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RESEARCH ARTICLE

Machine Learning based Recommender System for Economical Diet Packages and Physical Exercise Charts towards T2DM

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ABSTRACT

Data is growing significantly and is being generated from a variety of sources at a quick rate due to the rapid growth of technology. The variability and complexity of the data make it challenging to store, analyse, and interpret. Although improvements in hardware technology enable us to store such enormous amounts of data, more work needs to be done in the areas of analysis and knowledge development. Human skill is crucial for data analysis, yet because of human limits, large amounts of data cannot be processed. Although there are several traditional/conventional procedures used for data analysis, they fall short due to concerns with data such as high velocity, high volume, high variety, high veracity, etc. Statistical methods are another strategy utilised for data analytics, however they are excessively sluggish, expensive, and fully dependent on the knowledge, competence, and analytical skills of the expert. For instance, many statistical techniques that work well with small data sets do not scale to large data sets. Similar issues are faced by many conventional/traditional techniques that excel at handling tiny amounts of data. The work describes the implementation of a recommender system for affordable diet regimens and exercise schedules for various patient categories. Designing diet regimens and exercise schedules for various patient categories has been examined utilising the reverse feature engineering technique and findings obtained by applying the fuzzification method. The framework for end-user recommendations of affordable diet packages has been used.

Keywords: Machine Learning, Diet plans, Web Crawler / Web Scraper.

INTRODUCTION

Generally speaking, recommender systems are computer programmes that make suggestions to users based on their choices [1]. The usage of recommender systems helps users find the items they are interested in, delivers the items to the appropriate users, identifies products that are highly relevant to users, aids websites in increasing user engagement, etc. [2]. Based on the user's preferences, interests, and physiological activity, the recommender system uses an information extraction methodology [3]. Recommender systems have gotten a lot better. Due to their contributions in several spheres of life, they have gained attention in the present [4-5]. Knowledge-based, content-based, collaborative, and hybrid recommender systems are the four primary types of recommender systems and are utilised in various ways depending on the issue domain. Using their subject knowledge, human experts can make recommendations to the user using knowledge-based recommender systems [6]. When using a content-based recommender system, features from the contents of previously evaluated items are extracted in order to provide recommendations based on user profiles [7]. The collaborative filtering recommender system forecasts user behaviour by combining product ratings or recommendations, identifying commonalities, and then recommending related products to users who share those characteristics. In order to profit from the complementing advantage, hybrid recommender systems combine two or more recommender techniques in various ways [8]. Retail, media, education, healthcare, e-commerce, and other industries are just a few of the application domains where recommender systems are successfully used for various aspects.

The primary goal of developing a recommender system is to draw out the pertinent information regarding a client's inquiries. Due to the complexity and heterogeneity of the data available from many sources, users are unable to make informed decisions. As a result, recommender systems are information filtering systems that anticipate user behaviour based on actions using copious, dynamically created information [9]. The design of intelligent frameworks to provide proper management and reduce complications to various chronic diseases like Diabetes, Alzheimer's, Dementia, Cancer, Heart Disease, Parkinson's, etc. at an earlier stage is another important role that recommender systems play in the field of healthcare [10]. In order to prescribe medication, recommend a diet, and encourage physical activity based on a person's unique physiological traits, recommender systems are being researched. Diabetes is a fatal chronic condition that affects millions of individuals worldwide. The disease has become a global threat as a result of a considerable rise in the number of persons with diabetes over the past ten years. Of all diabetes kinds, Type 2 Diabetes Mellitus (T2DM) affects 90% of the population. Due to their significance in terms of leading a healthy lifestyle, food and exercise recommendation frameworks for a number of chronic diseases are currently required [49]. Healthcare personalised personal diet and exercise recommendation systems are reported to be understudied [11]. A healthy lifestyle assists the individual to lower their risk of disease and offers tangible health advantages [12]. This chapter proposes and implements a knowledge-based recommender system for the Realistic Healthcare Management System for Type 2 Diabetes Mellitus Disease (RHMST2DM), which suggests food regimens and exercise schedules for various patient categories based on the severity of T2DM. It generates diet regimens and fitness advice using inferences derived from user profiles using a machine learning approach. Additionally, the system suggests affordable diet packages by obtaining the contents of suggested diet goods from several sources.

