
Algorithm 1 Diabetes diet recommendation mechanism

Input:

1. Personal Information (i.e. sex, weight, height, age) and other facts(physical activity, temperature, altitude)
2. Food items and quantity taking upto before dinner
3. Interested for dinner items

Output: Preference wise dinner menu list and corresponding weighting percentage

METHODOLOGY

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1: START
2: function BASICCALORIE(sex, weight, height, age)           ▷ see section ??
3:   if sex=Male then
4:     Output ←  $66 + (13.7 \times \text{Weight}) + (5 \times \text{Height}) - (6.8 \times \text{Age})$ 
5:   else
6:     Output ←  $655 + (9.6 \times \text{Weight}) + (1.8 \times \text{Height}) - (4.7 \times \text{Age})$ 
7: function EXTRACALORIE(phy. act., temperature, altitude) ▷ see section ??
8:   temp ←  $[0.8, 0.1, 0.1] \cdot [f_1, f_2, f_3]$ 
9:   Output ←  $0.3 \cdot \text{temp} + 1.2$ 
10: Total Calorie ← Basic Calorie · Extra Calorie
11:                               ▷ Nutritional Information, see section ??
12: Required Calorie ←  $[0.55, 0.22, 0.27, 0.0144] \cdot \text{Total Calorie}$ 
13: Required Gram ← Required Calorie. $[0.4, 0.4, 0.9, 1]$ 
14: From 2nd input and from table ?? calculate total intake nutrients(in Gram)
    upto before dinner
15: Need Gram ← Required Gram - Intake Gram
16: Knowledge Set(X) ← Need Gram · / Required Gram (Component Wise)
17:                               ▷ Generating Utility Matrix
18: Generate utility matrix(U) according to input 3 with the help of table ??
19: if Some component of Knowledge Set is -ve then
20:   Showing the patient took extra calorie for this nutritional component
21:                               ▷ Decision making system, see [?]
22: function DECISIONSYSTEM(X,U)
23:   With the help of X and U generate fuzzy utility associated alternatives for each dinner item
24:   From U calculate maximizing alternative set for each dinner item
25:   Using min( $\wedge$ ) operator for each component of fuzzy utility associated and maximizing alternative set, calculate optimal utility sets
26:   Using sum( $\sum$ ) operator on optimal utility sets calculate optimal alternative for each dinner item
27: According to optimal alternative value for each dinner item, we suggest the preference wise menu item and their weighting percentage
28: END
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