

FitOrbit-Social Networking Fitness App

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Abstract- Over the years the fitness level of people of all ages has dropped heavily, while the usage of social media apps has increased exponentially. In this paper we discuss and provide a solution considering both the aspects and present our app FitOrbit which is a fitness app that uses the power of socialization and peer motivation to indulge young generation in fitness and health.

Keywords- Fitness, Social Media, COVID-19, AI, K-means Clustering, Random Forest Classifier

I. INTRODUCTION

We have all heard it many times that regular exercise is good for you. But like many people, you are either busy, or have a sedentary job, or just too lazy to start. Physical activity or exercise can improve your health and reduce the risk of developing several diseases like type 2 diabetes, cancer and cardiovascular disease. Physical activity and exercise can have immediate and long-term health benefits. Most importantly, regular activity can improve your quality of life.

Human beings are social creatures. We need the companionship of others to thrive in life, and the strength of our connections has a huge impact on our mental health and happiness. In today's world, many of us rely on social media platforms such as Facebook, Twitter, Snapchat, YouTube, and Instagram to find and connect with each other.

In India, the number of people actively using social media is about 448 million but it is growing faster with the availability of cheap prepaid connection like free of cost Jio Sim introduced by Reliance group and internet-enabled handsets at a very low price. [1]The average daily usage is 2 hours and 27 minutes.

FitOrbit tries to incorporate social networking within fitness app to increase the amount of physical activity in adults and create a positive competitive environment among peers, in turn also reducing the negative effects that come with social networking sites.

II. LITERATURE REVIEW

1) "Effects of COVID-19 Home Confinement on Eating

Behaviour and Physical Activity: Results of the ECLB-COVID19 International Online Survey"[2]

The preliminary results of the survey indicate a negative effect of home confinement on Physical Activity and diet behaviour with a significant increase in sitting time and unhealthy diet, indicative of a more sedentary lifestyle.

2) The impact of sharing physical activity experience on social network sites on residents' social connectedness: a cross sectional survey during COVID-19 social quarantine[3] During the COVID-19 pandemic, sharing physical activity experiences on SNS can create a positive, healthy, and energetic personal image, gain recognition from others, and establish new interpersonal relationships

3) "Use of Social Media Platforms among Adults in the United States—Behaviour on Social Media"[4]

Across the 2002 respondents, 458 reported using Twitter, 627 used Instagram, 1336 used Facebook, 451 used Snapchat and 1450 used YouTube. Only 365 respondents indicated that they do not use any of these. A total of 921 of the respondents were female and 1081 were male. All of the respondents were above 18 years of age.

4) "The effect of social media interventions on physical activity and dietary behaviours in young people and adults: a systematic review"[5]

Overall, the new evidence reported in this review suggests that the functionality of social media is diversifying, and this provides increased opportunities to reach and engage diverse groups to positively influence physical activity and diet-related behaviours within social media interventions.

5) "Physical Fitness and Exercise During the COVID-19 Pandemic: A Qualitative Enquiry"[6]

Study was conducted with individuals for whom going to the gym was a routine activity so as to explore their experiences in terms of their perceptions of the pandemic situation and their ways of coping with COVID-19-induced uncertainties and health issues.

6) User's Perspective about Mobile Fitness Applications[7]

The study addresses on the users outlook towards the smartphone fitness apps and its influence in promoting health.

Most participants agree that the fitness apps are highly effective in providing facilities to attain their fitness goals with less cost, time and easy accessibility.

III. PROBLEM DEFINITION

Reducing the negative effects of Social Networking and using its great positive side to help adults improve their fitness through socialization by creating FitOrbit

Goals-

- Users can create profile and post their workout goals/posts
- Get Personalised AI-Based Meal suggestion.
- Do workout and get points .
- Chat with other members of FitOrbit.

IV. REQUIREMENT ANALYSIS AND FEASIBILITY STUDY**1)REQUIREMENT GATHERING**

In this phase, we try to find out what are the requirements that need to be fulfilled by the proposed system, what all aspects we need to cover so as to make this system worth of usage.

2)PROJECT SCOPE

To create a web application that lets user create profile and share their workout goals and posts with others in turn influencing other peers to do their workout and gain point which then is reflected on their profile, also providing them personalized workout suggestions.

