

ABSTRAK

SISTEM REKOMENDASI RESEP MAKANAN BERBASIS BAHAN UTAMA MAKANAN DENGAN METODE *CONTENT-BASED FILTERING*

Patrick Sindu Putra Pratama

Universitas Sanata Dharma 2026

Pemanfaatan bahan makanan yang tidak optimal sering menyebabkan pemborosan karena pengguna mengalami kesulitan menentukan resep yang sesuai dengan bahan yang tersedia di rumah. Sebagian besar aplikasi resep hanya menyediakan pencarian berdasarkan nama atau kategori tanpa mempertimbangkan stok bahan pengguna. Penelitian ini bertujuan membangun sistem rekomendasi resep makanan berbasis stok bahan menggunakan metode Content-Based Filtering (CBF) untuk menghasilkan rekomendasi resep yang relevan.

Sistem dikembangkan menggunakan bahasa pemrograman Python dengan framework Flask dan menggunakan dataset Food.com (Kaggle) yang terdiri dari 4.473 data resep. Tahapan pengolahan data meliputi case folding, tokenization, stopword removal, dan stemming. Selanjutnya dilakukan pembobotan menggunakan Term Frequency–Inverse Document Frequency (TF-IDF) dan perhitungan tingkat kemiripan menggunakan Cosine Similarity untuk menentukan resep dengan nilai kemiripan tertinggi sebagai rekomendasi.

Evaluasi sistem dilakukan melalui Black Box Testing, pengujian beta menggunakan kuesioner usability, serta evaluasi kualitas rekomendasi menggunakan metrik Mean Average Precision (MAP) dan Normalized Discounted Cumulative Gain (nDCG). Hasil pengujian beta memperoleh nilai usability sebesar 90,42%, yang menunjukkan bahwa sistem memiliki tingkat usabilitas (efektif, efisien dan mudah digunakan) yang sangat baik. Selain itu, hasil evaluasi MAP dan nDCG menunjukkan bahwa sistem mampu menghasilkan rekomendasi yang relevan. Hasil akhir yang diperoleh menunjukkan bahwa sistem ini dapat membantu pengguna memanfaatkan stok bahan makanan secara optimal, mengurangi pemborosan, dan mempermudah penentuan menu masakan sehari-hari.

Kata Kunci: Sistem Rekomendasi, Content-Based Filtering, TF-IDF, Cosine Similarity, Resep Makanan, Stok Bahan Makanan.

ABSTRACT

***A FOOD RECIPE RECOMMENDATION SYSTEM BASED ON MAIN INGREDIENTS
USING THE CONTENT-BASED FILTERING METHOD***

Patrick Sindu Putra Pratama

Sanata Dharma University 2026

Suboptimal use of food ingredients often leads to waste because users have difficulty finding recipes that match the ingredients they have on hand. Most recipe apps only offer searches by name or category without considering the user's ingredient inventory. This study aims to develop a recipe recommendation system based on ingredient inventory using the Content-Based Filtering (CBF) method to generate relevant recipe recommendations.

The system was developed using the Python programming language with the Flask framework and utilized the Food.com (Kaggle) dataset, which consists of 4,473 recipe records. Data processing steps included case folding, tokenization, stopword removal, and stemming. Weighting was then performed using Term Frequency–Inverse Document Frequency (TF-IDF), and similarity was calculated using Cosine Similarity to determine the recipe with the highest similarity score as the recommendation.

The system was evaluated through black-box testing, beta testing using a usability questionnaire, and an evaluation of recommendation quality using the Mean Average Precision (MAP) and Normalized Discounted Cumulative Gain (nDCG) metrics. The beta testing results yielded a usability score of 90.42%, indicating that the system has an excellent level of usability (effective, efficient, and easy to use). Furthermore, the MAP and nDCG evaluation results show that the system is capable of generating relevant recommendations. The final results indicate that this system can help users optimize their use of food supplies, reduce waste, and simplify the planning of daily meals.

Keywords: Recommendation System, Content-Based Filtering, TF-IDF, Cosine Similarity, Food Recipes, Food Inventory.