

TELKOM UNIVERSITY

Abstract

School of Computing

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Master of Engineering

**Imputation Using Matrix Factorization for Solving Data Sparsity
on Memory-Based Collaborative Filtering**

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Collaborative filtering (CF) is one of the techniques in recommender system which exploits information of user preference in the form ratings of items and produces recommendation based on the similarity of ratings pattern. The collaborative filtering approach is divided into two classifications: memory-based and model-based, both have their respective advantages and disadvantages. The making of accurate memory-based CF depends on dataset used, the data which is generally sparse makes the predictions becomes less optimal. In order handle sparse rating data, this research propose an imputation using matrix factorization to fills empty rating scores on data sparsity. The research involves memory-based CF, with and without imputation to analyze both prediction performances. The result of experiments indicates that the proposed approach is able to predict more accurate than the existing approach without imputation.

Keywords: Collaborative Filtering, Memory-Based, Imputation, Matrix Factorization, Data Sparsity.