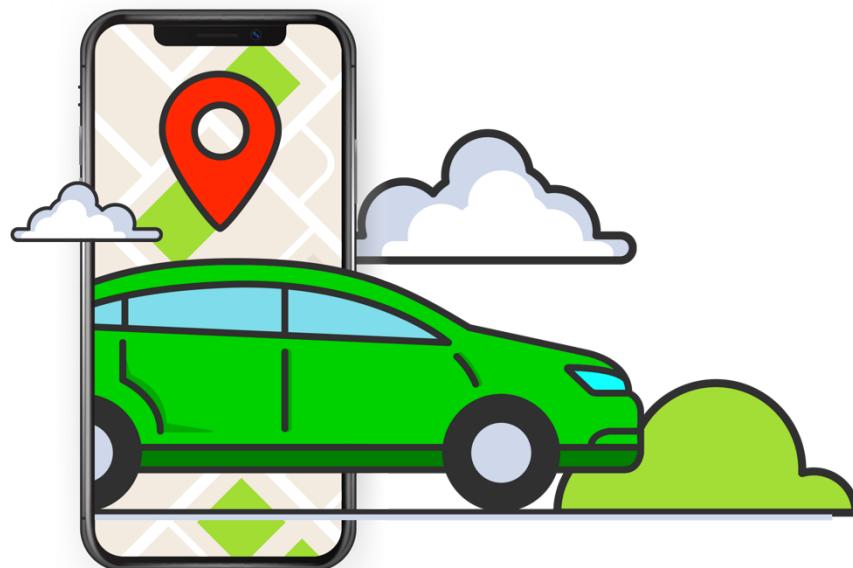




Smart Vehicle Tracking System

Project Proposal

Submission Date: 24/10/2023



Module – Computing Group Project

Module Code – PUSL2021

Lecturer – Pramudya Thilakaratne

Group Number - 37

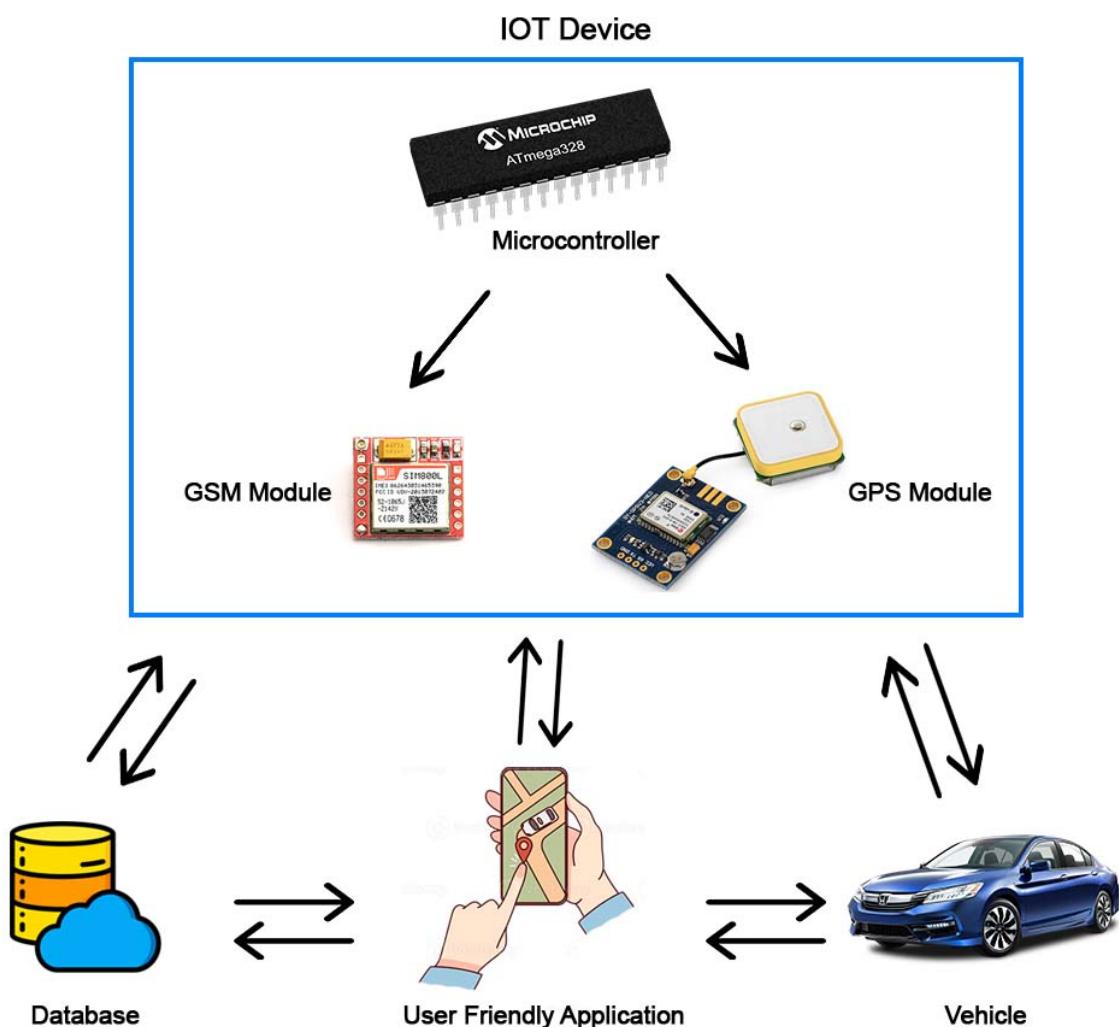
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Introduction to the System

