Abstract

Recommendation systems in general should have a balance of user data and data items. In providing recommendation results that are in accordance with user needs, the recommendation system has several challenges, one of which is data sparsity where the dataset has an imbalance of rating data on users and items. For this reason, a Convolutional Neural Network was carried out to study the context of the review items represented in vectors to predict ratings with the initial Probabilistic Matrix Factorization with the Convolutional Matrix Factorization (ConvMF) method and compare the results of the ConvMF recommendations with the Matrix Factorization (MF) and SVD++ methods which are the basis method. To find the performance of the system being built, the Mean Absolute Percentage Error(MAPE) and Root Mean Square Error(RMSE) are calculated. From the proposed method, MAPE values are 0.373 and RMSE 1.714 for ConvMF, MAPE values are 0.528 and RMSE 2.091 for MF methods, and MAPE values are 0.359 and RMSE 1.204 for SVD++.

Keywords: ***Recommender System, Convolutional Neural Network, Matrix Factorization***