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INTEGRATING BEHAVIORAL DATA FOR TAILORED OUTFIT RECOMMENDATIONS

Personalization became crucial for user engagement and retention as the online fashion industry grew in popularity. Recommender systems in e-commerce are generally built using collaborative filtering, content-based filtering, or hybrid approaches. Collaborative filtering identifies user similarities based on shared preferences [1], while content-based filtering leverages item features to recommend similar products [2]. However, traditional recommendation methods face limitations. This study aims to improve recommendation quality on a fashion rental platform by integrating behavioural data (e.g., browsing history, and rental frequency). Behavioral data provides insights into users' implicit preferences [3]. Integrating behavioral data enhances the effectiveness of recommendation systems by capturing a fuller picture of each user's unique preferences and needs.

Table 1. Behavioral Data Metrics

Metrics	Description
Browsing history.	Users frequently viewing specific styles, brands, or colours will likely prefer those attributes. The recommendation system can identify user visual preference trends by analyzing browsing patterns. Even if they have not rented an item, it helps to make better suggestions for future rentals.
Rental frequency.	High-frequency renters may seek variety, while low-frequency renters may prefer staple pieces. Recommendations for frequent renters might prioritize diverse styles, while infrequent renters could receive suggestions for versatile, seasonally relevant items.
Rental duration	Users who keep items longer usually prefer classic, timeless styles, while other customers may seek trendy or event-specific outfits. Depending on usage patterns, analyzing rental duration can help recommend timeless basics or fast-fashion items.
Ratings and reviews	Positive reviews for specific items or styles mean user satisfaction and could prompt similar recommendations. Conversely, negative reviews could be factored in to avoid recommending similar items.
The pattern of renting the same or similar items multiple times	Repeat rentals suggest loyalty to specific styles or fits. The recommender algorithms should highlight similar items or newer versions of rented pieces, assuming the user has a strong preference
Time of interaction	This information can reveal peak shopping times and seasonal preferences; for example, users who browse or rent more during specific seasons might appreciate recommendations aligned with seasonal trends or weather-appropriate items
Cart abandonment	Cart abandonment data offers insight into what users find appealing but hesitate to rent, perhaps due to price or uncertainty about fit. A recommendation algorithm could re-surface these items when they go on sale or show similar products at lower prices
User session duration and depth, including the number of pages viewed	In-depth sessions might indicate a user's interest in exploring multiple options before choosing. Diverse and exploratory recommendations can be provided for such users, while shorter sessions might suggest a preference for direct, targeted recommendations.
Outfit pairing patterns	Users who rent outfits in sets (e.g., pairing tops with bottoms or adding accessories) may benefit from bundled recommendations or outfit suggestions that fit their pairing patterns.

This study confirms that integrating behavioural data through a hybrid recommendation model can significantly improve the quality of outfit recommendations on a fashion rental platform. Incorporating behavioural profiles allows for more personalized user experiences, which can be a competitive advantage in the fashion rental market.

References

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