

Implementation of Dijkstra Algorithm with React Native to Determine Covid-19 Distribution

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Abstract

Since Covid-19 was declared a global pandemic because it has spread throughout the world, every effort has been made to help prevent and tackle the transmission of Covid-19, including information technology. Information technology developed to determine the shortest distance for Covid-19 cases around us needs to be developed. This research implements Dijkstra's Algorithm written in the React Native programming language to build a Covid-19 tracking application. The system can display the closest distance with a radius of at least one meter, and the test results can map the nearest radius of 41 meters and the most immediate radius of 147 meters. This system is built for the compatibility of Android OS and iOS applications with React Native programming.

Keywords: Android, GPS-based, Programming, Shortest Distance, Shortest Path

1 Introduction

Since WHO designated Covid-19 as a global pandemic because it has spread throughout the world, various ways have been sought to help prevent and cope with the spread of Covid-19. The use of intelligent information and communication technology that can help prevent the spread of Covid-19 can be done by implementing artificial intelligence. One of the advantages of artificial intelligence is that it can be used for mobile telecommunications devices (mobile phones) or smartphones. The application of an Android OS-based application to prevent the spread of Covid-19 is used to diagnose someone when they experience some of the symptoms they feel, and it is feared that the signs lead to an indication of Covid-19 [1]–[3]. However, to be able to determine the distance from one user to another, more research is needed, because according to [4], [5] in the control Covid-19 required tracking of cases confirmed Covid-19 to see the physical distance between the point Covid-19 with other people at specific locations.

The exact algorithm is used to determine the distance to nearby locations, such as Dijkstra's Algorithm. It can choose the shortest length of several routes [6], [7]. Studies using this algorithm seek the direction of travel the closest [8] and the location of the nearest futsal [7]. Determining a distance between two location points utilizing the GPS feature, with GPS will be able to track, determine the direction, especially when outdoors [9] and when the distance between people who have been confirmed Covid-19 can be known, it will warn other people who are around it to be able to maintain its distance so that it will minimize the occurrence of Covid-19 transmission. Applications to find out the closest confirmed case of Covid-19 are essential to avoid too tight space so that news of Covid-19 can be prevented, and this application trial can be implemented on mobile platforms [5].

Application development on mobile devices itself can use native types in JavaScript (React Native). React Native has advantages over both the hybrid type and the web version. React Native has been widely used to develop multi-platform applications, which can develop Android OS and iOS applications [10]. This paper seeks to implement Dijkstra's Algorithm represented in React Native to track Covid-19 in the vicinity through mobile applications.

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