Event-Based Social Networking System With Recommendation Engine

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ABSTRACT

For over a decade, social networking has been ruling over the internet and plays a vital role in day-to-day life. However, for a new network to survive in this market, exclusivity is a necessity. As a result, the goal of this work is to create a network for hosting and managing volunteering and events. Furthermore, the network will feature a recommendation system to provide users with events based on their interests and preferences according to how they interact with the platform. The proposed system is exclusively meant for event post creation and management and also it focuses on event posts with interactions such as replies, likes, interest, and disinterest options. This system has been implemented and deployed with the title 'Evento' with the recommendation engine boasting an average purity index of 0.8031 for approximately 30 users. The results for recommendations have been chosen considering purity index and fisher optimization criterion metrics. Based on the experimental results, the proposed social network system with the recommendation engine has been found to be sufficient.

KEYWORDS

Clustering, Collaborative Filtering, Recommendation System, Social Networking System

1. INTRODUCTION

With the ever-growing influence of the Internet in today's society and world, the influence that Social Media has over the people cannot be understated. Many people depend on these platforms for their daily dose of news and information. Along with this, these platforms provide entertainment which further grabs hold of the user's attention. Social Networking Systems refer to some form of online community of individuals that can interact with each other by sharing of textual or pictorial information. A social network is an abstract structure consisting of people who are linked together by one or more forms of relations, such as friendship, shared information, or similar interests (Zheng et al., 2009). Social network analysis is one of the research areas that has become increasingly relevant

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as the amount of social network data grows. The traditional recommendation system believes that users are self-contained and spread evenly, and it ignores the social interaction and connections that exist between them (Cai et al., 2019). Users are in desperate need of recommender systems that can connect them with potential friends or interesting items. In real-world applications, social (i.e. friend) and behaviour (i.e. item) recommendation are two types of popular services (Zhao et al., 2020).

Upon examining the successful social media platforms of the recent past, it becomes evident that the success of these platforms are directly tied to need for these applications increased along with the specific function that these platforms provide. Taking Twitter, now called X, as an example, it focuses primarily on textual content. There was a need for a platform that allowed for an individual's voice to be heard and their opinion made known. Twitter met this market by providing a platform where users were able to do just this by posting their thoughts and interacting. The existing social networking platforms have a plethora of limitations associated with them. Platforms like Facebook have reached a saturation point where there is an abundance of content and functionalities giving it an extremely general view. This has in part contributed to users flocking to other platforms like Twitter and Instagram. Niche platforms are required for specific functions and tasks. This is where an event-based platform would aid users in solving their concerns regarding real world engagement through social media/online interaction.

In consideration of all this, the objective and purpose of this work is to design a Social Media platform exclusively meant for creating, attending, managing and interacting with Events. The product aims to help a wide demographic of people, from students to adults to companies. Additionally, a Recommendation System is created to cater to the interests of each individual by suggesting other users based on common interest. The Recommendation Engine follows a Collaborative Filtering approach where suggestions are made based on the user's interaction with the system. This system was selected since users seem to prefer recommendations from people they know or who are similar to them, and trust-based recommendation techniques outperform those based just on user similarity (Belkhadir et al., 2019; Golbeck, 2009).

The recommendation system proposed uses an unsupervised learning approach called K-Means algorithm. Here, for each user, an array is maintained containing values that quantifies the user's interest in each tag. These tag values are then passed as input into the clustering algorithm. The users with similar tastes are clustered and recommended to each other as those users with similar interests. Recommender systems (RSs) are software that analyses data and makes recommendations based on the user's preferences.

The rest of the paper has been organized into chapters. Section 2 covers various other related works that cover the idea of a Social Media System and a Recommendation Engine. The following chapter, Section 3, describes in detail the system design that has been followed for the implementation of the proposed work. In addition, Section 4 showcases the hardware and software specifications, experimental results obtained and analysis. Finally, Sections 5 summarizes the work conducted in this paper.

2. RELATED WORK

This section describes the other works that have focused on a form of Recommendation Engine. These papers have described in detail the types of filtering that have been considered before reaching to a conclusion on how the system is built.

Anandhan et al. (2019) presented a paper that discusses open research issues that come with social media recommender systems. They categorize the various approaches to recommending schemes. Content-Based (CB) filtering looks at the text information that the user provides. There are many methods for creating communities based on user preferences that can be automated. However, due to a lack of resources, there are drawbacks in assigning attributes. Public forums are a drawback because new users with few reviews would not be able to provide reliable recommendations. Collaborative

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