AI Dietician

Project Report submitted in the partial fulfillment
Of

Bachelor of Technology
In

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Chapter 1

Introduction

1.1 Background of the project topic:

The online artificial dietician is a bot with artificial intelligence about human diets. It acts as a diet consultant similar to a real dietician. Dieticians are educated with nutrient value of foods. A dietician consults a person based on his schedule, body type, height and weight. The artificial intelligence dietician too asks all this data from the user and processes it.

The aim is to develop an open-source project on which developers worldwide can contribute. This project would be a great nutrition-manager for the mankind.

1.2 Motivation and scope of the report:

Many people have a hectic schedule and often lack time to plan a proper diet. It is quite difficult to plan a healthy diet taking all factors into consideration. The project is still in progress and we hope to complete it with sll the modifications.

1.3 Problem statement:

An application created on the internet to enter in all your details e.g: height, weight, etc. and get a medically tested diet depending on your meal timings for your body type and measure of BMI (Body Mass Index).

Chapter 2

Literature survey

Paper	Analysis	Implementations	Limitations
Application of Artificial Intelligence for Weekly Meal Planning for Children (Aug 2016)	This paper exhibits the advancement of computerized menu arranging framework for a nourishment direction application based on 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)	1) Generates a nutrient rich diet for children 2) Takes into account availability of products 3) The diet can be changed depending on requirements.	1) Restricted to children 2) Does not take into account the BMI of the child. 3) The input can be given only as positive or negative.
AI DIETICIAN (Mar 2019)	The designed system is useful for common people to maintain their health by taking proper diet. We can develop a system in which if the user is at a remote place, he/she can send details through SMS and system can send diet plan to user.	1) The system gives diet plan to the users on mobile based on BMI and other factors. 2) This result represents diet plan for obese people. 3)This result represents diet plan for people having pcos disease.	1) Needs a unique physical measuring Apparatus 2) Does not take into account the availability of food items. 3) Does not take any inputs on basis of the effect from the user
Exploring Identifiers of Research Articles Related to	This research is the first report to describe the use of natural language processing and artificial intelligence techniques to extract and analyze data from literature via an automatic classifier.	1) This paper determines what aspect of the food helps in what relation to the organ.	1) Does not give you a balanced diet plan.

Food and Disease using Artificial Intelligence (Nov 2018)		2) There is a thorough research conducted on basic problems such as heart attack and which foods help in avoiding the same.	2) Theoretical paper with no applications
Machine Learning Methods Analysis For Calories Measurement of Fruits and Vegetables	In this paper, we built a measurement method that approximate the amount of calories from an image by computing the volume of the fruit or vegetable from the image and using nutrition facts tables to calculate the amount of calories in fruits and vegetables.	1) Technique is successfully applied on a variety of food and vegetables. 2) The hardware gives a perfect calorie measurement irrespective of the size and shape.	1) Requires a physical measuring apparatus 2) The hardware is very complex to build 3) Restricted to fruits and vegetables and not cooked meals.

Chapter 3

Methodology and Implementation

1. Hardware description:

- The current project is a web-app model which is purely software based.
- In future, additional hardware integration is possible. (Fitness bands, weighing scales, BFP callipers, etc).

2. Software description:

- The project is developed using modern web-development technologies. AI Dietician is a complete MERN stack project.
- The core Front-end technologies used:

TECHNOLOGY	DESCRIPTION
JavaScript	Base programming language.
React.js	Front-end Library for JavaScript.
Axios	A client to make HTTP requests.
Chart.js	A Javascript Library for data visualization.
SCSS	CSS Preprocessor for styling.
npm	Node package manager.
DevTools	Google chrome devtools for development.
Adobe XD	Front end designing software.
Firebase tools	Hosting and analytics service by google.
Webpack	Web bundling and compilation.

- APIs used
  - **EDAMAM** – Food recipe and nutrition search API.
  - **MockAPI** – Test API for NoSQL database controlling dynamic content.

- The core back end technologies to be used:

