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Ensemble-Based Recommender Systems: A Bibliometric Analysis of Research Trends and Emerging Applications

Communication Info

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Abstract

Recommender systems are information-filtering tools designed to predict the relevance or utility of items for a given context, whether a user, a group, or an automated process, thereby helping manage information overload [1]. Ensemble-based recommender systems extend this concept by combining the outputs of multiple recommendation models to improve robustness and predictive performance [2]. This study presents a bibliometric analysis of the ensemble recommender systems literature based on a dataset of 1,557 scholarly articles indexed up to March 2026. The search string was designed to retrieve studies addressing recommender systems developed under the ensemble learning paradigm, including techniques such as stacking, blending, voting, mixture-of-experts, and meta-learning. The analysis was conducted in the R environment using the bibliometrix package [3].

Temporal analysis of author keywords and abstracts reveals persistent research challenges, particularly scalability, data sparsity, and the cold-start problem [1]. The results also indicate a methodological shift within the retrieved corpus, where earlier studies rely primarily on traditional techniques such as collaborative filtering, while more recent research increasingly explores deep learning-based architectures and advanced ensemble strategies. Application-oriented studies are mainly concentrated in domains such as e-commerce and healthcare, while a smaller emerging body of work explores recommender systems in marine and environmental contexts.

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