

Application of Artificial Intelligence for Weekly Meal Planning for Children

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Abstract: With the emergence of disorders arising out of bad eating habits as an occupational hazard, dietary menu planning is an important part of personalised lifestyle counselling and is used mostly in preventive health care. The paper describes the use of an automated menu generator to plan meals specifically to prevent cardiovascular diseases. The menu generator uses Genetic Algorithms to prepare weekly menus for users. The objectives are derived from personal medical data collected via forms, combined with general nutritional guidelines. Research papers have shown that the Genetic Algorithm based method plan dietary menus satisfy numerical constraints on every nutritional level for a person like daily calorie intake, weekly calorie intake etc. Nutrition-focused interactive multimedia tools are valuable for improving comprehension, but to date, no such program has been developed to help patients practice their meal-planning skills and reduce their anxieties about food portion sizes. The number of professionally designed visuals available to most dieticians for educating patients is limited. The research paper proposes the use of user dashboards at the dietician's end to monitor real time progress of the patient and educate them using visual aids.

Keywords- Artificial Intelligence; Meal Planning; Balanced Diet; Children

I. INTRODUCTION

Eating a well-balanced diet, can help prevent heart diseases by 80% and control cholesterol levels, weight, blood sugar and blood pressure. With the right choices of foods, one can also prevent onset of sudden disease such as colds and flu. A well-balanced diet plan needs to include at least three healthy meals each day with each meal having all the food groups in it. This balanced diet plan will not only help one lose those extra pounds, but also keep them fit and healthy with enough energy supply. The paper aims to hit at the scourge of the unhealthy eating habits followed by people across the world by educating them using visual aids and helping dieticians track in real-time each patients progress to help them lead a healthy lifestyle.

Ailing health is ahead of schedule, youth has long haul results. Almost 30% of all recently conceived infants are confronting issues like a low-conception weight and prompts ailing health, diverse sicknesses in their initial adolescence. Vitamins and minerals deficiency additionally influences youngsters' survival and advancement. Sickliness influences 74% of youngsters under the age of three, more than 90% of youthful young ladies and half of ladies. Vitamin A deficiency prompts visual impairment and builds grimness and mortality among pre-schoolers, additionally remaining a general wellbeing issue.

It is important to give legitimate eating routine arrangement to the tyke as indicated by his/her need. The proposed computerised menu arranging system for kids assists the client with fulfilling nourishing needs of youngsters. This

paper basically focuses on the strategy utilised for parity eating regimen arranging and proposal. This sustenance suggestion is, for the most part, manufactured for North Indian nourishment database. Not much research has been done on nourishment in India.

II. PROPOSED FRAMEWORK

The proposed arrangement of diet suggestion for youngsters depends on many variables like nourishment inclinations, accessibility of nourishment, therapeutic data, sickness data, individual data, movement level of a kid, for Indian food database. The critical errand in usage is to prescribe the specific nutrition from the sustenance database in light of specific imperatives, for example, likeliness of an item, accessibility of that food item at the user's location, its nutritious substance, for example, protein, sugars, fats in that food. This suggestion chooses the nourishment from the database such that the insufficiencies won't happen in future and legitimate eating regimen arrangement will be given to the kid. The principle goal of exhibited work is to build a choice tree until the suitable arrangement is established; to choose the best possible nourishment set in light of food accessibility, Category of user, Likeness Factor, Overall substance of Nutrients in that nourishment; and afterwards to characterise the choice guidelines and imperatives on it, for age group between 7 to 9 years.

The level 0 incorporates the fundamental data, for example, individual data, medicinal data, illness data, action level of kid is considered. At level 1, client's sustenance inclinations, atmosphere data, nourishment accessibility, particular prerequisites, if any, are considered.

