Bab I Introduction

In the current digital age, the industry is growing rapidly, such as in the movie and technology industry [1]. According to IMDb, the average number of movies produced reached 4584 in 2005, rising to 9387 in 2015 [1]. Due to the increasingly advanced development of movies, finding movies that match the desired interests will be very difficult and can take a lot of time [2]. Therefore, a recommendation system is needed to select movies that are of interest and according to users [3].

A recommender system is a method of helping users find items that suit their needs [4]. In general, recom-mendation systems are grouped into Collaborative Filtering, Hybrid-Based, Content-Based, and Knowledge-Based [5]. One of the most widely used recommendation systems is Collaborative Filtering (CF). Most Collabo-rative Filtering takes advantage of similarities between users. Similar users are found by calculating the similar-ity of ratings from users [6]. Decision Tree is one of the Collaborative Filtering algorithms developed by Ross Quinlan. Decision trees have advantages such as high levels of accuracy, high speed in the classification pro-cess, and the ability to learn well in simple development [7].

Jadhav, S. D et. al. [7] used the collaborative filtering method in the book recommendation system. In gen-eral, the recommender system uses the KNN algorithm to perform classification but takes a long time to pro-cess large datasets. Therefore, this study carried out a combination of Collaborative Filtering and Decision Tree. Due to the fast classification of decision trees, this study successfully recommended a book with more accurate results and less time. Meanwhile, Zhang, J et. al. [8] use the Collaborative Filtering method to implement a recommendation system but has problems with time complexity, so this study uses the Weighted Slope One method to design and implement virtual matrix to obtain recommendation results with reduced time complexi-ty. This research succeeded in building a web-based system that can evaluate the feasibility and accuracy of the system based on the data obtained.

Singh, R. H. et. al. [9] used content-based filtering to illustrate movie recommendation modeling and rec-ommend movies to users. There is also machine learning to handle big data and automate the creation of ana-lytical models. This research successfully implements the KNN Algorithm to provide more accuracy when rec-ommending movies. Meanwhile, Bhalse, N et. al. [10]used the collaborative filtering method to predict the list of top n movie recommendations to active users by using singular value decomposition and cosine similarity to calculate similarity values. This study managed to overcome the large dataset and sparse scoring matrix.

Based on previous research, a movie recommendation system based on Collaborative Filtering has been stud-ied, but the results obtained are not optimal so that further development is needed. In this study, we took a dataset from the grouplens.org website and filtered the data by removing movies with a total rating of less than 50. The purpose of this research is to implement a recommender system using collaborative filtering and Deci-sion Tree algorithms. The testing procedure is performed by testing the movielens dataset, and to evaluate the accuracy of the recommender system, we use the Mean Absolute Error (MAE).