

Implementation of the K-Nearest Neighbor Method for a Furniture Product Recommendation System for Clients of PT. Romi Violeta

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ABSTRACT

PT. Romi Violeta is a company engaged in the furniture sales industry, offering a wide variety of products with diverse characteristics. The large number of available product options often makes it difficult for customers to determine which furniture best suits their needs and preferences. Therefore, a recommendation system is needed to assist customers in selecting furniture products more quickly, accurately, and effectively.

This study aims to design and develop a web-based furniture product recommendation system by implementing the K-Nearest Neighbor (K-NN) method. The system was developed using the Laravel framework and utilizes historical order data as the training dataset. The criteria used in the recommendation process include country of origin, client type, model, and product type. Categorical data are first converted into numerical values through an encoding process, after which the Euclidean Distance method is used to calculate the similarity between user preferences and the available historical data.

System evaluation was conducted using the Accuracy metric to measure the performance of the K-Nearest Neighbor algorithm in generating furniture product recommendations. The evaluation was performed using three different K values, namely 3, 5, and 10. The results indicate that the K-Nearest Neighbor method is capable of generating recommendations with a very high level of accuracy. Based on the evaluation results, the average Accuracy score obtained was 99.54%, demonstrating that the system can provide appropriate furniture product

recommendations based on the similarity between user preferences and historical order data.

Based on the results of this study, it can be concluded that the K-Nearest Neighbor method was successfully implemented in a web-based furniture product recommendation system and is capable of helping customers obtain product recommendations that match their preferences. Furthermore, the developed system can support PT. Romi Violeta in improving service quality, enhancing marketing effectiveness, and optimizing the furniture sales process.

Keywords: *Furniture, Recommendation System, K-Nearest Neighbor (KNN), Euclidean Distance, Waterfall.*