

ABSTRACT

Recommender systems are essential components in enhancing user experience across digital platforms, including music streaming services such as Spotify. However, traditional approaches like collaborative filtering have limitations in capturing the sequential context of user interactions which is an important aspect in music consumption. To address this issue, this study proposes a next-item recommender system based on sequence prediction, integrating three core components: Gated Recurrent Unit (GRU), attention mechanism, and item embeddings. The model was developed and evaluated using the Spotify Playlist Dataset from Kaggle, focusing on the sequence of songs within user playlists. Experiments were conducted on three model variants: the Full Model, GRU-only, and the Full Model with an embedding size of 128. Results indicate that GRU is highly effective in capturing sequential patterns of songs; however, the GRU-only variant exhibited signs of overfitting despite achieving high metric values. The attention mechanism improved model generalization by highlighting relevant elements in the sequence, while increasing the embedding size did not significantly enhance performance. Evaluation using the Hit@K metric ($K = 5, 10, 15$) demonstrates that the proposed approach delivers accurate and stable predictions. This research highlights the potential of combining GRU, attention, and embeddings in building more contextual and personalized music recommendation systems.

Keywords: *Recommender System, GRU, Attention, Embedding, Spotify, Song Prediction*