

ABSTRACT

DESIGN OF PRODUCT RECOMMENDATION SYSTEM BY USING DEEP LEARNING METHODS

In this study, a product recommendation system was designed using the deep learning method AutoEncoder. This designed recommendation system was implemented using the Python language on the TensorFlow platform. MovieLens 1M dataset was used which consists of the movie ratings ranging from 1 to 5 and collected by the GroupLens researchers from the users of MovieLens website.

The study was written in four sections. In the first section, the significance of the recommendation system and the deep learning approach, the studies which already exist in the literature, and the methods that are used when designing a recommendation system were clarified while in the second section, the designed recommendation system was elaborated step by step. Furthermore, it was tried to find the best optimization algorithm to improve the success of the system and the effect of increasing the amount of data that was analyzed. The results of the algorithms of Gradient Descent, Gradient Descent with Momentum, RmsProp and Adam were depicted in both tables and graphs. In the third section, findings were evaluated and as a result, the Adam was shown to be the best algorithm with 1,363 points of test error. It was observed that the more data a training set has, the more successful the recommendation system is. In the fourth section, all the results from the processes mentioned above were summarized and the studies which can be conducted in order to implement a better recommendation system as future plans were stated.

Keywords: Recommendation System, Deep Learning, Explicit Feedback, AutoEncoder, Optimization Algorithms