Abstract

This research aims to develop a recommendation system for elective courses tailored to the historical data of students from the Informatics study program at a university in Indonesia. Despite existing course planning schemes, personalized recommendation systems that accurately predict student preferences based on academic history are still needed. This study addresses this by exploring how a collaborative filtering (CF) approach, specifically using Recurrent Neural Networks (RNN), can improve recommendation accuracy and personalization. The main purpose is to provide accurate and relevant elective course recommendations to students. The CF approach focuses on user-based similarity, analyzing the sequence of grades in mandatory courses recorded in the university's academic database. The model underwent several experimental scenarios, with the most effective scenario using a 9:1 data split and batch normalization, resulting in an accuracy of 91.5%. Additionally, the system achieved a precision of 75%, a recall of 65%, and an F-1 Score of 70%. Analysis revealed that courses with fewer students enrolling showed higher test accuracy compared to more popular courses, which had around 70% accuracy. This suggests the recommendation system performs better with less popular courses, highlighting an area for further optimization. These findings underscore the system's effectiveness in aiding course planning and enhancing the academic experience for students. Implementing such a recommendation system can significantly contribute to better academic outcomes and more efficient curriculum planning in educational institutions.

Keywords: *Recommendation System, Collaborative Filtering, RNN, User-Based ecommendation*