3)EXTERNAL INTERFACE REQUIREMENTS**3.1)User Interfaces**

The product will run as a web application. The product will have good usability and intuitive controls and navigation. The application will have a dashboard and an interactive guide.

3.2)Software Interface

Front-end, back-end interface - The back-end framework, such as NodeJS, Flask, will host the web application running on the client side. The requests sent from the frontend (ReactJS, HTML/CSS, Jquery) will be used by the back-end framework to handle user authentication, navigation and various functions

4)FUNCTIONAL REQUIREMENTS:

- The user should be able to create and edit their profile
- The user should be able to share posts with others
- The users should be able to chat with each other
- The user should get personalized workout suggestions
- The user should get points on doing workout (based on the difficulty of workout), and it should reflect on their profile
- Authentication
*Users have to sign up and login using username and password to access the app.
- Authorization
*User can only modify posts created by them.

5)NON-FUNCTIONAL REQUIREMENTS:**Essential Requirements**

- The application should be easy to use by people of all ages.
- The application should be accessible to all the people using it
- The application should allow several transactions to be made at the same time without downgrading performance
- The system should provide security using encryption method.

Optional Requirements

- The system should be able to process each request within 2 seconds

Software Quality Attributes

- Scalability
- Reliability
- Availability
- Maintainability

6) FEASIBILITY STUDY

6.1) Operational Feasibility

Operational feasibility refers to the measure of solving problems with the help of a new proposed system. It helps in taking advantage of the opportunities and fulfills the requirements as identified during the development of the project. It takes care that the management and the users support the project. The proposed FitOtbite app is capable in providing users with way to socialize with others easily and allow them to interact and share their workout goals. Personalized workout suggestion has made the system more congenial to end user.

6.2) Technical Feasibility

The system is developed using the latest technologies which include ReactJS, NodeJS, Express, MongoDB, Python. It also uses Machine Learning to suggest personalised meal based on your goals and body parameters using K-means clustering and Random Forest Classifier to predict food items based on the clustered data.

6.3) Economic Feasibility

Cost-benefit analysis is very important in deciding whether the project is economically feasible or not. It is alone sufficient to save time and money. Through cost-benefit analysis, it is quite evident that the benefits of this system outweigh costs and thus the project is economically feasible.

6.4) Behavioral Feasibility

Behavioral feasibility determines how much effort will go into educating, selling and training the user staff on a candidate system. This project is evaluated to be behaviorally feasible as it is very user-friendly and hardly needs any extra efforts to educate user for its facility and functioning.

V. SYSTEM REQUIREMENTS

Software Requirements

- HTML/CSS
- JavaScript
- ReactJS
- NodeJS
- MongoDB
- Python
- Flask

- Google Chrome/Firefox

Hardware Requirements

- Min. 2GB RAM (recommended 4GB RAM)
- Min. 20GB HDD (recommended 40GB)
- Intel Pentium 4 or higher

VI. SYSTEM IMPLEMENTATION PLAN

- The system is a web application. The main function of the app is to make users socialize while also focusing on their fitness.
- The system works with the help of technologies and frameworks like HTML/CSS, ReactJS, NodeJS, Python, Flask, MongoDB.
- HTML/CSS, ReactJS will be used primarily to create the frontend which provides the user to navigate to different functions like-Meal suggestion, workout, Social Feed, Profile etc.
- The backend is powered by NodeJS and Flask .Flask is used to implement the machine learning model developed in Python for AI-based Meal Suggestion.
- The system also provides a personalised meal suggestor which is AI powered and is implemented using K-means clustering and Random Forest Classifier.
- It takes the following user inputs for suggestion-
 - Age
 - Veg or Non-Veg
 - Weight(in kg)
 - Height(in cm)

VII. SYSTEM DESIGN

1) System Architecture

The architecture of a system describes its major components, their relationships (structures), and how they interact with each other. Software architecture and design includes several contributory factors such as Business strategy, quality attributes, human dynamics, design, and IT environment.