Reverse Feature Engineering of Lifestyle Indicators

To determine whether a patient has diabetes or not, the outcomes of predictive ML/EL models are divided into two groups, diabetic and non-diabetic patients (binary classification problem), as mentioned in chapters 4 and 5. Reverse feature engineering was used to further categorise the non-diabetic patients into low risk, moderate risk, and high risk subclasses. Fuzzy logic has been used in the process of reverse engineering features. In disciplines like artificial intelligence and machine learning where data values are ambiguous or imprecise with regard to the solution to a problem, fuzzy logic is frequently applied [13]. Real-world issues are complicated, making it challenging to design precise answers in the face of ongoing ambiguities and uncertainties. Fuzzy logic is a straightforward method for drawing conclusions even when the data is noisy, hazy, confusing, inaccurate, or even when certain pieces of information are missing. To cope with reasoning that is approximate rather than precise, one uses a multivalued

logic. The idea of membership is the foundation of fuzzy logic. A number termed truth value, which has a range of 0 to 1, is used to represent values. Absolute values of 0.0 and 1.0 stand for "true" and "false," respectively. Fuzzification is the conversion of a crisp quantity into a fuzzy value using fuzzifiers or membership functions. A precise value frequently lacks the ability to capture the exactness of a truth because it contains uncertainty. Making decisions based on such information is challenging and might result in tricky and prone to mistakes. In these circumstances, a fuzzy value is required to express the fact. In membership functions, sharp values are transformed into fuzzy ones. For this reason, a variety of membership functions are available; some of the most well-liked membership functions include those with triangular, trapezoidal, spline, and gaussian shapes. Function for Spline-Based Membership: Spline-shaped membership functions have been employed to fuzzify data during the reverse engineering process. The S-shaped membership function is another name for the spline-based membership function, which is a mapping on the x-axis [14].

Figure 1 displays a graphic illustration of the Spline-shaped membership function. Core, Support, and Boundary are the three features that define a membership function. The degree of membership is used in the membership function to scale down the data samples from "0.0 to 1.0". Additionally, lifestyle parameters and class variables have had their actual values fuzzified. The Spline-shaped membership function has been investigated using the Java Eclipse IDE environment. The significance of using the membership function was to determine the degree to which each predicate variable contributed to the outcome (class variable).

The primary goal was to give suitable care and management to potential patients in order to lessen the complexity of T2DM at an earlier stage and improve quality of life and life expectancy. Age, urination, thirst, weight, height, fatigue, and outcome are the lifestyle factors taken into consideration throughout the reverse feature engineering process. Figure.2 displays the outcomes of the experiment using the Spline-shaped membership function. The class variables' actual values were 0 and 1, where 0 denotes a non-diabetic state and 1 denotes a diabetic state. Additionally, utilising the feature engineering approach, non-diabetic patients have been divided into three classes, A, B, and C. The outcomes of all relevant parameters are used to calculate the likelihood of developing diabetes in the future. Fuzzified values of the predicate have been measured using the Spline-Shaped Membership Function.

Representation of Categories

'A' [0.0-0.3] represents the people having low risk of being involved in T2DM.
'B' [0.4-0.6] represents the people having moderate/middle risk being involved in T2DM.
'C' [0.7-0.9] represents the people having high risk of being involved in T2DM.

