



PARSHVANATH CHARITABLE TRUST'S

A. P. SHAH INSTITUTE OF TECHNOLOGY

Department of Information Technology

(NBA Accredited)



FitGeek: Modelling ML Based Recommendation System for fitness and wellness

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**Project Guide
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Contents

- Abstract
- Introduction
- Objectives
- Literature Review
- Problem Definition
- Scope
- Technology Stack
- Proposed System Architecture/Working
- Prototype Design Demonstration

1. Abstract

The FitGeek transcends the boundaries of a mere fitness website; it represents a transformative and comprehensive wellness platform meticulously crafted to empower individuals on their journey to take full control of their health and fitness.

- **Personalized Wellness Solutions:** Our platform offers personalized solutions that cater to your unique needs, preferences, and objectives.
- **Guidance Every Step of the Way:** Fitgeek provides you with the guidance you need, ensuring that every step you take aligns with your specific goals
- **Continuous Learning and Growth:** Fitgeek is committed to keeping you informed and up-to-date with the latest trends, research, and best practices in the wellness industry.

FitGeek isn't just a destination; it's a way of life. It's about embracing the full spectrum of your well-being, taking charge of your health, and ultimately leading a life that's not just healthier but also happier.

2. Introduction

In today's fitness-focused world, many enthusiasts face two key challenges: relying on unreliable internet information and the economic constraints of accessing proper guidance. FitGeek offers a solution. We empower fitness geeks with knowledge and animated exercises, bridging the gap between misinformation and economic barriers, making fitness more accessible and safer for all.

With FitGeek, the user can confidently work towards their fitness goals, knowing that they have accurate guidance at their fingertips. To address these challenges, FitGeek emerges as the solution. FitGeek is committed to empowering fitness enthusiasts by providing them with the knowledge and tools needed to get closer to their fitness goals safely and effectively.

On our platform, users can precisely target specific muscle groups for their workouts and learn the corresponding exercises through detailed animations. FitGeek's mission is to bridge the gap between unreliable fitness information and the economic constraints that often hinder access to proper guidance, making the journey to fitness more accessible and safe for all.

3. Objectives:

- **To Provide Convenient and Economical Fitness Guidance:** To offer affordable and easily accessible fitness guidance.
- **To Offer Instructional Exercises with Animations:** To provide exercises with clear instructions, animated demonstrations and on a timer.
- **To Raise Awareness About Healthcare Updates:** To inform and raise awareness about recent healthcare updates.
- **To Enable Remote Access to Exercises and hydration calculator:** To facilitate remote access to exercises via web.
- **To Implement Disease Predictors:** To include disease predictors for conditions like diabetes and stress, along with relevant recommendations.
- **To Offer Personalised Diet Recommendations:** To provide tailored diet recommendations based on the person's body statistics.
- **To calculate stress levels of the user:** To create a tab where the user can get access to various mental health practices.

4. Literature Review:

Data collected by fitness trackers could play an important role in improving the health and well-being of the individuals who wear them. Many insurance companies even offer monetary rewards to participants who meet certain steps or calorie goals. However, in order for it to be useful, the collected data must be accurate and also reflect real-world performance. The results demonstrate that the reporting of health indicators, such as calories burned and miles travelled, are heavily dependent on the device itself, as well as the manufacturer's proprietary algorithm to calculate or infer such data. As a result, it is difficult to use such measurements as an accurate predictor of health outcomes, or to develop a consistent criteria to rate the performance of such devices in head-to-head comparisons.

