I. INTRODUCTION

The rapid development of the video games industry along with the number of games that continues to grow every year makes the video games industry one of the most valuable industries in the world. Currently, many platforms distribute games such as Steam, Epic Games, Xbox Games, and others. Currently, Steam is the largest games distribution platform with 90 million monthly active users as of 2019 [1]. With so many new games every year, it makes it difficult for users to find games that are suitable for users to play, and many users buy games but are not played because the games purchased do not match the user's preferences[2]. Therefore, a recommender system is needed to provide recommendations for games that match user preferences.

Collaborative Filtering (CF) is one of the most widely used and successful paradigms of recommender systems [3]. CF provides recommendations by making rating predictions based on other users who have similar preferences. [4]. Memory-based collaborative filtering and model-based collaborative filtering are the two subcategories of this paradigm [5]. Memory-based CF is an approach that looks for similarity with fellow users called user-based CF and similarity with items called item-based CF [4]. Meanwhile, model-based CF predicts ratings using machine learning or data mining methods [6], [7]. One of the methods in model-based CF is matrix factorization (MF) and Singular Value Decomposition (SVD) is one of the techniques of MF. In SVD, dimensionality reduction is done by reducing the number of input variables (dimensions) before modeling [8] So, it has the advantage of increasing the scalability of the recommender system [9] and is also one of the most relevant techniques in dealing with data sparsity problems [10].

SVD, which is a model-based collaborative filtering (CF) technique, generates more accurate predictions compared to memory-based CF. Additionally, SVD is more memory efficient as it utilizes existing models for predictions, unlike memory-based CF which requires loading all rating data into memory, resulting in higher computing costs [11].

Previous research on game recommender systems used k-NN which is a memory-based CF [1] and there is research that uses a hybrid recommender system that suggests using a collaborative filtering recommender system due to data sparsity problems that cause poor accuracy [12]. Bhalse, et al. used SVD and Cosine Similarity to recommend movies and proved to be able to overcome the problem of data sparsity [5]. Therefore, we propose the use of SVD in the game recommender system, because SVD is better than model-based CF to overcome the data sparsity problem. To test the performance of SVD, we use Non-negative Matrix Factorization (NMF) algorithm as a base model.