



A Recommender System for Healthy Food Choices Based on Integer Programming

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Introduction

Recommender systems is an information filtering system that can solve the information overload problem [1]. The technology applied by the recommendation system can filter information and narrow the information according to user preferences or needs, and help users select relevant information. Referral systems, commonly adopted in e-commerce websites, social networks and entertainment industries, can also support nutrition-based health management to giving individuals more food choices based not only on one's preferred tastes but also on one's dietary needs and limitations.

Based on certain assumptions, this study introduces the design, implementation and evaluation of an intelligent recipe recommendation model based on the balanced diet and economic level of patients with diabetes mellitus.

Method&Application

Method

1. Cross-industry data-mining standard process (crisp-DM)
2. Recommendation Model based on Integer planning model

Application

In 2016 the World Health Organization (WHO) estimates that, globally, 39% of the adults were overweight and 13% were obese [2]. Good nutrition and balanced dietary patterns play a vital role in leading a healthy lifestyle. Previous studies have shown that a healthy diet can successfully reduce the risk of chronic diseases (such as type 2 diabetes and cancer), with other well-documented benefits. However, existing food recommendation models tend to rely only on user feedback (e.g., click and purchase data), which aims to optimize click rate (CTR) but ignore the importance of users' health needs.

Intuitively, healthy eating recommendations require comprehensive consideration of different types of information such as nutrition, ingredients, and cooking methods.

Conclusion

In this study, combining the dietary needs and characteristics of diabetic people, we constructed a recipe planning model for a balanced diet based on integer planning. This study expands the existing study by considering individual calorie intake needs and intake needs of various nutritional indicators. Based on the dietary characteristics of diabetic people, the weekly diet is given for the hyperparameters such as food diversity and budget.