- Introducing our Smart Vehicle Tracking System, a revolutionary solution designed to solve the pressing problem of vehicle theft. As the incidence of vehicle theft continues to surge, we recognize the urgent need for a comprehensive, user-friendly, and technologically advanced system that empowers individuals to safeguard their vehicles like never before. Our Vehicle Tracking System is a powerful ally in the battle against vehicle theft, offering a suite of features that not only provide real-time vehicle location tracking but also deliver a host of innovative functionalities to ensure the security of your valuable assets. Here's a closer look at what sets our system apart:
 1. **Real-time Vehicle Location Tracking:** *With our system, you can keep a vigilant eye on your vehicle's location, allowing you to monitor its movements in real-time. This feature is essential for not only tracking your vehicle's position but also for quick recovery in the unfortunate event of theft.*
 2. **Instant Ignition Activation Notification:** *The system sends instant notifications to your mobile device as soon as your vehicle's ignition is activated. This immediate alert enables you to take swift action if an unauthorized ignition event occurs, potentially thwarting theft attempts before they escalate.*
 3. **Remote Vehicle Control:** *Our mobile application grants you the power to remotely start and stop your vehicle with just a few taps on your smartphone. This feature is not only convenient but also adds an extra layer of protection by allowing you to immobilize your vehicle in case of suspicious activity.*
 4. **Multi-Vehicle Integration:** *We understand that many individuals have more than one vehicle in their possession. Our system allows you to seamlessly integrate and monitor multiple vehicles through a single application. This simplifies the process of managing and securing all your assets in one place.*
 5. **Customizable Alerts:** *Tailor the system to your specific needs by setting up customizable alerts for various events, such as unauthorized vehicle movement, speeding, or boundary breaches. These alerts keep you always informed and in control.*
- Our Vehicle Tracking System stands as a beacon of hope in a world where vehicle theft continues to be a growing concern. By combining cutting-edge technology with user-friendly applications, we're committed to providing a solution that not only safeguards your vehicles but also offers peace of mind in an increasingly uncertain world. Join us in this journey toward a safer, more secure future for our communities, where the protection of your prized possessions is our top priority.

