

Literature Survey

Introduction

The purpose of the literature survey is to give the brief overview and to establish complete information about the reference papers. The goal of the literature survey is to completely specify the technical details related to the main project in a concise and unambiguous manner.

Ranajoy Mallik, Amlan Protim Hazarika, Dilip Singh and Bandyopadhyay. “Development of An Android Application for Viewing Covid-19 Containment Zones and Monitoring Violators Who are Trespassing into It Using Firebase and Geofencing”,2020.

The World Health Organization has declared the outbreak of the novel coronavirus, Covid-19 as pandemic across the world. With its alarming surge of affected cases throughout the world, lockdown, and awareness (social distancing, use of masks etc.) among people are found to be the only means for restricting the community transmission. In a densely populated country like India, it is very difficult to prevent the community transmission even during lockdown without social awareness and precautionary measures taken by the people. Recently, several containment zones had been identified throughout the country and divided into red, orange and green zones, respectively. The red

zones indicate the infection hotspots, orange zones denote some infection and green zones indicate an area with no infection. This paper mainly focuses on development of an Android application which can inform people of the Covid-19 containment zones and prevent trespassing into these zones. This Android application updates the locations of the areas in a Google map which are identified to be the containment zones. The application also notifies the users if they have entered a containment zone and uploads the user's IMEI number to the online database. To achieve all these functionalities, many tools, and APIs from Google like Firebase and Geofencing API are used in this application. Therefore, this application can be used as a tool for creating further social awareness about the arising need of precautionary measures to be taken by the people of India.

A.H.Abbas, Mohammed I. Habelalmateen, Syukran Jurdi, L. Audah, N. Alduais. "GPS based location monitoring system with geo-fencing capabilities",2019.

This paper presents a study on GPS Based Location Monitoring System with Geo-fencing Capabilities. This system provided a high-security system that prevents vehicles from being stolen. It also issued an alert to the user based on the boundary of the location by using the Internet of Things (IoT). In this study, the system could easily monitor and track the location of the vehicle and was able to issue an alert when the vehicle exited the geofence area. This system was separated into two parts which were the hardware and software. The hardware parts were the ESP8266 Node MCU and GPS module while Google Maps and IoT platform were the software parts. The admin could monitor the vehicle

via the computer, and the notification alert was sent to the registered email of the admin when the vehicle exited or entered the geofence area. The prototype system was tested by moving the vehicle around the geofence area. The results showed the correct location of the vehicle and email notification alert when it exited or entered the boundaries. The location accuracy of about 95% compared to the real-map on the mobile phone.

Akira Suyama, Ushio Inoue. “Using geofencing for a disaster information system”, 2016.

This paper proposes a disaster information system using the geofencing technology to detect the movement of users and provide information of the risk for them. The system is composed of client-server architecture; the server collects risk information from various information sources and the client watches the user to notify the information as the need arises. To detect the user’s movement, the client creates a virtual fence called geofence at the dangerous area based on the risk information stored in the server, and monitors the user's entry and exit of the fence. Thus the system can deliver warnings and advices timely to specific users in danger. We implemented a prototype system and evaluated the accuracy of the system. The location of the user was detected with high accuracy when entering the fence, but the accuracy was low when exiting the fence.

Mohammed Alsaqer, Brian Hilton, Tom Horan and Omar Aboulola. “Performance Assessment of Geo-triggering in Small Geo-fences: Accuracy, Reliability, and Battery Drain in Different Tracking Profiles and Trigger Directions”,2015.

Geo-fencing has been predicted to be a multi-billion dollar market in areas such as retail, ambient intelligence, entertainment, healthcare, etc. Businesses have been adopting geo-fencing technology, and now there are several platform providers such as Google, Qualcomm, Esri, Urban Airship, and others. These tools are continuing to attract application developers; however, best practices for choosing the specific performance options within this technology is still ambiguous. For example, Esri provides a geo-trigger service that allows developers to send targeted messages to users when they enter, exit, or dwell in a geo-fenced area. This service also provides the ability to choose higher levels of accuracy or battery saving by offering different location tracking profiles. This paper investigated two geo-trigger tracking profiles (Fine and Adaptive) to assess their performance in small, outdoor, geo-fenced areas; these two profiles are the most accurate but vary in their battery-use. The results show the Adaptive tracking profile to provide 100% reliability and average accuracy of 68.53 meters in geo-fences between 20-70 meter radii. In addition, the Adaptive tracking profile saved 15.20% battery-life while the user is stationery and 9.23% while the user is moving.

Piotr Szczytowski. “Geo-fencing Based Disaster Management Service”,2014.

The success of disaster handling often depends on the efficient flow of information. The social media and networks receive a growing attention as potential source of valuable data in disaster scenarios. The social network based information flow is real-time, direct, two-directional and often geo-tagged. Unfortunately, besides these obvious advantages, social network data suffers from drawbacks: it is unstructured, dispersed and lacks reliability. This paper proposes an approach based on combining a geo-fencing technology with social network platform to combat this problem and deliver a novel service for disaster management. The service groups users ad-hoc based on their location. Social network features allow users to exchange real-time information, coordinate rescue efforts, issue and report tasks. The geo-fences are visualized to provide a good overview of the disaster zone. The service was evaluated by disaster management experts, with an encouraging feedback.