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Body fat prediction and a well-balanced diet recommendation system based on the user's food preferences and health conditions.

A dissertation by

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ABSTRACT

Obesity is a prevalent condition that poses a significant public health challenge worldwide. It is characterized by the accumulation of excess body fat, which can lead to an array of health issues. These include an increased risk of cardiovascular disease, diabetes, certain types of cancer, sleep apnea, and joint problems, among others. As such, maintaining a healthy body composition is essential in mitigating these risks. This can be achieved through a combination of a balanced diet and regular exercise. A healthy diet should provide adequate nutrition while limiting the intake of unhealthy fats, sugars, and refined carbohydrates. On the other hand, regular physical activity helps to burn calories, improve metabolism, and strengthen muscles and bones. Therefore, adopting healthy lifestyle habits that promote a healthy body composition is crucial in preventing and managing obesity and related health complications.

The proposed research project aims to develop a system that can predict a user's body fat percentage and offer personalized diet recommendations based on their food preferences and health conditions. Machine learning models will be used to predict body fat percentage by considering factors such as age, weight, height, and neck size. The system will also calculate the user's basal metabolic rate to determine their optimal caloric intake according to their activity level and weight goals. With this system, users can effectively manage their body fat and promote healthy eating habits with a personalized approach.

Subject Descriptors: Machine Learning, Natural Language Processing (NLP), Nutrition and dietetics, Personalized food, Health and wellness, Weight management

Keywords: Machine learning**,** Diet Recommendation Systems, Health conditions**,** Personalized nutrition