Recommender System Architecture for RHMST2DM

The suggested architecture, which is presented in Figure.3, outlines a practical method for recommending affordable diet packages and exercise regimens to diabetic patients and potential patients. The architecture has looked into the outcomes of using lifestyle parameters and machine learning and deep learning approaches to predict type 2 diabetes. To determine different thresholds of lifestyle characteristics and their contribution to disease, reverse feature engineering was used. To create food regimens and exercise schedules for various patient categories, the predictive analytical results of T2DM were discussed with professionals such as dieticians and nutritionists. Additionally, data regarding suggested diet programmes was extracted using a web crawler or web scraper to create affordable diet packages. Lastly, the affordable, customizable diet plans. All patient categories will be advised to follow specific, affordable food regimens and exercise schedules in order to establish healthy living habits. Here is a detailed discussion of the various RHMST2DM recommender system architecture components:

T2DM prediction using lifestyle indicators: EL/ML models were used to predict T2DM

The results fall into two categories: diabetic (1) and non-diabetic (0) patients since the problem statement calls for binary classification to determine if a patient has diabetes or not. Reverse feature engineering is used to further divide the non-diabetic (0) class variable into the low risk, moderate risk, and high risk categories in order to give early-stage candidate patients with health recommendations.

Charts for diet plans and physical activity

The development of necessary and ideal diet plans and exercise schedules for various patient categories involved in this phase's reverse feature engineering process and predictive analytical results, which were discussed with experts like diabetologists, endocrinologists, dieticians, and nutritionists. The recommendation method made use of the created diet programmes and exercise charts.

Economical Diet Packages

Recommendations for diet plans are fed into the architecture of web crawlers and web scrapers, which then compare diet-related products based on criteria like Product ID, Product Name, Product Quantity, Product MRP, Product RS, and Product Discount. These criteria were chosen to produce the budget-friendly diet programmes.

Charts recommending diet and exercise regimens

The algorithm then suggests affordable diet plans and exercise schedules for various patient categories based on prediction findings after creating the cost-effective diet packages as described in step no. 3. By updating diet programmes and exercise schedules in accordance with user profiles and lifestyle behaviours, the recommendation process will also benefit end users. **4.**

Design of Diet Plans and Physical Exercise Charts

In maintaining and controlling blood sugar levels, especially when dietary modifications are involved, the use of technology has proven to be quite beneficial. In addition to improving the health fitness of potential patients or candidates, proper food programmes and exercise regimens offer tangible health benefits to prevent complications of diabetes illness at early stages [15]. By regulating glucose levels, the advantages of healthy food plans and activity schedules serve to control and reduce the risk of T2DM [16-17]. Fortunately, lifestyle changes including adopting a nutritious diet, engaging in regular exercise, and losing weight can help people with pre-diabetes avoid becoming type 2 diabetes. Depending on a person's propensity for diabetes, different diet/food and exercise regimens are necessary. Green leafy vegetables, fresh fruits, whole grains, legumes, nuts, and healthy fats are all part of a balanced diet that provide our bodies with the nutrients they need to function properly. One of the key pillars in the therapy of T2DM is diet, which should be tailored to the individual's preferences, age, metabolic control, and co-occurring medical disorders. Designing balanced diet plans with the appropriate list of foods that provide the necessary nutritional values in sufficient quantity is urgently necessary. Additionally, it offers the appropriate details on physical activity charts that take health issues into account. Dietary guidelines and exercise schedules have been created with this in mind With the help of specialists, the findings of the reverse feature engineering process were thoroughly reviewed in relation to the contributions made by each lifestyle aspect. Both diabetic and non-diabetic individuals had diet plans and activity schedules created. Additionally, several food regimens and activity schedules have been created for people with low, moderate, and high risk of developing diabetes (non-diabetic class). For patients who may become diabetic and those who are already diabetic, dieticians and nutritionists advise a list of foods to avoid and exercise schedules. Table [1-2] lists the meal programmes and exercise schedules for the various patient categories. Customized meal plans and exercise schedules might assist patients in establishing healthy living habits in advance.

Recommendation Process for Economical Diet Packages

Non-communicable diseases including T2DM diabetes, cardiovascular disease, cancer, etc. have an increasing financial burden that is widely acknowledged. For those in poor socioeconomic groups, hospital care and readmission costs constitute a barrier to adopting good eating practises [18]. An obstacle to following a healthier diet plan is the price of food for individuals with lifestyle diseases. Given the worrisome global development rate of chronic degenerative diseases [19], healthy eating habits cannot be put off any longer as a top concern. The economical diet model shows a considerable decrease in healthcare expenses related to the management of T2DM by adhering to the Mediterranean diet's nutritional guidelines, and it was developed using computational approaches. A cost-effective diet model can offer a platform for accessing and identifying of Economical diet model can provide

platform to access and identify the most affordable diet items over different sources for different categories of people.

