

Laptop Recommender System Using the Hybrid of Ontology-Based and Collaborative Filtering

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Abstract: In the era of ever-evolving information technology, choosing the best laptop can be a complicated task for many users. The increasing complexity of technical specifications is often an obstacle, especially for users who need help understanding them. In addressing this challenge, we propose a solution: a laptop recommendation system that considers users' preferences and functional needs. We designed this system to help users choose a laptop that suits their daily functional needs. This system uses a form of Conversational Recommender System (CRS) by combining Ontology-Based Recommender System Filtering and Collaborative Filtering (CF). Ontology-Based Recommender System Filtering ensures a strong relationship between functional needs and technical specifications of laptops, making it easier for users to identify the right laptop. At the same time, Collaborative Filtering (CF) can provide diversity to the recommended products by using similar user preference data. We evaluate the accuracy of our system by calculating the success rate of recommendation accuracy with the accuracy metric, and the evaluation results show that the success rate of recommendation accuracy reaches 93.33%. Our system is highly effective in assisting users in choosing a laptop that suits their functional needs. With our laptop recommendation system, users can confidently select the correct laptop without being burdened by technical specifications, thus making their lives easier and more productive.

Keywords: collaborative filtering, conversational recommender system, laptop recommender system, ontology-based recommender system, recommender system

INTRODUCTION

The evolution of technology and the widespread use of the internet have brought about major changes in various aspects of our lives, such as doing work, communicating with others, and engaging in social interactions. Most people now consider laptops essential devices in computing technology. However, with the increasing functionality and variety of laptop types, choosing a product that suits their needs can be challenging for users. One of the complicating factors in laptop selection is the need for more understanding of technical specifications among users. Most people may need to become more familiar with the technical specifications and features they should look for when buying a laptop, especially if they are not experts in the technology field. Therefore, they need help determining a laptop suitable for their daily needs (Laseno & Hendradjaya, 2019; Sharma & Yadav, 2020). In order to help users find a laptop that is suitable for their day-to-day needs, recommendation systems have an important role to play in solving this problem (Iswari et al., 2019).

To provide users with recommendations for items, the recommender system plays an essential role; several methods can be used, such as Content-Based Filtering (CBF), which utilizes data from things that users have liked in previous items; Collaborative Filtering (CF), which uses other similar user profiles to generate recommendations, as well as Hybrid which combines both methods to achieve high-quality recommendations, and so on. Many studies have been conducted on laptop recommendation systems to provide recommendations that match user preferences. For example, research conducted using the RNN method combined with Collaborative Filtering (CF) has achieved an accuracy of 96% (Tjayadi & Mawardi, 2022). In addition, other research on laptop recommendation systems using ontologies has also been conducted, and in this study achieved an accuracy of 84.6% (Ayundhita et al., 2019).

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