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Exploring Tourist Flow Patterns through Geotagged Social Media Data: A Case Study from Sri Lanka

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Abstract

Tourism studies often rely on conventional methods such as interviews and site-specific surveys to collect data on tourist behaviour, mobility patterns, and preferences. However, these methods can be expensive, time-consuming, and limited in scope. Additionally, accurately tracing tourist travel paths can be challenging due to recall bias. Recently, user generated content on social media platforms have emerged as an alternative data source in tourism studies. In this study, we used geotagged posts on Flickr to understand the dominant paths taken by inbound tourists in Sri Lanka. The methodology consisted of three steps. First, geotagged photographs were collected from the Flickr API spanning a ten-year period, from 2012 to 2022. These photographs included metadata such as user ID, the timestamp of photo capture, and geo coordinates indicating where the photo was taken. Second, a density-based clustering algorithm was utilized to identify tourist hotspots. Finally, the Markov Chain model was employed to calculate transition probabilities among different attractions, revealing dominant travel routes within the country. Study's findings indicate that Cultural heritage attractions were the most popular, comprising 55% of all attractions identified by the algorithm, and are particularly popular in districts such as Anuradhapura, Polonnaruwa, Matale, Kandy, and Galle. Nature-based attractions, constituting 37% of the total, were mainly located in Nuwara Eliya and Badulla Districts, as well as Yala National Park in Hambantota District. For coastal tourism, Galle and Matara Districts were the top preferences. The analysis confirms dominant travel patterns between North Central, Central, and Southwest coast regions. Notably, Galle, Kandy, Matale, Matara, Nuwara Eliya, and Colombo attract tourists from a more diverse array of regions compared to other districts in the country, showcasing their significance as tourist hubs. The study findings highlight opportunities in Jaffna for cultural-heritage tourism, the Eastern coast for coastal tourism, and the central highlands for tea tourism. It also emphasizes the need to develop the less-visited natural sites to ease pressure on popular National Parks. This research's significance lies in its contribution to informed decision-making and the sustainable management of tourist destinations. By understanding tourist mobility patterns and identifying popular attractions through social media data, policymakers can effectively manipulate visitor flows and mitigate excessive tourist pressure, while preserving the authenticity and allure of these destinations.

Keywords: Sustainable tourism, Geotagged photographs, Social media, Tourist mobility, Flickr

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