File name: org-090.txt

Result: PLAGIARISM NOT DETECTED

Plagiarism Detected: 0.00%

Text to analyze: Given the challenges of inter-domain information fusion and data sparsity in collaborative filtering algorithms, this paper proposes a cross-domain information fusion matrix decomposition algorithm to enhance the accuracy of personalized recommendations in artificial intelligence recommendation systems. The study begins by collecting Douban movie rating data and social network information. To ensure data integrity, Levenshtein distance detection is employed to remove duplicate scores, while natural language processing technology is utilized to extract keywords and topic information from social texts. Additionally, graph convolutional networks are utilized to convert user relationships into feature vectors, and a unique thermal coding method is used to convert discrete user and movie information into binary matrices. To prevent overfitting, the Ridge regularization method is introduced to gradually optimize potential feature vectors. Weighted average and feature connection techniques are then applied to integrate features from different fields. Moreover, the paper combines the item-based collaborative filtering algorithm with merged user characteristics to generate personalized recommendation lists.In the experimental stage, the paper conducts cross-domain information fusion optimization on four mainstream mathematical matrix decomposition algorithms: alternating least squares method, non-negative matrix decomposition, singular value decomposition, and latent factor model (LFM). It compares these algorithms with the non-fused approach. The results indicate a significant improvement in score accuracy, with mean absolute error and root mean squared error reduced by 12.8% and 13.2% respectively across the four algorithms. Additionally, when kâ€‰=â€‰10, the average F1 score reaches 0.97, and the ranking accuracy coverage of the LFM algorithm increases by 54.2%. Overall, the mathematical matrix decomposition algorithm combined with cross-domain information fusion demonstrates clear advantages in accuracy, prediction performance, recommendation diversity, and ranking quality, and improves the accuracy and diversity of the recommendation system. By

effectively addressing collaborative filtering challenges through the integration of diverse techniques, it significantly surpasses traditional models in recommendation accuracy and variety.

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