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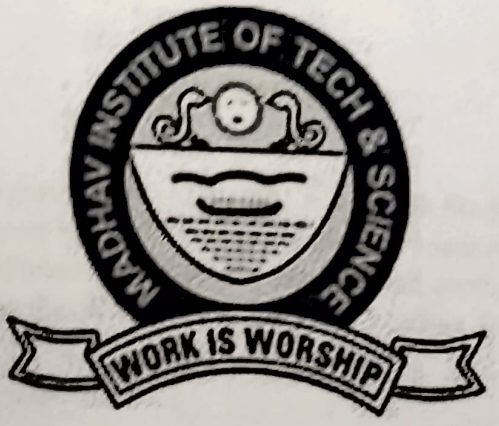

Project Report

on

GetFit App

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Assistant Professor

Centre for Artificial Intelligence

CENTRE FOR ARTIFICIAL INTELLIGENCE
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CERTIFICATE

This is certified that **Ayushi Agrawal** (0901AI211015) & **Anirudh Singh Rajawat** (0901AI211008) has submitted the project report titled **GetFit App** under the mentorship of **Dr. Bhagat Singh Raghuwanshi**, in partial fulfilment of the requirement for the award of degree of Bachelor of Technology in **Artificial Intelligence & Robotics** from Madhav Institute of Technology and Science, Gwalior.

23/11/2023

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23/11/23

Dr. R. R. Singh
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DECLARATION

I hereby declare that the work being presented in this project report, for the partial fulfilment of requirement for the award of the degree of Bachelor of Technology in **Artificial Intelligence & Robotics** at Madhav Institute of Technology & Science, Gwalior is an authenticated and original record of my work under the mentorship of **Dr. Bhagat Singh Raghuwanshi, Assistant Professor,** Centre for Artificial Intelligence.

I declare that I have not submitted the matter embodied in this report for the award of any degree or diploma anywhere else.

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ABSTRACT

GetFit is a revolutionary fitness app designed to elevate your workout experience by harnessing the power of Google's free ML toolkit. This innovative application focuses on providing real-time feedback on body posture during exercises, ensuring users perform each movement with precision and effectiveness.

GetFit Coach is not just a workout app; it's your personal fitness companion. Whether you're a beginner or a seasoned fitness enthusiast, GetFit Coach ensures that every rep counts and every movement is executed with precision, helping you achieve your fitness goals faster and safer. Elevate your workout experience with GetFit Coach – where technology meets fitness excellence.

Keyword: Fitness app, Body posture recognition, Real-time feedback, Workout companion, Exercise precision, Personalized workouts, Performance tracking, User-friendly interface, Google ML toolkit, Fitness goals, Progress monitoring, Workout history, Achievement tracking

सार:

यह वर्कआउट एप्लिकेशन एक सुविधाजनक और उपयोगी परियोजना है जिसमें गूगल के मुफ्त एमएल टूलकिट का उपयोग करके योग्य व्यायाम की सही शारीरिक स्थिति प्राप्त करने का प्रयास किया गया है। इस ऐप के माध्यम से यूजर को उनके क्षमता के अनुसार पुशअप्स और स्क्वॉट्स की गिनती करने का अवसर मिलता है, जिसे एक डेटाबेस में संग्रहित किया जाता है। इसके आंकड़े को विस्तृत रूप से ऐप में देखा जा सकता है। हमने इस परियोजना में मशीन लर्निंग का उपयोग किया है ताकि योग्यता और स्थिति की सही पहचान की जा सके। इस ऐप का नाम 'वर्कआउट गुरु' है, जो सही तकनीक के साथ व्यायाम करने में योग्यता प्राप्त करने वाले यूजर्स के लिए एक साथी के रूप में कार्य करता है।

हमारा वर्कआउट एप्लिकेशन एक नवाचारी और उपयोगी परियोजना है जो गूगल के मुफ्त एमएल टूलकिट का उपयोग करके व्यायामों के लिए सही शारीरिक स्थिति प्राप्त करने का लक्ष्य रखता है। यह ऐप फोन के कैमरे का उपयोग करके पुशअप और/या स्क्वॉट्स की गिनती करने के लिए है और गिनती डेटा को एक डेटाबेस में सहेजता है। इस ऐप में गिनती का विवरण विस्तार से देखा जा सकता है। हमने इस परियोजना में मशीन लर्निंग को समर्पित किया है जो उपयोगकर्ता को उचित गति और स्थिति की प्राप्ति में मदद करता है। इस एप्लिकेशन का नाम 'वर्कआउट गुरु' है, जो योग्य शारीरिक स्थिति में व्यायाम करने में उपयोगकर्ताओं को मार्गदर्शन करता है और स्वास्थ्य और कल्याण की दिशा में एक साथी के रूप में कार्य करता है।

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1.1 Introduction

In an era where health and well-being take center stage, harnessing the power of technology becomes paramount in promoting fitness and proper exercise routines. This introduction unveils an innovative workout app seamlessly integrated with Machine Learning (ML), poised to revolutionize the way individuals approach their fitness journeys.