Data Sources

Information about the suggested diet programmes was gathered from a variety of websites. The diet packages for patients with T2DM categorization are being collected using an API (Application Program Interface) that was built and makes use of famous websites as data sources. The selection of websites like Bigbasket20, Nature's Basket21, Sabzi Bhazi22, Freshindiaorganics23, Amazon24, Flipkart25 and Proveg Website as data sites was made possible by the availability of the daily diet goods that end consumers need on these online grocery stores. Figure.4-7 displays a few examples of various websites that were used as data sources for the diet suggestion process.

Architecture for Development of Economical Diet Packages

Web mining techniques are frequently used to collect data from various sources where it would be challenging to manually gather pertinent information about the contents. Additionally, manual extraction requires a lot of time and is not always error- and bug-free. The inexpensive diet packages were designed using the architecture depicted in Figure.8. Using Python scripting, the Uniform Resource Locators (URLs) of web sources have been retrieved. Additionally, a web crawler or web scraper was utilised to retrieve the pertinent data from the websites for the diet products. The content database contained the extracted contents. Finally, several patient classifications were taken into consideration when designing the affordable diet programmes.

URLs Searching

The Uniform Resource Locator on each website's page has been used to search for information about diet programmes from various online sources. The URLs are entered into the web crawler or web scraper so that it can access the online pages and collect the necessary data from their contents. By scripting lines of code using computer languages like Python, URLs offer automated options for searching pertinent info. For the extraction and structuring of data parameters, Python's library of packages, such as Selenium, Beautiful Soup, and Pandas, is quite extensive. Figure.9 displays the scripting software in action when URL-searching the Flipkart website.

Data Extraction

There is a vast amount of information available on the internet in many data types, including unstructured, semi-structured, and structured data. It won't be feasible to retrieve data from websites' web pages because certain websites lack their own APIs. Web scrapers are used to retrieve the information that has to be recognised in order to get over the limitations of API approaches. Web scrapers like Data Miner26, Webharvy27, and import.IO28 were used to retrieve the information on suggested diet programmes. For data extraction, the developer creates scraping applications in a variety of computer languages, including Python29, R-Language30, Java31, C32, and C++33. The Python programming language and Jupyter Notebook34 have been used in this work to collect data from various websites depending on the URLs. Data from web pages of those specified URLs that were found and downloaded by web crawler was extracted using a web scraper.

Web Crawler/Web Scraper

Web crawlers, a crucial component of search engines, are frequently employed to gather information from the internet [20]. Every day, a sizable number of new web pages are created, and the pertinent data is also always updating. In order to retrieve relevant data, the World Wide Web is systematically and automatically browsed through using a process called web crawling [21]. In this study, a web crawler has been utilised to gather the URLs of various online storefronts and traverse them iteratively in order to keep a database list of URLs. Data from Web Pages of those URLs that have been found and obtained using crawlers has been extracted using data scraping. The web scraper extracts the necessary diet-related data. Dietary advice from dietitians and nutritionists is extracted and kept in the content database as data. By analysing the commodities from several online shopping websites, the database is used to create affordable diet packages.

Extracted Contents

This application is used to extract the nutritional information from various diet products found on websites like Bigbasket, Nature's Basket, and Amazon. Green leafy vegetables, fruits, pulses, and diet-related other essential data items are currently extracted from the contents. Product ID, Product Name, Product Quantity, Product MRP, Product RS, and Product Discount are the retrieved items for affordable diet packages [22]. These criteria are used to determine the most affordable diet packages for patients in various classification categories.

Content Database

The information that is scraped from websites with various URLs is stored in content databases. The recorded data for the Bigbasket website is shown in Figure.10. Additionally, the information from other websites has been extracted and kept in a content database. To determine the most affordable diet package, the content database's data has been compared. The customers have been given the budget-friendly diet packages [23].