YEAR	AUTHOR	TITLE	OUTCOME	DRAWBACK
2015	Chelsea G. Bender	Measuring the fitness of fitness trackers	The fitness tracker devices are proving to be very essential for keeping a track of the user's progress	But they are not handy also being very expensive
2017	Lakhwinder Kaur	Influence of height and weight on Physical Fitness	The user's height and weight data are essential for the measurement of their PFI score(essential to grade the fitness of an individual)	Height and weight aren't the only factors to be considered while analysing a person's fitness.
2019	Jifeng Liang	'Research on Fitness App	It monitors users physical activity and analyses users health	They lack reliability and were not as detailed as they should be
2018	Yudhy Dharmawan	Web-App to support Physical Fitness	The data received can be used as a mean of monitoring their own health in real time	-
2020	Parinaz Bulky	A multipurpose sensor based system for weight training	Device monitors weight and user activities by using IMU using algo of LDA and SVM	Requires external hardware devices

5. Problem Definition:

Problem Definition:

- Widespread reliance on irrelevant or inaccurate fitness information and incorrect workout plans found on the internet.
- This dependence on internet sources can lead to serious injuries or ineffective workouts that do not suit individual body types.
- Access to proper fitness guidance is economically unfeasible for many individuals.

Proposed Solution:

- FitGeek aims to empower fitness enthusiasts with knowledge to approach their fitness goals more effectively and safely.
- Users can target specific muscle groups for their workouts and learn the corresponding exercises through interactive animations.
- FitGeek bridges the gap between unreliable fitness information and economic constraints, making fitness accessible and personalized for all.

6. Scope:

1. **Enhanced Fitness Progress:** AI-powered recommendations adapt as users progress, ensuring optimal workout plans.
2. **Calorie Intake Tracker and Analysis:** Implement algorithms for analysing calorie intake against individual goals and dietary preferences.
3. **Personalised Diet Plans:** Incorporate nutritional analysis to ensure users receive balanced and tailored dietary recommendations.
4. **Hydration Calculator:** Develop a hydration calculator that calculates daily water intake needs based on user profiles, activity levels, and environmental conditions.
5. **Stress Level Assessment:** Implement stress assessment tools, such as surveys or wearable device integrations, to measure users' stress levels.
6. **Mental Health Practices:** Integrate mental health practices, including mindfulness and meditation exercises and offer guided sessions and resources to improve mental well-being.
7. **User Engagement and Tracking:** Implement tracking features to monitor users' adherence to recommendations and progress towards wellness goals.

7. Technology Stack:

Frontend : WEB X.O

1. HTML : for structure
2. CSS : for styling
3. JavaScript : for interactive elements
4. Bootstrap : CSS framework for responsive and attractive designs

Backend:

