A Review of Diet Recommendation systems: with a Focus on Development Approaches

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Abstract. Nourishment and a balanced diet are essential for human health, physical development, psychological development, and overall well-being. All forms of malnutrition, obesity, and non-communicable diseases, such as cancer, diabetes, and heart disease, can be avoided by maintaining a healthy diet. However, due to a lack of understanding of nutritional values and other diet-related criteria, many are unable to maintain a healthy diet. Though some people get advice from experts regarding diets, some people cannot take that advice due to time and financial constraints. A diet recommender system would be an effective solution to this problem. This study aims to examine the status of the current diet-recommending process while focusing on existing approaches to diet-recommending systems. This study includes diet recommender systems that have employed various recommendation methodologies and were found by conducting a literature search. Additionally, this also studied about ongoing food recommendation process through expert consultation. The study's findings show that the current recommender process is a fully manual process done by experts in the field. The survey results conclude that the age, BMI, mealtime, medicines they use, food allergies, income (whether the diets recommended are affordable to the user.), and food combinations that must avoid (Ex: Ginger and Manioc) as the only factors to consider when recommending food with 68% of expert responses. Then the rest of the expert responses were to consider food preferences, activity level, and added preservatives in addition to the above-mentioned factors. 23 out of 25 experts believe that automated diet recommendation systems should have constant supervision of an expert in the Field. Furthermore, the literature survey results convey that Machine Learning (ML), and Fuzzy logic can achieve higher accuracy in diet recommendations. This study concludes that developing an automated diet recommender system using Machine Learning (ML) and Fuzzy logic will provide an effective solution for most of the problems in the current food-recommending process.

Keywords: *Diet, recommendation, Food, Machine Learning, Fuzzy logic, Muti-Agent, Cloud*