Methodology



Objectives of the System

- The primary purpose of this system is to increase the safety of vehicles. The increase in vehicle theft calls for a proactive approach to protecting people's valuable assets.
- Providing vehicle owners with the ability to track their vehicles in real-time enables them to know the exact location of their vehicles at any given moment. This is very important for theft prevention and quick recovery in case of theft.
- Instantly notify vehicle owners via mobile notifications when their vehicle's ignition is turned on without permission. This instant alert empowers owners to respond quickly to suspicious activity.
- Enable vehicle owners to remotely control their vehicles through a mobile application, allowing them to start or stop the vehicle, thereby preventing unauthorized use or theft attempts.
- Providing a seamless solution to manage and secure multiple vehicles through one app, reducing the complexity of vehicle security for people who own more than one vehicle.
- Allowing users to set customizable alerts for specific events such as unauthorized vehicle traffic, speeding, or limit violations, ensuring that the system can be tailored to the user's unique security needs.
- In the event of a vehicle theft, the system's real-time tracking and notification capabilities help facilitate a faster response, increasing the chance of recovering the stolen vehicle intact.
- Giving vehicle owners peace of mind knowing that their valuable assets are protected and that their vehicles are in control even when they are not physically present.
- The system's presence and capabilities act as a deterrent to potential thieves, reducing the likelihood of vehicle theft in the first place.
- Contribute to the overall safety of our communities by reducing vehicle theft incidents that often lead to other criminal activity and threaten public safety.
- The aim of this system is to make vehicle safety and management more convenient for owners, allowing them to control their vehicles from their hands, saving time and effort.
- Leveraging advances in mobile technology, GPS tracking and remote-control capabilities to provide an innovative solution for vehicle security in an increasingly digital world.

Through the implementation of this solution, we aim to address the pressing issue of vehicle theft in our country and provide vehicle owners with the means to effectively protect their assets. The objectives of the system are designed to improve safety, provide convenience, and contribute to the well-being of our communities by reducing vehicle theft and related risks.

Targeted Users of the system

1. **Vehicle Owners:** The primary user group consists of people who own cars, motorcycles, or other vehicles. They are the direct beneficiaries of the system's features and benefits, including real-time tracking, remote control, and instant notifications, empowering them to protect their vehicles and gain peace of mind.
2. **Security and Law Enforcement:** Security agencies and law enforcement departments can use the system to track stolen vehicles, improve chances of recovery and respond quickly to theft incidents. It supports the fight against vehicle-related crime.
3. **Parents and Guardians:** Parents and guardians can use the system to monitor the locations and usage of vehicles used by their teenagers, ensure their safety, and promote responsible driving habits.
4. **Insurance companies:** Insurance providers can offer discounts or incentives to policyholders who use the system, which reduces the risk of theft and increases the chances of vehicle recovery, ultimately reducing insurance claims.
5. **Automakers and Dealers:** Automakers and dealers can include the system as an optional feature or offer it as an aftermarket solution to increase the value of their vehicles and increase customer loyalty.
6. **Government and municipal authorities:** Government agencies can use the system to track and manage government-owned vehicles, monitor public transport, and enforce vehicle-related regulations.
7. **Rental car agencies:** Customers can use the system to track rental cars to car rental companies, ensure their safe return and prevent unauthorized use.
8. **Communities and Neighborhood Watch Groups:** Entire communities or neighborhood watch groups can use the system to collectively monitor and protect vehicles in their areas, improving overall community safety.

The vehicle tracking system is designed to be versatile and can cater to a wide range of users including individuals, businesses and organizations with different needs and use cases. It offers a flexible and customizable solution to meet the unique needs of each user group, making it a valuable tool in enhancing vehicle safety and management.

Application Features and Description

1. Real Time Vehicle Tracking:

- Description: This feature allows users to view the real-time location of their vehicles on a map. The app continuously updates the vehicle's location, providing accurate and up-to-the-minute tracking information.

2. Ignition Activation Notification:

- Description: When the vehicle's ignition is turned on, the app sends an instant notification to the user's mobile device. This alert notifies the user of any unauthorized ignition events, increasing security and enabling quick response.

3. Remote Vehicle Control:

- Description: Users can remotely start and stop their vehicles through the app. This feature not only provides convenience, but also provides added security by allowing users to immobilize their vehicles in case of theft.

