

## Abstract

Skincare is part of skin treatment. It is important for users to choose skincare products appropriately to avoid more skin problems and money waste. To avoid such problems, skincare buyers tend to read reviews from other users before buying skincare products. However, reading too many reviews causes information overload, making users even more confused. The skincare recommender system that has been built has not been able to resolve the sparsity of explicit ratings and information overloading of reviews. Therefore, we introduced a skincare recommender system using Bidirectional Encoder Representations from Transformers for Recommender System (BERT-RS) that combines Neural Collaborative Filtering (NCF) and BERT. This approach can improve the NCF model by adding the ability to analyze potential and emotional factors in textual comments. In addition, we also use additional attributes such as skin type, skin problems, brand name, and product price. Experiments show that the use of additional attributes significantly improves model performance, with an Root Mean Squared Error (RMSE) of 0.3039. Besides that, the experiments conducted also highlight the importance of data normalization in influencing model performance. Normalized data results in better RMSE compared to models that use unnormalized data.

*Keywords* : recommender system, skincare recommender system, user reviews, BERT-recommender system, BERT, neural collaborative filtering