Title: GetFit

1.1.1 Background

As our lives become increasingly intertwined with digital solutions, the realm of fitness is no exception. The amalgamation of health-conscious lifestyles and technological advancements has paved the way for a paradigm shift in how we perceive and engage with exercise. Recognizing this shift, our workout app emerges as a cutting-edge tool to address the evolving needs of fitness enthusiasts.

1.2 Objectives and Scope

1.2.1 Objectives of the App

The primary objectives of our app extend beyond conventional fitness applications. Beyond calorie counts and step tracking, our app aims to foster a deeper connection between users and their workout routines. With ML at its core, the app endeavors to be a virtual fitness companion, guiding users towards optimal exercise form.

1.2.2 Scope of the App

Delving into the world of exercises, the app focuses on a diverse array of workout routines. From strength training to yoga, its ML capabilities adapt to various exercise forms, ensuring users receive tailored guidance. Designed for users across different fitness levels, the app caters to beginners and seasoned fitness enthusiasts alike.

1.3 Project Features

The app, which makes use of Google's ML toolkit, transforms workouts by providing real-time body posture analysis. It personalizes workout plans, monitors progress, and ensures precise exercises with immediate feedback. The virtual trainer, community features, and wearable integration improve the user experience, making fitness more engaging and effective.

1.4 Feasibility

This workout app's viability is demonstrated by its use of Google's free ML toolkit, which ensures accurate body posture analysis. The app's compatibility and the widespread availability of smartphones contribute to its feasibility, making it accessible to users seeking personalized and effective fitness experiences.

1.5 System Requirement

- Android version 6.0 or higher
- Camera
- Storage permissions

Chapter 2: Literature Review

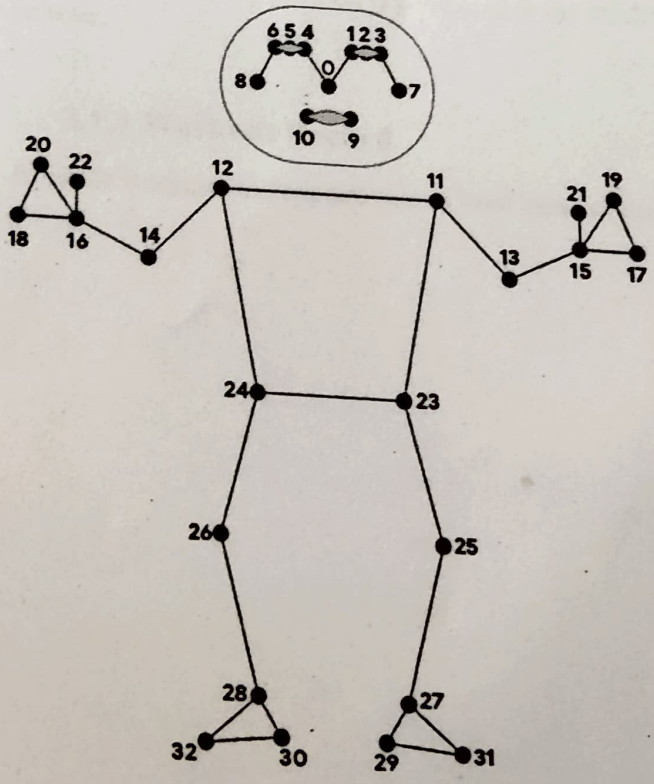
2.1 Working of Our app

2.1.1 Google's ML KIT

Google ML Kit is a mobile SDK (Software Development Kit) that enables developers to incorporate machine learning capabilities into their Android and iOS apps. ML Kit is a collection of pre-trained machine learning models and APIs that allow developers to add features like text recognition, image labeling, pose detection, face detection, barcode scanning, language translation, and more to their mobile apps without having to learn machine learning from scratch.

ML Kit Pose Detection produces a full-body 33 point skeletal match that includes facial landmarks (ears, eyes, mouth, and nose) and points on the hands and feet.

For each landmark, a measure that indicates the probability that the landmark is within the image frame. The score has a range of 0.0 to 1.0, where 1.0 indicates high confidence.