The individual data incorporates kid's age, height, weight, sex to calculate BMI [Body Mass Index] and BMR [Body Muscle Ratio]. BMI is used to anticipate whether kid is underweight, typical, or overweight. BMR discovers every day calorie needs of the kid. Restorative data incorporates classification of kid, for example, underweight, typical, or overweight. Sickness data serves to proposed framework, for example, if the kid is having any infection and youngster is not permitted to eat some nourishment, for example, potato, banana, and so forth by specialist's recommendation then it won't be doled out in Menu Plan. Movement level of youngster is utilised to figure out aggregate number of day by day calories required according to kid's activity level. The sustenance inclination is the resemblance element of a specific client with reference to some nourishment. This variable is taken as an info from the client in reaches from low, medium, high. In the event that the youngster prefers Milk in high partition then resemblance variable will be high for Milk. The atmosphere data suggests the nourishments gainful specifically seasons are considered. Nourishment Availability helps the proposed framework to choose the sustenance, relying upon its accessibility. Indian food database contains nutritive estimation of North Indian nourishment put away in it.

III. PROPOSED METHODOLOGY

Decision tree learning is a strategy for computing the objective quality having discrete capacity. The function that has been learned is symbolised by a choice through the decision tree. For the inductive derivation, decision tree learning is a standout amongst the most regularly and extensively utilised techniques which are reasonable as a part of nature.

The decision tree learning calculations are for the most part utilised on account of the accompanying three reasons:

1. Decision tree is a decent induce from the specific cases that are surreptitious.
2. The estimations in these systems are productive and are corresponding to the occurrences that are watched.
3. At the last, the decision tree which is created is effortlessly comprehended by the human.

Calculations are utilised for decision tree learning like, which legitimate food thing items could be doled out in menu planning. To achieve this, the use of a training data is done. Entropy and Information gain variables are ascertained over the training data. After this, outcome is determined as negative or positive to the given conditions.

The issue considered here is to figure out if specific nourishment thing to be given to youngster or not by considering the variables, for example, sustenance accessibility, Category of client, Likeness Factor, Overall substance of Nutrients. In light of the result positive or negative quality, one can propose effective nourishment to be allotted to kid. The calculation could be utilised to take legitimate choice among accessible nourishments.

Accordingly the correct menu arranging should be possible considering client decisions. The result will be more exact, when the preparation set is bigger. As number of conceivable cases in properties builds, preparing set will get expand- ed. Here, the preparation information set is considered as all the conceivable instances of every client so that the outcome is constantly precise.

IV. IMPLEMENTATION

To prepare ID3 appropriate arrangement of traits and yield choice is to be given. For figurings, expected specimen dataset is as appeared underneath in table 1. In the first place, make preparing information set utilising taking after traits appeared as a part of table 1. It arranges database relying upon beneath qualities.

Sustenance Item (Milk, Tea, Coffee)

Sustenance Availability(yes, no)

Resemblance Factor(low, medium, high)

Category(Underweight, Normal, Overweight)

General Content of Nutrients(Low, Medium, High)

The result class is: Decision (positive, negative).

The aforementioned table demonstrates the expected specimen information set of traits for preparing the decision tree considering just three sorts of drinks, i.e. milk, Tea, coffee. All the conceivable cases have been shown in this table, through which nourishment is accessible. Same cases

have been considered in table, when nourishment is not accessible. All things considered, choice will be no dependably, if nourishment is not accessible, no matters what are the other comparing properties. In table 1, '--' demonstrates that characteristic quality can be anything there, yet choice will be dependably 'no', since food item is not accessible.

For Example:

On the off chance that food item is not accessible and

On the off chance that food is any item and

On the off chance that youngster is underweight or ordinary or overweight and If like factor of child is low or medium or high and

On the off chance that content of Nutrients is low or medium or high then Decision is constantly "negative"

CONCLUSION

The significance of dietary direction is going to expand step by step. Nourishment direction is completed by tolerating the client's food inclinations and client's profile. Regularly, adjusting the eating routine requires master information on food items and is a tedious procedure. This paper exhibits the advancement of computerized menu arranging framework for a nourishment direction application.