TEAM 2 – TINY CODERS

FINAL TECH PAPER

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Abstract— ***Recent technological advancements have created numerous opportunities for the development of fitness applications with personalized diets that can assist users in achieving their fitness goals. It can be difficult for people who are new to fitness or have casual fitness goals to know the number of calories in their food or identify the ingredients that cause allergic reactions. Furthermore, calculating maintenance calories can be difficult for people who are unfamiliar with fitness or nutrition. Users, on the other hand, can make informed decisions about their diet and exercise routine with the help of personalized fitness apps. These apps can help users track their food intake, calories burned during exercise, and nutritional information about the foods they eat. These apps can help users track their food intake, calories burned during exercise, and nutritional information about the foods they eat.***

Keywords**—** *fitness, personalized diet, calorie count, allergies, exercise, recipes application.*

1. **INTRODUCTION**

In recent years, an increasing number of people have become health-conscious and strive to live a healthy lifestyle. Various projects on recipe generation, fitness, maintenance calories, and calorie estimation have been developed to support these efforts. Few applications, however, have combined all these features into a single, holistic platform. In response to this need, we are creating a comprehensive nutrition and fitness application that will use deep learning techniques to integrate features such as calorie estimation, food classification, maintenance calories, and recipe generation. This app will help users make informed lifestyle decisions by providing personalized nutrition and fitness plans based on their dietary preferences, health goals, age, height, and level of activity, our application will provide a user-friendly interface and simple information to casual users who are unfamiliar with the nuances of diet and fitness. Our application will accurately estimate the number of calories in a recipe, classify the ingredients, and generate recipes based on user preferences by leveraging the power of deep learning. Overall, our nutrition and fitness app will be a useful resource for anyone looking to improve their health and wellness through proper nutrition and fitness practices. Users will be able to make more conscious decisions, achieve their health goals, and live a healthier, happier life thanks to our application.

**II. LITERATURE REVIEW**

The food and fitness application industry has grown significantly in recent years, with a revenue of 5.35 billion in 2021, a 54% increase over the previous year. This expansion is due to changes in lifestyle habits, as more people are interested in tracking their physical activity and diet. These applications' success can be measured statistically by tracking user engagement, retention rates, and customer satisfaction. Businesses can gain insights into user behaviour and preferences by analysing this data and using this information to improve the effectiveness of their applications. Personalized feedback and recommendations based on specific user data are a crucial component of food and fitness apps. Deep learning, natural language processing, and computer vision technologies are used to enable this personalization. These technologies can give consumers accurate and pertinent information, which eventually results in improved health outcomes, by evaluating data from sensors, natural language input, and photographs of food. From a commercial standpoint, the success of food and fitness applications depends on elements including user acquisition, monetization techniques, industry competitiveness. Business can profit from the rising industry competitiveness. Organizations can benefit from the rising interest for these applications by perceiving these viewpoints and making effective showcasing and adaptation strategies. The food and wellness application market are growing rapidly because of changes in shopper ways of life and the extending availability of state-of-the-art innovation like profound learning, regular language handling, and PC vision. The craving for individualized and effective arrangements will just increment as additional individuals endeavour to monitor their food and exercise, starting new business possibilities for organizations in this area.

**III. PROJECT REQUIREMENTS**

Writing project requirements for a Re-Define Me application would involve the following steps:

1.Define the problem statement: Begin by defining the problem statement that this application will address. For instance, the application could be designed to help individuals track their calorie intake, maintain an exercise routine, and achieve their fitness goals.

2. Identify the target audience: Identify the target audience for the application to gain a better understanding of their needs. Is the app aimed at fitness enthusiasts or beginners? What age group is it designed for? Are there any specific health issues that the application needs to address?

3. Define the features and functionalities: List the features and functionalities required to address the problem statement and cater to the target audience. These could include calorie tracking, workout routines, reminders, personalized meal plans and so on.

4. Define the technology stack: Identify the technology stack that the application will use. For instance, Re-Define Me could use Node.js for the backend, React for the frontend and MongoDB as the database.

5. Define the success criteria: Establish the metrics that will be used to measure the success of the application. This could include the number of users, user satisfaction rates, revenue generated and so on.

6. Establish the project scope: Define the boundaries of the project to ensure that the team stays on track. For example, the scope of the project could be limited to the development of certain features rather than the entire application.

Given below are the Application requirements of our project. A. Software requirements ● Browser: Microsoft Edge, Google Chrome, Mozilla Firefox ● IDE: PyCharm, Jupyter ● Design: Adobe Illustrator, Miro Board ● Database: MongoDB ● Version Control: GitHub ● Project Management: GitHub Projects, JIRA Documentation: Microsoft Word, PDF Expert, Excel, Google Docs B. Hardware requirements ● Any processor and device capable of running a browser. ● Any operating system C. Functional Requirements ● The end user will be able to view and use the services. ● End user can register and save his information to get customised service ● The admin has access to the user’s information. ● User can provide feedback and rate the service and the professional D. Technical Requirements • This is a web-Application and also supports tablet and mobile. • This application is developed using MongoDB, ExpressJS, NodeJS and React.

**IV. SYSTEM DIAGRAMS**

1. **Entity-relationship diagram**

Diagram

Description automatically generated

Figure 4.1 Entity Relationship Diagram

1. **Architecture diagram**

Diagram

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Figure 4.2 Architecture Diagram

1. **Sequence diagram**

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Figure 4.3 Sequence Diagram

1. **Use Case Diagram**

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Figure 4.4 Use-Case Diagram

1. **Data Flow diagram**

*Diagram

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Figure 4.5 Data Flow Diagram

**V. CONCLUSION**

There are numerous applications related to health, fitness, and diet, and developers are attempting to include every possible feature to eliminate the need for a personal mentor (trainer, dietician). This saves users a significant amount of time and money while also assisting them in making sound fitness decisions. There aren't many apps that solely focus on selecting recipes and assisting people in making informed decisions based on their lifestyle. This software focuses on creating recipes and calculating calories from food, which other applications do not provide. The application's front end interacts with its back end and database. This application is complex because the back end contains deep-learning, computer vision, and Natural Language Processing algorithms, and a database is used to store the users' information.

**VI. SUMMARY**

This software is intended to be modular and flexible enough to meet the requirements of every user, whether they are an individual or a member of a bigger group, like a gym or nutrition centre. The application offers individualized recommendations for diet and fitness routines based on the user's input and may be tailored to match the user's particular goals and tastes. In the future, the program will be accessible online, enabling users of any age or physical ability to use it from the comfort of their own homes. This will make it possible for everyone, including the elderly and the disabled, to benefit from a fitness and nutrition program, enhancing their general health and wellbeing. VII. References [1]Li, X., Dunn, J., Salins, D., Zhou, G., Zhou, W., Liu, C., & Poon, C. C. (2016). Digital health: Tracking physiomes and activity using wearable biosensors reveals useful health-related information. PLoS biology, 14(1), e1002343. https://doi.org/10.1371/journal.pbio.1002343 [2]Mummah, S. A., King, A. C., Gardner, C. D., Sutton, S., & Moore, J. B. (2016). A text messaging intervention to promote healthy habits for college students: A randomized

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