CONCLUSION

In this work is describes the application of a recommender system for affordable food regimens and exercise schedules for various patient categories. To develop the diet plans and activity charts for patients, the reverse feature engineering process has been explained, and the outcomes obtained by utilising the fuzzification method have been investigated. Dieticians and nutritionists have been active in creating food programmes and exercise schedules for a variety of patient populations. It has been discussed how to build cost-effective diet packages for end consumers. Data on the diet items were gathered from several online shopping sites using a web crawler or web scraper as part of the process of generating affordable diet packages. WebCrawler and Web Scrapper have both extracted the URLs of websites. WebCrawler has extracted the URLs of WebPages, and Web Scrapper has been used to examine every URL in order to collect the needed information. Finally, all patient categories were advised to follow affordable diet regimens and exercise schedules.

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Table .1: Diet Plan for Diabetic Patients for diet purpose

Diet Plan :1- Low/Moderate Risk Non-Diabetic Patients	
BEFORE BREAKFAST	➢ Fenu Greek Soaked Water ➢ Cinnamon Brewed Water
BREAKFAST	➢ **Scrambled Eggs & Oats** ➢ 2 Eggs Whites ➢ Oats in Eggs ➢ Oats with Veggies (if Vegetarian) ➢ Cubs of cheese
12:30	➢ Salad ➢ Veg Fiber with Soup

LUNCH **02:00**	➢ **Rice/Dal/Roti** ➢ Chakki Atta Roti 2 with Veggies ➢ Dal soup ➢ 1 cup Brown Rice
03:00	➢ Cinnamon Brewed Water
04:00	➢ Tea with 2 Marie Biscuit
05:00	➢ 1 cup Cucumber Juice
DINNER **08:00**	➢ **Rice/Dal/Roti** ➢ Moong/Dhulia/Masoor/Arhar Dal Palak ➢ Dal Tadka Eat with 2 Chapatti
Diet Plan 2 – Low/Moderate Risk Non-Diabetic Patients	**1.**
BEFORE BREAKFAST	➢ Tale Gooseberry Juice (30 ml in water) ➢ Lemon Water ➢ Fruit Salad (Apple, Guava, Papaya)
BREAKFAST	**Scrambled Eggs & Oats** ➢ Porridge ➢ Oats ➢ Dal pan cake ➢ Roti with curd ➢ Bread omelette/Bread butter ➢ Upma ➢ Idly
12:00	➢ Mix seeds ➢ Dry fruits
01:30	➢ Salad ➢ Veg Fiber
LUNCH **02:00**	**Rice/Dal/Roti** ➢ Dal ➢ Sabzi ➢ Portion of Rice ➢ Chicken/Cheese (once in a week)
05:00	➢ Tea with Snack
06:00	➢ Coconut Water
07:00	Soup (Veg/Non-Veg)
DINNER **08:00**	**Rice/Dal/Roti** ➢ Roti ➢ Sabzi ➢ Dal
BEFORE SLEEP	➢ Cup of Milk with a dash of Turmeric ➢ Sabzi
Diet Plan 3 – High Risk Non-Diabetic Patients	➢
BEFORE BREAKFAST	➢ Cinnamon Water ➢ 2 Almond + 1 Walnut ➢ 1 small Teaspoon Flax Seeds
BREAKFAST	**Scrambled Eggs & Oats** ➢ 2 slices of Brown/Wheat Bran Bread ➢ Salad ➢ Quinoa

	➢ Steel-cut Oats ➢ Spiced Butter Milk
11:00	➢ 1 Green Apple ➢ Skin Carrot ➢ Guava
12:00	➢ **1/2** Peach
01:00	➢ Salad (Cucumber + Onion + Tomato) ➢ with Lemon
LUNCH **02:00**	**Rice/Dal/Roti** ➢ Wheat Atta Roti ➢ Brown Rice ➢ Beans ➢ Legumes ➢ Black Chana
03:00	➢ Cinnamon Water
04:00	➢ Green Tea
05:00	➢ Nariyal Pani
06:00	➢ Tea or Coffee
07:00	Veg Fiber
08:30	**Rice/Dal/Roti** ➢ Egg Whites ➢ Veggies ➢ Wheat Atta Roti ➢ Missi Roti