1. Django : framework for web application development
2. Python : for backend logic

Libraries/Dependencies: DATA ANALYSIS

1. Pandas
2. Numpy
3. Matplotlib
4. Google Maps API, FastAPI

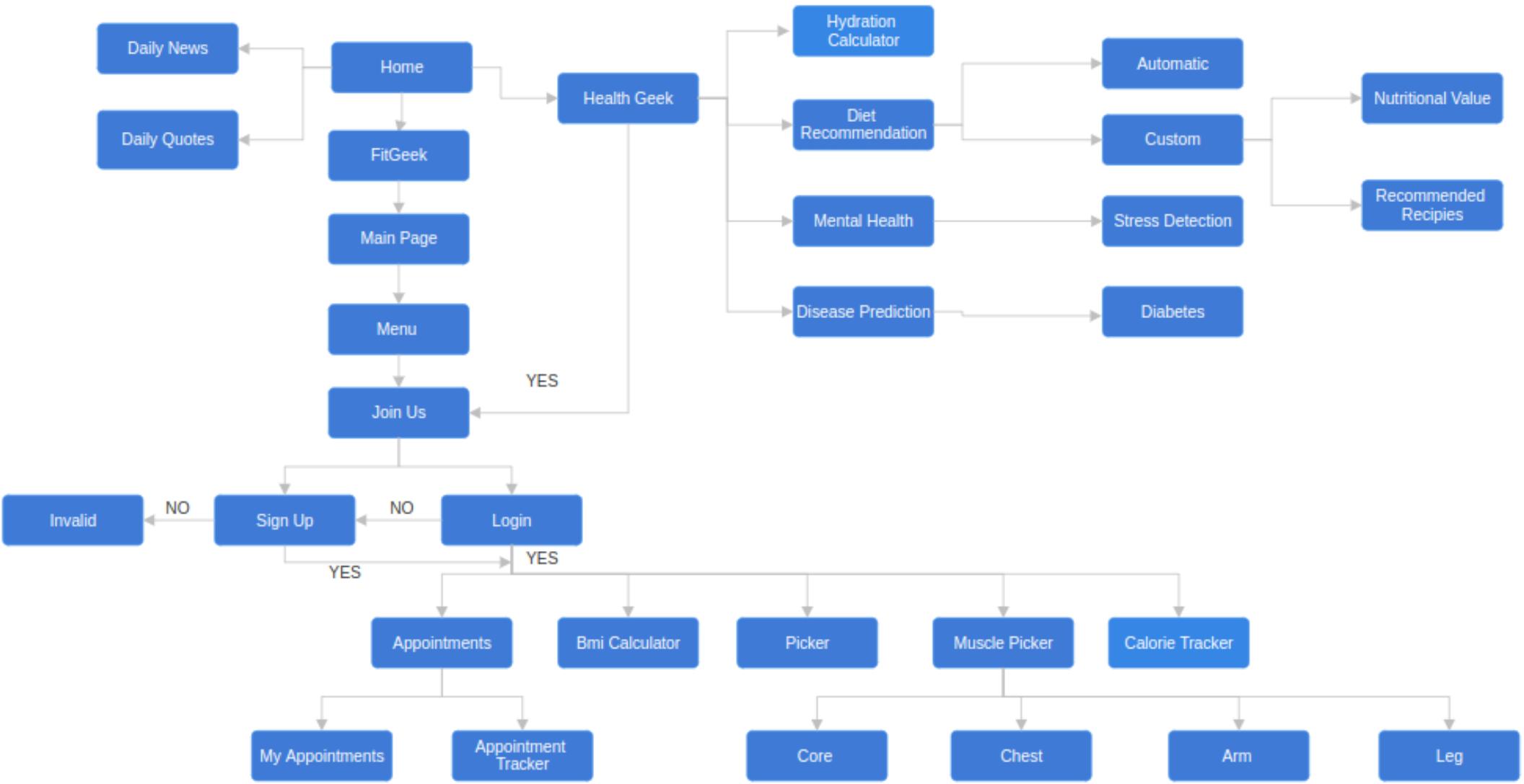
For ML related features:

1. Scikit-learn : for building disease prediction models.
2. TensorFlow or PyTorch : For building recommendation and machine learning models.
5. Streamlit : for Machine Learning models.

ML Algorithms:

1. K-Nearest Neighbors: for classification and regression tasks of the diet recommender.
2. Support Vector Machine: for classifying individuals into one of two classes: diabetic or non-diabetic, in the diabetes predictor.
3. Content-Based Filtering: for exercise recommendation system.
4. Natural Language Processing: to determine the stress levels of the user based on the inputs provided.
5. Logistic Regression: to predict stress levels categorised into different classes (e.g., low, moderate, high).

8. Proposed System Architecture/Working:



9. Prototype Design Demonstration:

FitGeek

Home

HealthGeek

Picker

Appointments

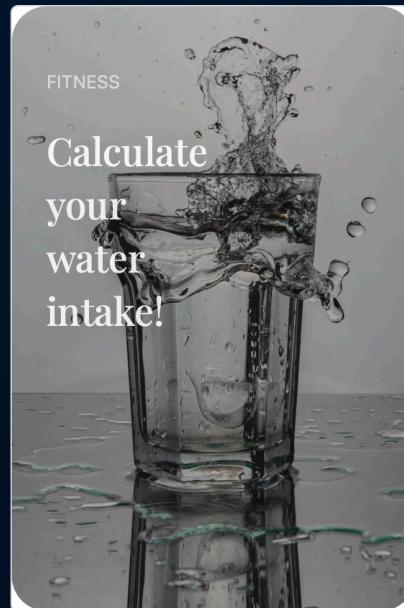
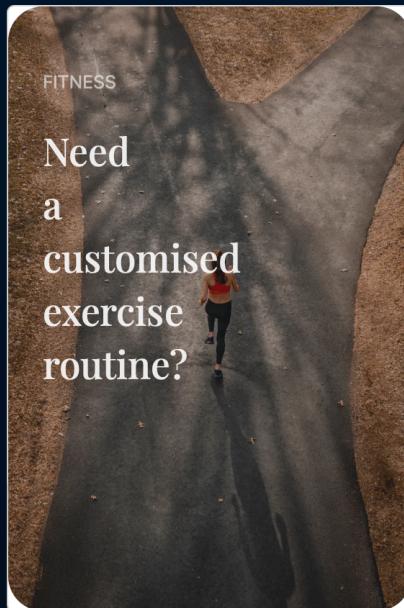
Join Us ▾

