📑 Literature Review – Hybrid Recommender Systems: A Survey

Problem Statement

- Traditional recommender systems (collaborative filtering or content-based) face inherent limitations in accuracy, cold start, and personalization.
- Hybrid recommender systems aim to overcome these challenges by combining multiple algorithms and signals to deliver improved music recommendations.

Hybrid Approach Types

➔ Weighted Hybrid
- Aggregates scores from multiple models, e.g., $ 0.6 \times $ Collaborative + $ 0.4 \times $ Content-based.

➔ Switching Hybrid
- Dynamically selects the recommendation algorithm based on context or data availability.

➔ Cascade Hybrid
- Filters with one method, then reranks the shortlisted set with another model.

➔ Feature Augmentation
- Uses output from one recommender as features for another, enriching input representations.

➔ Mixed Hybrid
- Presents results from more than one system side-by-side to the user.

Strengths

- Cold start mitigation by leveraging metadata and usage signals.
- Improved accuracy and user engagement through blending data types.
- Increased diversity: enables surfacing of less popular tracks.
- Deep personalization based on user context (e.g., mood, device, session).
- Flexible design for scaling across scenarios.[4][2]

Limitations

- Increased complexity in model management and system integration.
- Higher computational and storage requirements.
- Reduced interpretability, making user-facing explanations harder.
- Challenging data integration (audio, lyrics, social).
- Risk of model overfitting with excessive blending.[2][4]

Project Relevance

- This project implements a hybrid recommendation system for music, utilizing:
- Collaborative filtering (playlist/usage history)

- Content-based modeling (lyrics, audio features)
- Mood-aware filtering (sentiment-derived context)
- Hybrid strategies were selected to address cold starts, improve recommendation accuracy, and engage users in Spotify-like contexts by fusing behavioral, content, and contextual data.[3][1][2]

References:

- Spotify TechDocs documentation best practices
- Academic and project reports on hybrid approaches in recommender systems