Table .2: Diet Plan for Diabetic Patients for physical concept

WALKING	It will help diabetics lose weight and lessen the difficulties associated with high blood sugar levels.
CYCLING	Cycling can help people reach their fitness objectives while limiting joint stress if they have diabetes neuropathy, a disorder that results from nerve loss. Diabetes neuropathy causes lower joint pain.
SWIMMING	Another joint-friendly workout choice is aquatic activity. Swimming, water aerobics, aqua jogging, and other aquatic exercises, for instance, can work your heart, lungs, and muscles while causing minimal joint stress.
TEAM SPORTS	A good aerobic workout is provided by several recreational sports. Try out ultimate frisbee, softball pairs tennis, basketball, and soccer.
YOGA	It can aid those with Type 2 Diabetes Mellitus in controlling their weight, cholesterol, and blood sugar levels. Additionally, it can help you feel happier, get better sleep, and lower your blood pressure.
Exercise Chart for Non-Diabetic Patients	
WALKING	It will help diabetics lose weight and lessen blood sugar-related complications.
CYCLING	Cycling can help people reach their fitness objectives

	while limiting joint stress if they have diabetes neuropathy, a disorder that results from nerve loss. Diabetes neuropathy causes lower joint pain.
SWIMMING	Another joint-friendly workout choice is aquatic activity. Swimming, water aerobics, aqua jogging, and other aquatic exercises, for instance, can work your heart, lungs, and muscles while being relatively easy on your joints.
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YOGA	It can aid those with Type 2 Diabetes Mellitus in controlling their weight, cholesterol, and blood sugar levels. Additionally, it can help you feel happier, get better sleep, and lower your blood pressure.
JOGGING	For those who are predisposed to diabetes, jogging might be a type of exercise. It makes the body more responsive to insulin.

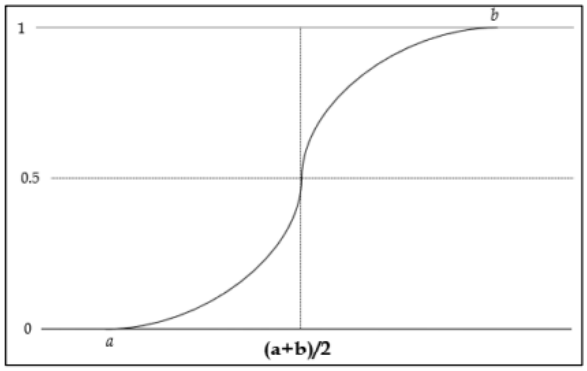

Figure.1: Shape of Spline-Shaped Membership Function

	Age	Urination	Thirst	Weight	Height	Fatigue	Normal Value Outcome	Fuzzified Value Outcome	Class
1	0.340312	0.189349	0.091837	0.536351	0.245802	0.656907	0	0.100281	A [0-0.3]
2	0.617188	0.704142	0.173456	0.487731	0.539559	0.656907	0	0.749944	C [0.7-0.9]
3	0.572187	0.573964	0.163265	0.647615	0.371089	0.922282	0	0.570111	B [0.4-0.6]
4	0.772187	0.704142	0.255102	0.687852	0.723598	0.656907	1	1.0	D [1.0]
5	0.659688	0.573964	0.255102	0.604938	0.157675	0.922282	0	0.854766	C [0.7-0.9]
6	0.89875	0.704142	0.989796	0.373419	0.686438	0.656907	1	1.0	D [1.0]
7	0.327654	0.189349	0.095276	0.487731	0.09892	0.922282	0	0.000541	A [0-0.3]
8	0.834687	0.893491	0.971837	0.373419	0.136083	0.922282	1	1.0	D [1.0]
9	0.524687	0.704142	0.367347	0.463649	0.157675	0.656907	0	0.458965	B [0.4-0.6]
10	0.89875	0.704142	0.989796	0.725652	0.010796	0.922282	1	1.0	D [1.0]
11	0.360243	0.199675	0.093786	0.647648	0.245802	0.656907	0	0.100345	A [0-0.3]
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
1938	0.834687	0.893491	0.989796	0.373419	0.245802	0.922282	1	1.0	D [1.0]
1339	0.524687	0.704142	0.255102	0.463649	0.010796	0.922282	0	0.458965	B [0.4-0.6]

