

## I. Introduction

Tourism is one of the industries with excellent potential and continues to grow each year. Therefore, the tourism industry has become a leading development program to drive the national economy [1]. As one of the well-known countries with incredible destinations to visit by domestic and international tourists, Indonesia has constantly tourism growth before 2020 [2]. Therefore, Tourism is one of the mainstay sectors contributing to Indonesia's foreign exchange. Indonesia also has a lot of great destinations that have been known internationally. According to the TripAdvisor Travelers Choice Award, Bali is among the most popular destinations in 2021 [3].

Technological growth has made it natural to leave comments or reviews on social media such as TripAdvisor or Google Maps. This growth brings a new opportunity to develop the management system of tourist destinations based on a data-driven decision [4], such as mobility, sentiment, and problem analysis. Currently, there is not much information or study that explains the mobility, sentiment, or problem of the tourist in the destination of Bali. The data also need to be analyzed because they have valuable information for many stakeholders as users share their thoughts, opinions, preferences, or feelings on the destination [5]. The interpretation will benefit from maximizing the opportunity for destination management.

The study of tourist mobility using social media data potentially help determine the management's strategy, such as developing tourist destination using favorite destination [4]. Using the tourist review from social media, we can represent the tourist sentiment in the destination [6]. We can also use filtered reviews, such as negative reviews to classify multiple problems in the destination.

Currently, several tools are available to help analyze mobility, sentiment, or problems, such as network analysis and machine learning. This paper proposes using the UGC data from TripAdvisor to represent tourist mobility using SNA. The sentiment analysis shows the tourist sentiment about the destination and multiclass text classification to classify the problem in the tourist destination. In this study, we propose to use the network metrics and measurement from social network analysis, tourist sentiment from sentiment analysis, and problem class from multiclass text classification as a combined approach. Our objective is to present a prospective recommendation that helps improve tourist destinations. This research combines social network analysis, sentiment analysis, and multiclass classification to get a comprehensive view

of tourist behavior in Bali. The results benefit by providing a recommendation to many stakeholders such as tourists, the government, and business organizations [7].