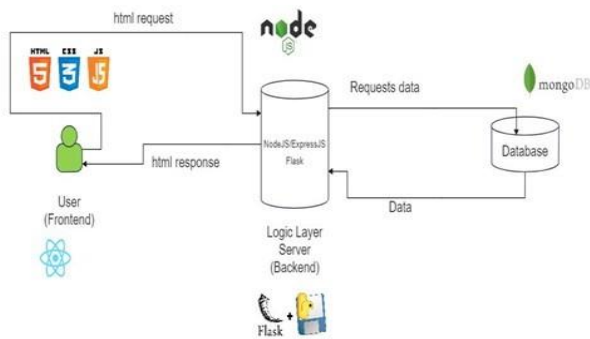


Fig.1.System Architecture

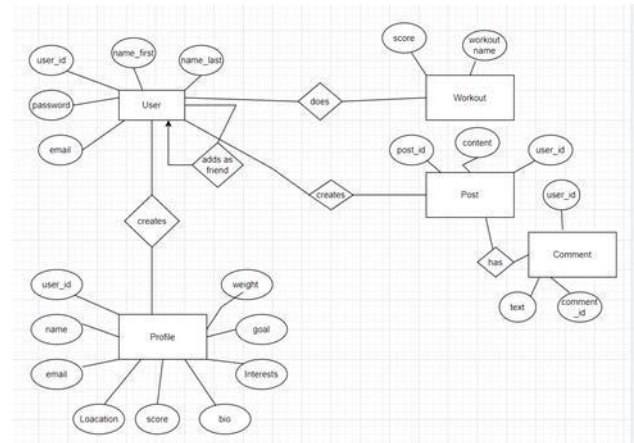


Fig.4.ER Diagram

2) Data Flow Diagram

A data flow diagram (DFD) maps out the flow of information for any process or system.

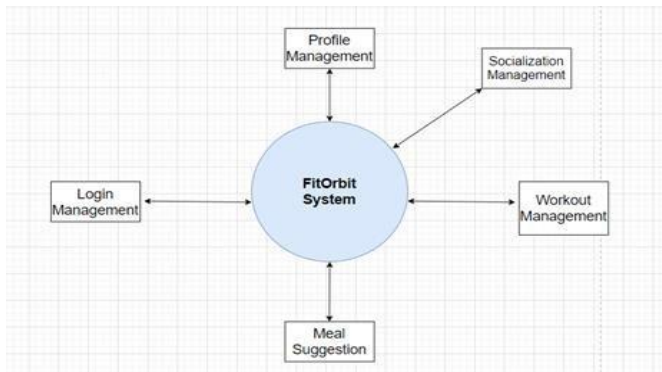


Fig.2.DFD Level 0

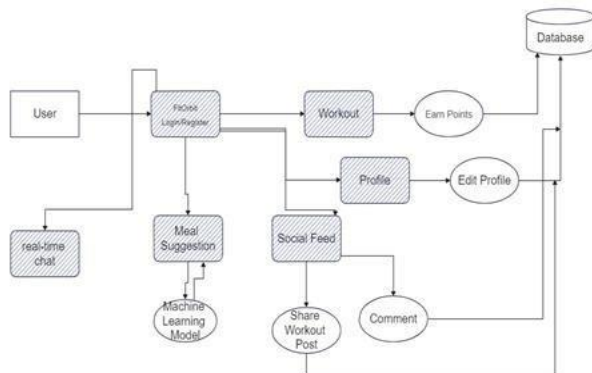


Fig.3.DFD Level 1

3) ER Diagram

An entity–relationship model (or ER model) describes interrelated things of interest in a specific domain of knowledge.

4) Use Case Diagram

A use case diagram can summarize the details of your system's users (also known as actors) and their interactions with the system.

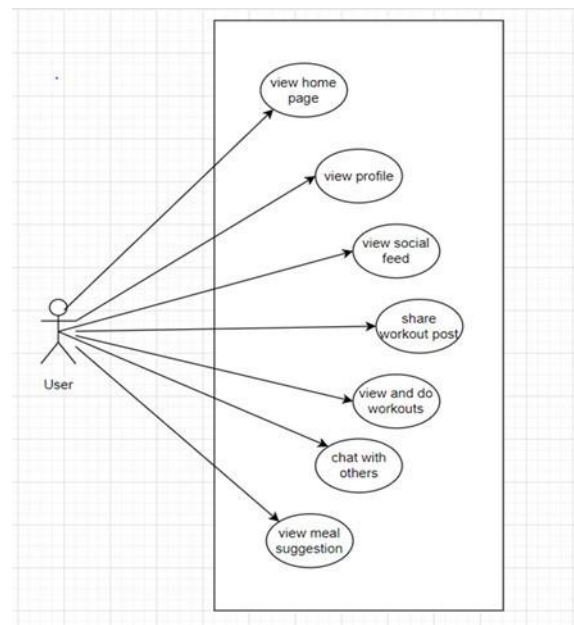


Fig.5.Use Case Diagram

5) State Machine Diagram

State-transition diagrams describe all of the states that an object can have. the states it can go to from current state.