Figure.2: Results of Reverse Feature Engineering

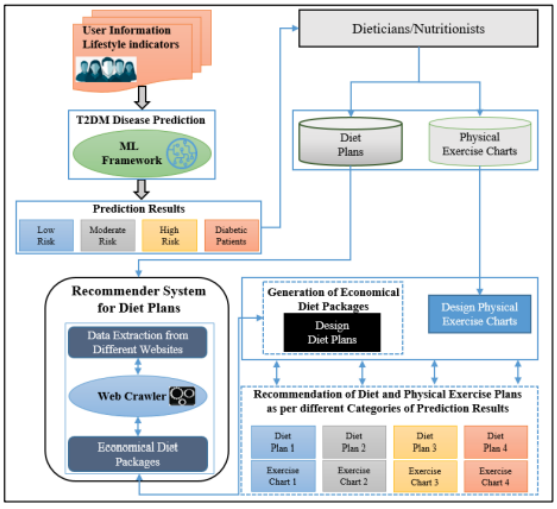

Figure.3: Architecture of Recommender System

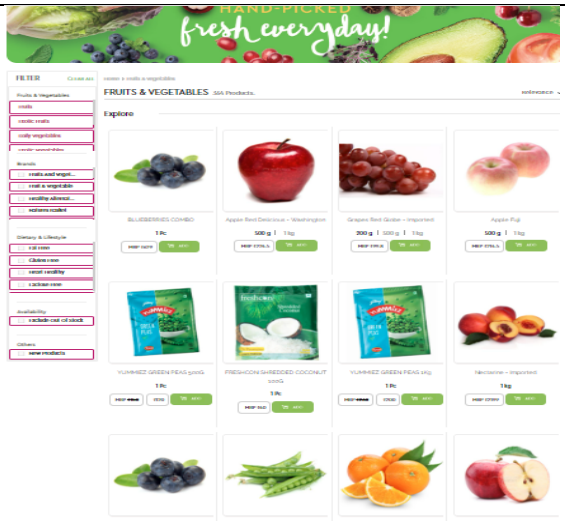

Figure.4: Nature's Basket Website

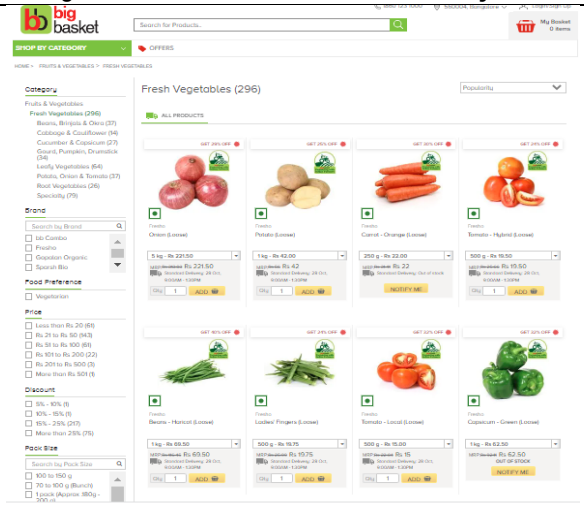

Figure.5: Big Basket Website

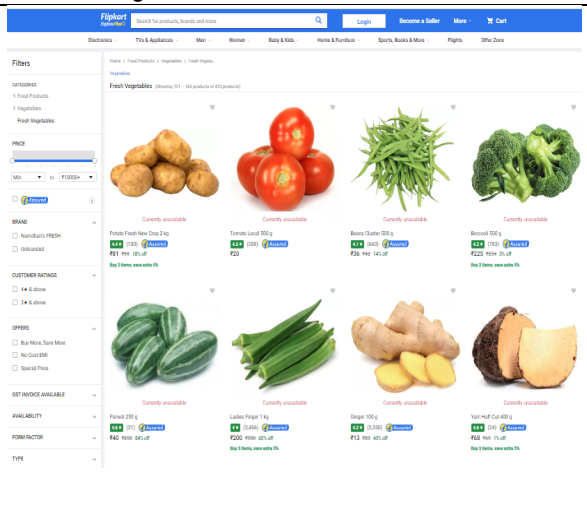

Figure.6: Flipkart Website

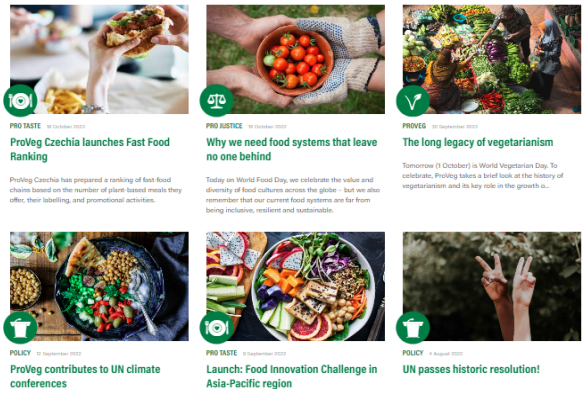

Figure. 7: Proveg Website

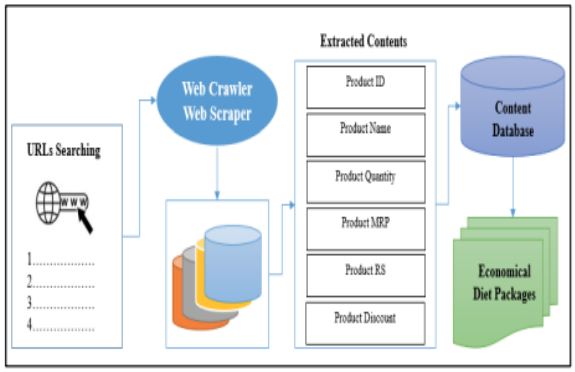

Figure.8: Architecture for Economical Diet Packages

```
0  https://www.flipkart.com/onion-1-kg/product-re...
1  https://www.flipkart.com/namdhari-s-fresh-onio...
2  https://www.flipkart.com/onion-sambhar-250-g/p...
3  https://www.flipkart.com/spring-onion-100-g/pr...
4  https://www.flipkart.com/sambar-onion-peeled-2...
**********Crawller Starts**************
navigation []
navigation []
navigation []
navigation []
navigation []
**********************************Extraction Ends*****************************
************
***************Finishng Time**********************
Exit Time : Tue Sep  7 20:08:46 2021
>>>
```

Figure.9: Python code execution for URLs Searching

Url	Product Name	Quantity	MRP	RS	Discount
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Beans - Haricot	250 g	31.25	19	39%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Capsicum - Green	500 g	23	18	22%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Palak - Cleaned, wit	100 g	7.5	6	20%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Radish - White	500 g	20	12	40%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Tomato - Hybrid	500 g	10.63	7	34%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Ladies Finger	500 g	17.5	13	26%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Bitter Gourd	500 g	18.75	12	36%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Onion	5 kg	187.5	150	20%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Carrot - Orange	250 g	25	17	32%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Coccinia	500 g	30	15	50%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Potato	1 kg	33.75	26	23%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Chow Chow	500 g	28.75	16	44%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Cabbage	1 pc	18.75	11	41%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Cucumber	500 g	28.13	16	43%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Brinjal - Varikatri	500 g	15.63	7	55%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Methi/Venthaya Ke	100 g	11	8.8	20%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Beetroot	250 g	8.75	7	20%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Sweet Potato	500 g	28.75	16	44%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Brinjal - Bottle Shap	500 g	30	19.5	35%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Ridge Gourd	1 kg	43.75	28	36%
https://www.bigbasket.com/ps/?q=fresh%20vegetables&nc=pscs#!page=6	Beans - Cluster	250 g	14.38	6	58%

Figure.10: Extracted Contents regarding Diet Items