

GeoReminder: Intelligent Location-Based Reminder System Using GPS and Geofencing

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Abstract

GeoReminder is an intelligent location-based reminder system developed using GPS and geofencing techniques. The system allows users to create reminders linked with specific locations and predefined radius values. The application continuously monitors user location using GPS services and triggers notifications when users enter the defined geofence region. Flutter and Firebase are used for cross-platform development, cloud storage, and real-time synchronization. The system improves productivity and reminder relevance while reducing battery consumption through optimized periodic tracking.

Keywords

GeoReminder, GPS, Geofencing, Flutter, Firebase, Location-Based Reminder.

1. Introduction

Traditional reminder systems are mainly time-based and cannot effectively handle tasks that depend on location. GeoReminder solves this issue by using GPS and geofencing technologies to provide intelligent location-aware notifications. The application automatically alerts users when they reach predefined locations.

2. Related Works

Existing location-based reminder systems use GPS and geofencing to trigger notifications. However, many systems face issues such as high battery usage and limited customization. GeoReminder improves performance using optimized tracking, offline notifications, and customizable geofence radius.

3. System Design and Methodology

The system includes user authentication, reminder creation, GPS tracking, distance calculation, and notification triggering modules. Reminder data such as coordinates and radius values are securely stored in Firebase Firestore. The Haversine formula is used to calculate distance between the user and stored locations.

4. System Implementation

The application is developed using Flutter and Dart for cross-platform support. Firebase Authentication and Cloud Firestore are used for backend services. Google Maps API is integrated for interactive location selection and visualization.

5. Results and Discussion

The application successfully triggers notifications when users enter predefined geographic regions. Periodic GPS tracking reduces battery consumption while maintaining acceptable accuracy and performance.

6. Conclusion

GeoReminder provides an efficient solution for intelligent location-based reminders using GPS and geofencing technologies. The system improves task management, notification relevance, and user productivity through real-time location tracking and context-aware alerts.

References

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