

## I. INTRODUCTION

Education is no longer confined to a place thanks to digital devices that produce many revolutions in the world of education after the Covid-19 pandemic [1]. This change of behavior has significantly increased the growth of course users, so online course services such as Coursera, Udemy, Course Hero, and other online course services have increased the number of courses to meet user preferences. However, the large selection of courses also makes users face problems in deciding which course to choose. Therefore, an online course recommender system is needed to solve the course selection problem.

Recommender systems can be categorized into different types: Content-Based (CB), Collaborative Filtering (CF), and Hybrid Recommender System [2]. CF is the most widely used approach and has been proven to address several recommender system problem topics [2]. CF is generally a recommender system paradigm that is generated from user feedback with items such as ratings, reviews, or opinions [3]. There are two approaches in CF, i.e., memory-based CF and model-based CF [4]. In memory-based CF recommendations are built with a neighborhood method that focuses on the relationship between items called item-based and the relationship between users called user-based [5], [6]. While model-based CF recommendations are built based on user ratings [7].

In some studies, the model-based CF approach has been shown to perform better than the memory-based CF approach. [5], [8], [9]. Singular value decomposition (SVD) is one of the model-based techniques that is proven to provide good performance in recommender systems [10]. SVD also has advantages over other CF techniques for handling high-dimensional data, because SVD performs dimensionality reduction and overcomes the problem of data sparsity [11].

Therefore, in this study, we develop a recommender system for online course problems that was test using the coursera dataset. We evaluate using SVD model which is one of matrix factorization (MF) techniques and using  $k$ -Nearest Neighbor ( $k$ -NN), Non-negative MF (NMF), and Slope One as base models.