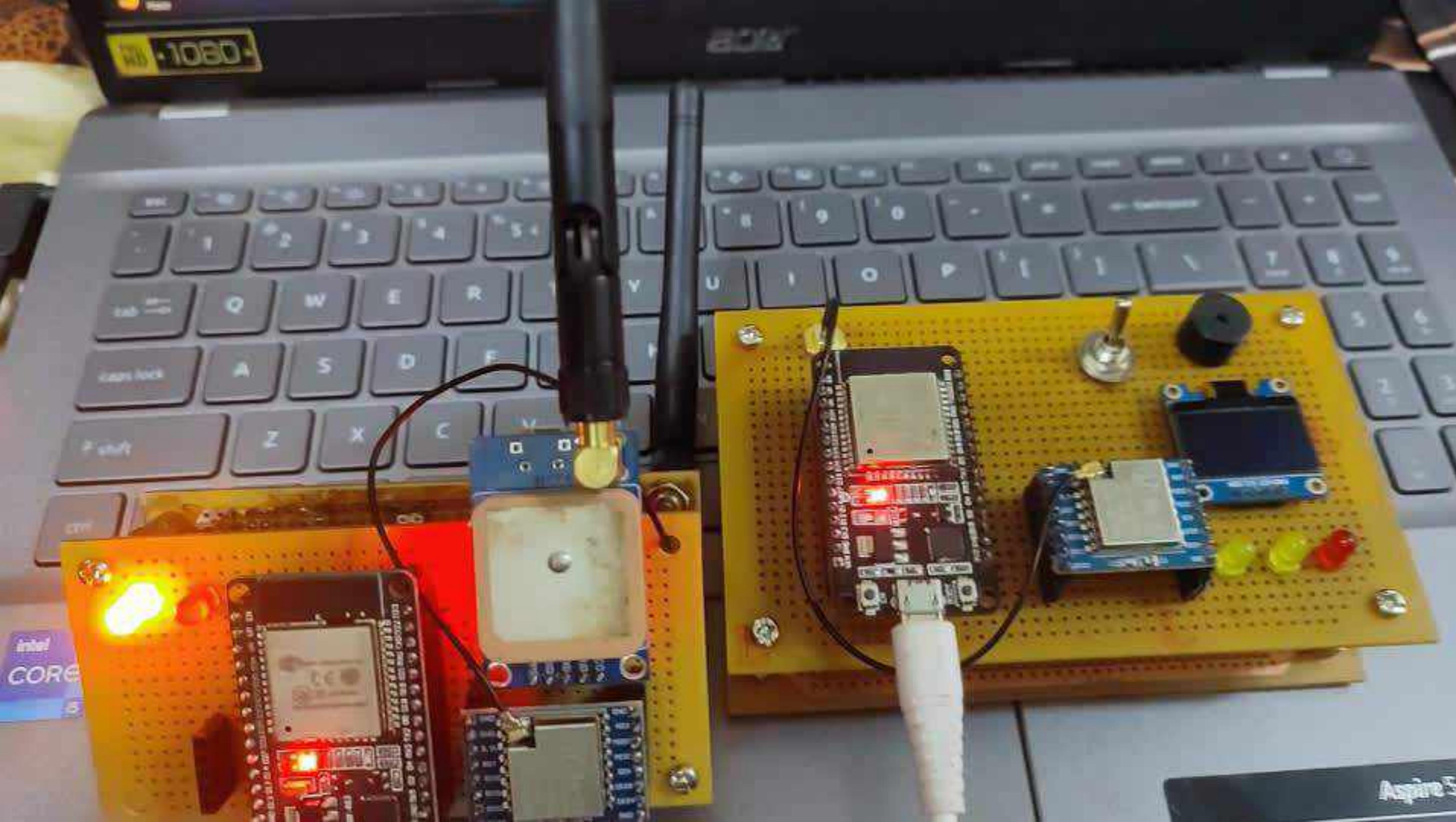
- Unauthorized Routes
- Smuggling Minerals
- Overloading.
- False Documentation
- Hiding Minerals
- Use of Unregistered Vehicles
- Off-Hours Operations
- Bribery and Corruption
- Use of Remote Routes
- Offloading in Undesignated Areas



# OUR DEVICE

- Vehicle Tracking
- Speed Monitoring
- Alert and Notifications
- Track Entry and Exit





# WHAT OUR DEVICE CAN DO ?

## 1. Vehicle Tracking:

- Real-time tracking of vehicles, displayed on a map, with markers indicating their current locations.
- Filter by vehicle ID, date, and time to review historical data.