Health With FitGeek

Enhancing the way of life



Welcome to HealthGeek



HealthGeek's Automatic Diet Recommendation

Hello

 Diet Recommendation

 Custom Food Recommendation

Modify the values and click the Generate button to use

Age

2

- +

Height(cm)

50

- +

Weight(kg)

10

- +

Gender

Male

Female

Activity

Little/no exercise

Little/no exercise

Extra active (very active & physical job)

Choose your weight loss plan:

Maintain weight

▼

Meals per day

3

-

3

5



DIET RECOMMENDER

Recommended recipes:

BREAKFAST

LUNCH

DINNER

Baked Tofu Nuggets

Venison Black Bean Chili

Venison Soup

White Bean, Tuna and Spinach Salad

Venison Soup

Venison Black Bean Chili

Grilled Tuna With White Bean and Charred Onion Salad

Grilled Tuna With White Bean and Charred Onion Salad

Beef With Cabbage and Mushrooms

Thai Style Tilapia Wraps from Gorton's

Halibut Despina

Moustache Ghoulash Economical and Tasty

Tortilla Fish Soup

Beef With Cabbage and Mushrooms

Modern Venison Roast

Recommendation Generated Successfully !

Choose your meal composition:

Choose your breakfast:

Baked Tofu Nuggets

Choose your lunch:

Venison Black Bean Chili

Choose your dinner:

Venison Soup

Total Calories in Recipes vs Maintain weight Calories:

Custom Food Recommendation

Hello

 Diet Recommendation

 Custom Food Recommendation

Nutritional values:

Calories

FatContent

SaturatedFatContent

CholesterolContent

SodiumContent

CarbohydrateContent

FibreContent

500

50

2000

100

13

300

2300

400

100

325

Hello

 Diet Recommendation

 Custom Food Recommendation



Specify ingredients to include in the recommendations separated by ":" :

milk;eggs

Example: Milk;eggs;butter;chicken...

Generate



Recommended recipes:

Batch Cooking Plan
Plus Mixed Berry Bread
Recipe

Baked Oatmeal ▾

Buttermilk
Cornbread ▾

Cinnamon Honey
Waffles ▾

Selyodka Pod Shuboy
(Dressed Herring) ▾

Overview:

Select a recipe

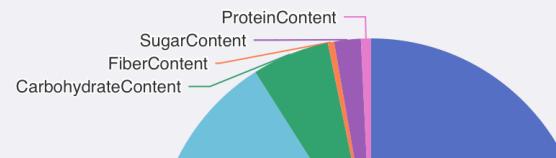
Batch Cooking Plan Plus Mixed Berry... ▾

Nutritional Values:

- █ Calories
- █ FatContent
- █ SaturatedFatContent
- █ CholesterolContent
- █ SodiumContent
- █ CarbohydrateContent
- █ FiberContent
- █ SugarContent
- █ ProteinContent

Nutrition values

Batch Cooking Plan Plus Mixed Berry Bread Recipe



Try the Calorie Tracker!

This calorie tracker will track your burnt calories per day and show you a detailed graph view in your [dashboard](#).

Calories burnt today

eg: 120.67



This helps us maintain your data for better recommendations.

Submit

Don't know how many calories you've burnt?

Try our new humane way of calculating calories.

What exercises did you do today?

eg: I ran 5kms and did 20 pushups!

Tell Us Your Weight

eg: 65.20



Tell Us Your Height (in cms)

eg: 120.67



THANK YOU!