4. Multi-Vehicle Integration:

- Description: The application supports the addition of multiple vehicles, making it easy for users with more than one vehicle to manage and secure all their assets within a single interface.

5. Customizable Alerts:

- Description: Users can set up customized alerts for specific events, such as unauthorized vehicle movement, speeding, or boundary breaches. This ensures that the system can be tailored to meet the user's unique security requirements.

6. Geo-Fencing:

- Description: Geo-fencing allows users to define virtual boundaries on the map. When the vehicle enters or exits these predefined areas, the application triggers notifications, adding an extra layer of security.

7. Historical Tracking Data:

- Description: The application stores historical tracking data, enabling users to review past routes and vehicle activity. This can be valuable for analyzing driving habits or investigating past events.

8. Driver Behavior Analysis:

- Description: The system can provide insights into driving behavior such as speed, acceleration, and braking patterns. Users can monitor and analyze this data for security and efficiency.

9. Emergency SOS button:

- Description: In the event of an emergency or security threat, users can press the SOS button within the app to send an immediate distress signal to predefined contacts or authorities.

10. Vehicle health monitoring:

- Description: Based on the vehicle's mileage or usage, users can receive alerts for maintenance reminders such as oil changes or tire rotations. This feature helps ensure proper maintenance of the vehicle.

11. User Management:

- Description: For businesses and organizations, the application includes user management features, allowing administrators to control access and permissions for multiple users within the system.

12. Integration with emergency services:

- Description: In the event of a vehicle theft or emergency, the app can integrate with local law enforcement and emergency services to increase the chances of a quicker response and vehicle recovery.

13. User-friendly interface:

- Description: The app is designed with a user-friendly interface, making it easy for users without technical expertise to navigate, access features and receive alerts.

14. Cross-platform compatibility:

- Description: The app is compatible with both iOS and Android devices, ensuring accessibility for a wide range of users.

15. Data security and privacy:

- Description: Data security and user privacy are very important. The app uses strong encryption and privacy measures to protect user information and vehicle data.

These features collectively create a comprehensive and user-centric application for the vehicle tracking system, providing security, control, and peace of mind to vehicle owners and various user groups.

Schedule of the Project

Task ID	Task Name	Start Date	End Date	Duration (In Days)																
T01	Group details & Roles	20/9/2023	26/9/2023	6	20/09/2023	27/09/2023														
T02	Project Idea	27/9/2023	15/10/2023	18		4/10/2023														
T03	Project Proposal	16/10/2023	24/10/2023	8		11/10/2023														
T04	Budget Report	25/10/2023	28/10/2023	3		18/10/2023														
T05	Gather Requirements	29/10/2023	19/11/2023	21		25/10/2023														
T06	Technical and Functional Specification Report	20/11/2023	30/11/2023	10		1/11/2023														
T07	Building the IOT Device	1/12/2023	11/12/2023	11		8/11/2023														
T08	Testing IOT Device	12/12/2023	15/12/2023	3		15/11/2023														
T09	Application UI development	16/12/2023	29/12/2023	13		22/11/2023														
T10	Database development	30/12/2023	5/1/2024	6		29/11/2023														
T11	Application Back-end development	6/01/2024	28/01/2024	22		6/12/2023														
T12	Connection IOT device to Application	29/1/2024	12/2/2024	14		13/12/2023														
T13	Hardware Configuration	13/2/2024	2/3/2024	17		20/12/2023														
T14	System Testing	3/3/2024	4/4/2024	32		27/12/2023														
T15	Final Project Submission	5/4/2024	21/4/2024	16		3/1/2024														
						10/1/2024														
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						17/4/2024														
						24/4/2024														

Members of the Group

Plymouth ID	Name	Leadership
10898513	Kalubowila D D	Group Leader
10898575	Nethsadi T M R D	QA Leader
10898663	Sigera L M K	Programming Leader
10898599	Perera M S D	Planning Leader
10898574	Nethmika U S	Testing & Maintenance Leader
10898643	Samarathunga I P	Technical Leader