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Analysis and Design of a Route Recommendation System and Bicycle Rental Fees at Tourist Destinations with Genetic Algorithms

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Abstract− The tourism sector is one of the country's most significant sources of income, especially in Indonesia. This is inseparable from many visitors or foreign tourists who come to Indonesia. Bandung is a tourist destination that is famous for its natural beauty and traditional culture, one example is in Desa Alamendah which has several tourist destinations, namely agro-tourism, nature tourism, and cultural tourism. However, access that can be passed from every tourist spot in Desa Alamendah can only be given on foot or by bicycle. Responding to this matter, bicycle facilities as a means of rotation are needed to access tourist attractions in Desa Alamendah. Based on these problems, this study aims to create a recommendation system for tourist attractions and bicycle rentals using an application in Desa Alamendah, Bandung. Using the Genetic Algorithm, an algorithm that can solve multi-objective problems can be applied to a tourist spot recommendation system in Desa Alamendah. In this system, the Genetic Algorithm is also used to determine fares based on the total distance traveled, so that bicycle rentals are more efficient. The study combines Google Maps as an appropriate route selection based on the recommendation of tourist destination points that tourists can visit using Genetic Algorithms, so that bicycle rentals are more efficient. This is study combines Google Maps as an appropriate route selection based on the recommendation of tourist destination points that tourists can visit using Genetic Algorithms. So that bicycle rentals are more efficient. The study combines Google Maps as an appropriate route selection based on the recommendation of tourist destination points that tourists can visit using Genetic Algorithms. Based on the results of tests that have been carried out in the process of forming tourist attractions recommendations with a Genetic Algorithm that using mutation probability 1.0 and Crossover Probability 0.6, can produce a Mobile Application with a Genetic Algorithm as a tourist spot recommendation system in Desa Alamendah. In addition, it also can provide recommendations, namely displaying tourist points, route using Google Maps. The rental fee is based on the total distance traveled.

Keywords: Genetic Algorithm, a recommendation system for tourist attractions, Google Maps

1. INTRODUCTION

The tourism sector is a sector that plays a vital role in increasing income. Sustainable tourism not only considers its economic, social, and environmental impacts but must also address the needs of tourists, industry, the environment, and the local population.[1]. Bandung is a tourist destination that is famous for its natural beauty and traditional culture, one example is in Desa Alamendah, which has several tourist destinations, namely agro-tourism, nature tourism, and cultural tourism. However, access that can be passed from every tourist spot in Desa Alamendah can only be done on foot or by bicycle. Responding to this matter, bicycle facilities as a means of ratio are needed to access tourist attractions in Desa Alamendah.

Bicycles offer an advantage over other vehicles likely to produce pollution; besides, other vehicles often cause traffic jams in tourist areas[2]. Therefore, a bicycle rental system is needed at tourist attractions. To facilitate access to transportation, for tourists to be able to explore all tourist attractions.

Study[3]proposed a Genetic Algorithm for a bicycle sharing system for tourism. Their research aims to improve bicycle-sharing services, thanks to the Mobile Tourist Guide (MTG), which can support bicycle renters to recommend exciting places to visit. Based on this research, it takes a simulation of destination point recommendations, and the author will build the application by combining it with Google Maps. In a study [4], the Genetic Algorithm can solve multi-objective problems, applying it to a culinary tourism recommendation system. The crossover method with one cut point and mutation with gene shift in the Genetic Algorithm can solve the problem. Each destination visited also has time and load constraints. Close the place. Based on this research, it takes a simulation of destination point recommendations, and the author will build the application by combining it with Google Maps. As a recommendation system to tourist destination points, with the development of tourist spot recommendations based on real-time time, the application will automatically recommend tourist attractions at the right time according to the schedule of opening and closing hours.

In Desa Alamendah, there are various kinds of tourist attractions, sometimes making it difficult for tourists to choose which tourist attractions they will visit. The Genetic Algorithm will recommend tourists to visit tourist attractions in Desa Alamendah by knowing which tourist attractions are open or closed when tourists are at the location. This is implemented into an application on a smartphone[5], which can detect where the area of tourists is[6]so that you can find out all the tourist points that have been divided according to opening and closing hours. Therefore, it is hoped that tourists will get an easy route to visit tourist attractions in Desa Alamendah.

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