## 2. Speed Monitoring:

- Filter for vehicles exceeding a defined speed limit.

## 3. Path and Geo-Fencing:

- Overlay predefined routes and geo-fences on the map.
- Receive alerts for deviations from authorized paths or unauthorized entries/exits from geo-areas.

## 4.Trip Information:

- Show trip details, including start and end times, distance traveled, and time spent.
- Filter trips by date, vehicle ID, or specific routes.

## **5. Load and Unload Times:**

- Display load and unload times for each vehicle.

## **6. Vehicle Details:**

- Access information on each vehicle, including vehicle ID, registration, and driver details.

## **7. Alerts and Notifications:**

- Receive real-time alerts for deviations, unauthorized stops, or suspicious activities.
- Filter and categorize alerts by type and severity.

## **8. Community Reporting:**

- Provide a channel for community members to report suspicious activities.
- Display reported incidents and actions taken.

## **9. Historical Data and Trends:**

- Access historical data to track the performance and behavior of vehicles over time.
- Analyze trends to identify potential issues or patterns of concern.

## **10. Settings and Preferences:**

- Allow users to customize their notification preferences, such as the frequency and types of alerts.
- Permit users to set up their preferred viewing options and filters.

## **11. Data Export and Reporting:**

- Provide options for exporting data and generating reports for audits and compliance purposes.
- Enable users to filter and select specific data to include in reports.

## **12. User Access Control:**

- Implement user roles and access control features to manage who can view and edit data.
- Control which users have the authority to immobilize vehicles.

## **13. Regulatory Compliance:**

- Include sections for regulatory documentation and compliance records.
- Filter for regulatory audits and data related to compliance.

# TECHNIQUES WE USED IN OUR DEVICE

- **Virtual Fencing:** It is a technology used to create geographic boundaries and trigger alerts or actions when a person or object enters or exits the defined area.
- **ANPR Cameras for Entry and Exit Checks:** Automatic Number Plate Recognition (ANPR) cameras are used to capture and recognize license plate numbers, commonly at entry and exit points of parking lots, toll booths etc. ANPR cameras can automatically log the entry and exit times of vehicles, allowing for efficient security and access control.
- **Pickup and Drop Location Tracking:** This technology is often used in transportation services. It allows users and service providers to track the location of a vehicle in real-time.
- **Real-time Mining Activity Through LoRa Module:** LoRa (Long-Range) is a low-power, wide-area network (LPWAN) technology that is used for long-distance communication.

- **Remote On/Off Control for Unsuspicious Activity:** It allows for the remote operation of devices. It is often used for energy management and security.
- **Weight Checking:** Weight checking involves monitoring the weight of objects or vehicles. It helps in ensuring that vehicles are not overloaded, which can lead to safety hazards and legal issues.
- **Daily Trip Records and KM Traveled:** Keeping daily trip records and tracking kilometers traveled is essential for vehicle maintenance, accounting, and compliance. It helps in managing a fleet of vehicles efficiently, calculating fuel consumption, and ensuring that vehicles are serviced and maintained at appropriate intervals.

# CONCLUSION

- Illegal mining is a pervasive issue with far-reaching implications that extend beyond the extraction of valuable minerals. Its unregulated nature poses a significant threat to the environment, society, and the global economy. This multifaceted challenge demands urgent attention and comprehensive solutions.
- Hence, our device stands out to solve this issue and to help authorities to maintain proper process and procedure for solving this problem so that the illegal practices can be stop to some extent which in turn would help the environment and the global economy to rise well.
- As we continue to work for the betterment of the world , our device speaks for itself and stands its testament in providing a safer and better environment at the mining sights for the authorities as well as the workers and helps in overall balance of the environment by preventing illegal mining to a great extent.