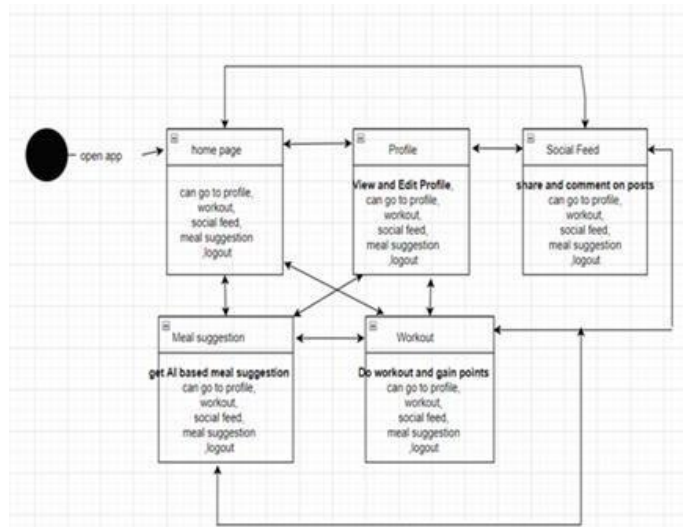


Fig.6.State Machine Diagram

VIII. ADVANTAGES

- The project connects the gap between fitness and socialization to utilize socialization to influence people into doing workout through peer motivation.
- Reduces mental health issues by creating a positive competitive environment.
- Uses the addictiveness of social media to increase fitness level of individuals.
- This app can be readily used by non-programming personal avoiding human handled chance of error.
- Provides workouts that can be done without Gym Equipment Can work on any device.
- Low cost of maintenance.
- Uses latest tech.
- Saves time to look for meals, provides AI based personalised suggestion.

IX. LIMITATIONS

- Internet connection is required

X. CONCLUSION AND FUTURE SCOPE

Conclusion

With the busyness of life increasing day by day and people not finding time to workout ,and students spending most of their time on social networking websites specially in this pandemic .This app makes them spend their time in something that will be useful for them in longer run rather than feeling insecure on social media website which has many ways to distract one.

The app uses peer motivation to create a positive environment to influence people and get fit together .

Future Scope

- Influencers and Professionals will provide personalized workout and diet plan for premium users.
- Fitness Challenges to friends

REFERENCES

- [1] <https://www.theglobalstatistics.com/india-social-mediastatistics/>.
- [2] “Effects of COVID-19 Home Confinement on Eating Behaviour and Physical Activity: Results of the ECLB-COVID19 International Online Survey” Achraf Ammar ,Michael Brach,KhaledTrabelsi and 53 others May 2020 Nutrients 12(1583).
- [3] The impact of sharing physical activity experience on social network sites on residents’ social connectedness: a cross-sectional survey during COVID-19 social quarantine YifanZuo, Yudan Ma, Mu Zhang, Xiaoyuan Wu &Zhanbing Ren Globalization and Health volume 17, Article number: 10 (2021)
- [4] User’s Perspective about Mobile Fitness Applications. Sakitha Anna Joseph, Reshma Raj K., Sony Vijayan
- [5] “Use of Social Media Platforms among Adults in the United States—Behaviour on Social Media” Jan Hruska and Petra Maresova Department of Economics, University of Hradec Kralove, 500 03 Hradec Kralove, Czech Republic;
- [6] “The effect of social media interventions on physical activity and dietary behaviours in young people and adults: a systematic review” Victoria A. Goodyear, Grace Wood, Bethany Skinner, Janice L Thompson International Journal of Behavioral Nutrition and Physical Activity volume 18, Article number: 72 (2021)
- [7] “Physical Fitness and Exercise During the COVID-19 Pandemic: A Qualitative Enquiry” Harleen Kaur, Tushar Singh, Yogesh Kumar Arya andShalini Mittal 29 October 2020