APPLICATION OF DATA MINING TECHNIQUES IN A PERSONALIZED DIET RECOMMENDATION SYSTEM FOR CANCER PATIENTS

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Abstract

Cancer is one of the top fatal diseases in the world. When cancer patients undergo treatment, they need a different diet to help them withstand the side-effects of treatment, as well as to provide sufficient nutrition to boost the recovery cycle. Most of the dietician systems currently in the market are more in the advice area rather than recommending specific diet menus for users. These systems usually provide advice in a general form, for example: “Cancer patients should eat foods with high protein”. Such recommendations are insufficient to assist cancer patients with the physical preparation necessary to withstand the side effects of treatment, or with ensuring they take adequate nutrients for their body. We propose a Personalized Diet Recommendation System for Cancer Patients to help patients manage their daily food intake. The proposed system integrates the data mining techniques of Case-based Reasoning, Rule-based Reasoning and Genetic Algorithm. Case-based Reasoning is used to suggest a set of diet plans taken from the cases existing in the system, whereas Rule-based Reasoning is used to filter out irrelevant cases from the system and select the most appropriate case to be suggested to the patient. The Genetic Algorithm technique ensures that the diet menus suggested are customized according to each patient’s personal health conditions. The output of the diet plan system is in the form of a list of specific nutritional values to be taken daily, and a menu recommendation suggesting actual dishes for the patient.

Keywords: Cancer patients, Genetic algorithm, Rule-based reasoning, Case-based reasoning, Data mining, Diet recommendations