A Personalized Nutrient-Based Meal Recommender System

A Minor Project Synopsis Submitted to

Bachelor of Engineering (Information Technology)

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Abstract:
Making decision about what to eat is a major problem in our everyday lives due to a wide variety of ingredients, culinary styles, ethnicities, cultures, and personal tastes. Choosing right dish at the right time seems to be a very difficult task. The proposed model extracts interested ingredients from the set of recipes of user's favorite dishes that is given before using the system. This recommendation system is then extended by including it into an application which provides continuous feedback on the participant's nutritional behavior. Also individual preferences are integrated using approaches from critique based and persuasive recommender systems. System uses an adapted collaborative filtering approach to recommend food based on healthiness and taste ratings of other users. In the future projects might be used in combination to provide optimal health support.

KEYWORDS:

Nutrient-based meal recommendation, personalization

Introduction of the Project:

Healthy eating plays a critical role in our daily well-being and is indispensable in preventing and managing conditions such as diabetes, high blood pressure, cancer, mental illnesses, asthma, and so on In particular, for children and young people, the adoption of healthy dietary habits has been shown to be beneficial to early cognitive development. Fundamentally, the goal of these systems is to suggest food alternatives that cater to individuals' health goals and help users develop healthy eating behaviour by following the recommendations.

Food recommendation challenges the way recommender systems are used, since it requires a strong adaption to the domain specific requirements in order to provide individually valid and practically usable health advice. On one hand, user ratings of food taste may be individually reliable in view of using them in a collaborative filtering approach. On the other hand, the variety of nutritional advice available and the difficulty of knowing all ingredients and nutrients in a given meal make it harder for consumers to judge the health value of their meal. Thus a personalized recommender based on expert knowledge may be necessary to provide good results.

OBJECTIVES:

The objectives of the project are given below:

- Web scraping , Dataset creation
- Create a UI for recommendation system
- Build a content based recommendation system

Methodology

The Content-Based Recommender relies on the similarity of the items being recommended. The basic idea is that if you like an item, then you will also like a “similar” item. It generally works well when it’s easy to determine the context/properties of each item. A content based recommender works with data that the user provides. Based on that data, a user profile is generated, which is then used to make suggestions to the user. As the user provides more inputs or takes actions on the recommendations, the engine becomes more and more accurate.

Software and Hardware Requirements

Python libraries will be exploited for the development and experimentation of the project.

Long Term Vision

After successfully studying project approaches, there will be further issues open for investigation. One vision is to build a hybrid recommender system that includes both the expert knowledge as well as the crowd ratings. A second vision currently is to create an analogous hybrid recommender system that ranks possible sport or fitness activities based on user ratings and their health effect. Further perspective extensions are meal and exercise recommendations for complete groups which will enable families or groups of friends to plan their meals ahead. Another extension with regard to the usability is automatic meal recognition from speech or images.