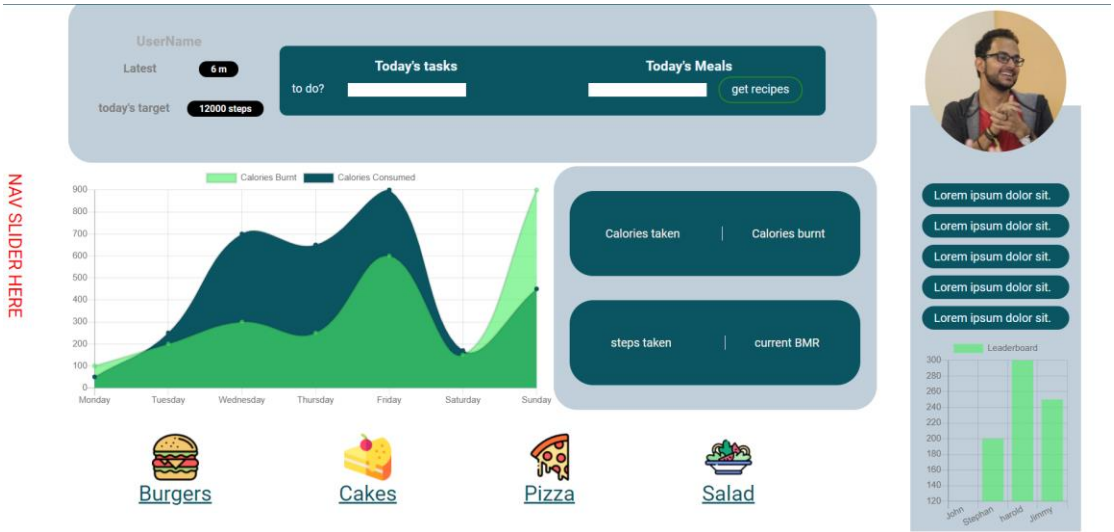
TECHNOLOGY	DESCRIPTION
JavaScript	Base programming language.
Node.js	JavaScript runtime with google's V8 engine.
MongoDB	NoSQL database.
Mongoose	Client to communicate with DB
Express.js	Node.js library
npm	Node package manager.

- Other technologies used:
  - GitHub
  - HTML
  - Parcel

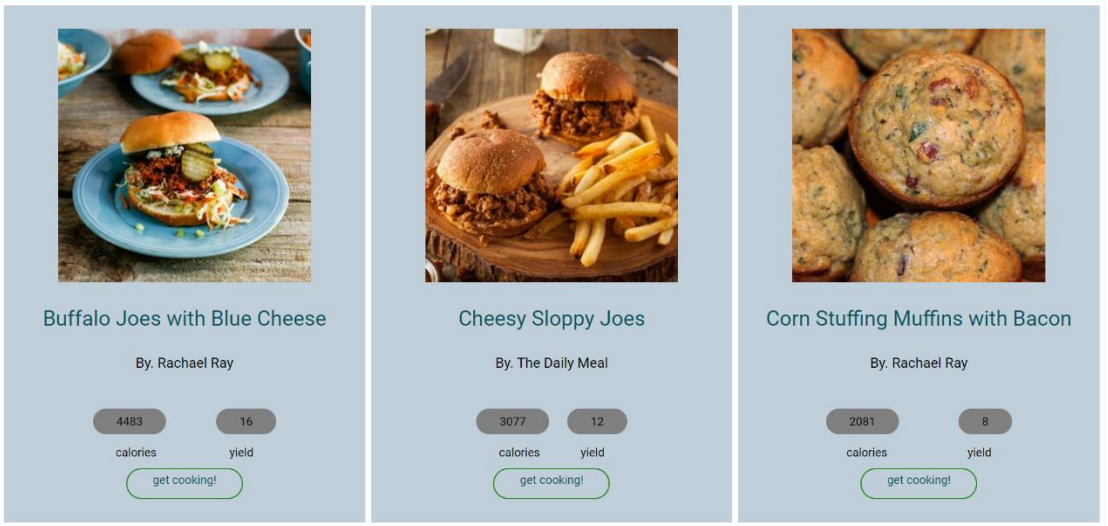
Model Implemented

Wireframe (Dashboard)

Version 1 (Dashboard)



Version 1 (Recipe cards)



The application, at current stage is able to request data from **External servers** through **APIs** and fetch a response. This response is **rendered onto the web-app** dynamically,

A user can request recipes based on any **set of ingredients**. The relevant recipes will be displayed on an **internally routed page**. The response data has **information** such as Title, Calories, ingredients, recipe URL, Nutritional values, Macro & Micro nutrients digest, image URL, filters, cautions, etc.

Chapter 4

Results and Analysis

Version-1 of the web-app is capable of **core-functionality** of our project – **Recipe building**. A user can request recipes and it's nutritional values from a simple UI. The dashboard has a **multi-axis line-chart** which provides the weekly **calorie tracking**. A to-do list, to keep a tract of scheduled activities. **A leader-board concept** to track progress among other application users.

The application will be a boon to people who find it difficult to maintain a nutritious diet during a tough schedule. This will help people look for a **healthy and nutritious meal plan** in the times of **COVID-19**. The **filters and health-risk features** will make the application robust and be able to use for medical-purposes.

Future Scope

The web-app will have a **customised database** and an **authentication model** so that the user's data can be stored on the **cloud**. All the content will be **dynamic** and **AI** will help the **application to be smart**. The application will have support for **cross platform usage**, with design principles making it widely accepted.

Application will be laid upon **Jenkins**, a **CICD model**, for **smoother and responsive deployment**. Integration of device-hardware eg.

1. **Camera** – food snap.
2. **Microphone** – voice search.
3. **Smartwatch –** activity tracking.

The application will be made **secure**, with a **human intervention in the case of active-dietician on request.**

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