Landmarks

0. Nose
1. Left_eye_inner
2. Left_eye
3. Left_eye_outer
4. Right_eye_inner
5. Right_eye
6. Right_eye_outer
7. Left_ear
8. Right_ear
9. Left_mouth
10. Right_mouth
11. Left_shoulder
12. Right_shoulder
13. Left_elbow
14. Right_elbow
15. Left_wrist
16. Right_wrist
17. Left_pinky
18. Right_pinky
19. Left_index
20. Right_index
21. Left_thumb
22. Right_thumb
23. Left_hip
24. Right_hip
25. Left_knee
26. Right_knee
27. Left_ankle
28. Right_ankle
29. Left_heel
30. Right_heel
31. Left_foot_index
32. Right_foot_index

Fig. 2.1 ML Kit (body tracking) [a]

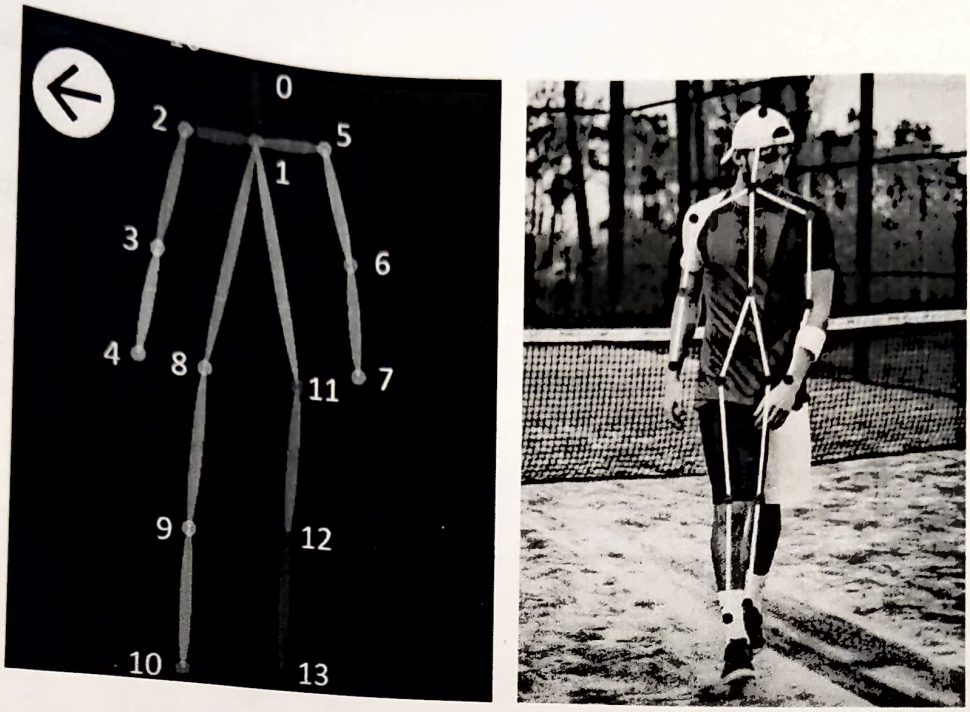


Fig. 2.2 ML Kit (body tracking) [b]

2.1.2 Pose Comparison

When the user's body position is compared to the predefined workout posture, the app increases the repetition counter.

2.1.3 Workout Record

After the workout, the app provides a brief summary of your workout.

Chapter 3: Preliminary design

3.1 Design

A for a visual representation of the preliminary design Block-Diagram which includes:

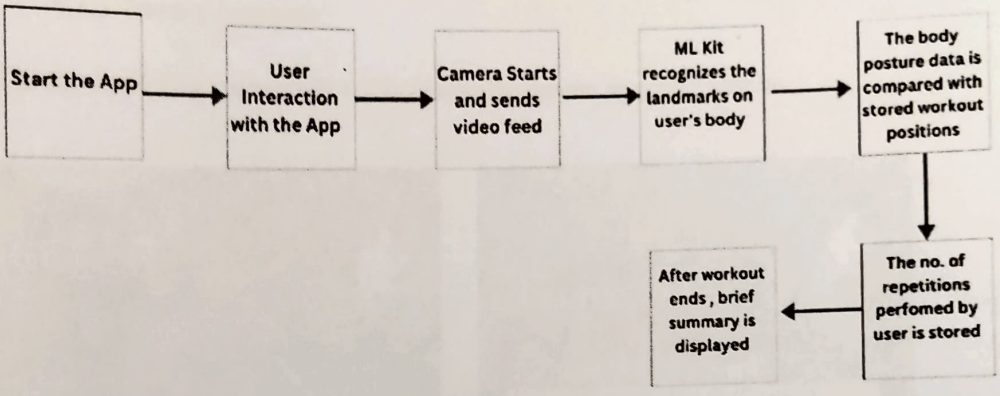


Fig. 3.1 Block-Diagram

3.2 Technology stack used:

1. Android Studio
2. Google ML kit
3. CameraX API
4. Jetpack Compose
5. Figma

Chapter 4: Final Analysis and Design

4.1 Results

4.1.1 Result Analysis

The app is working successfully and increasing the counter on correct posture.

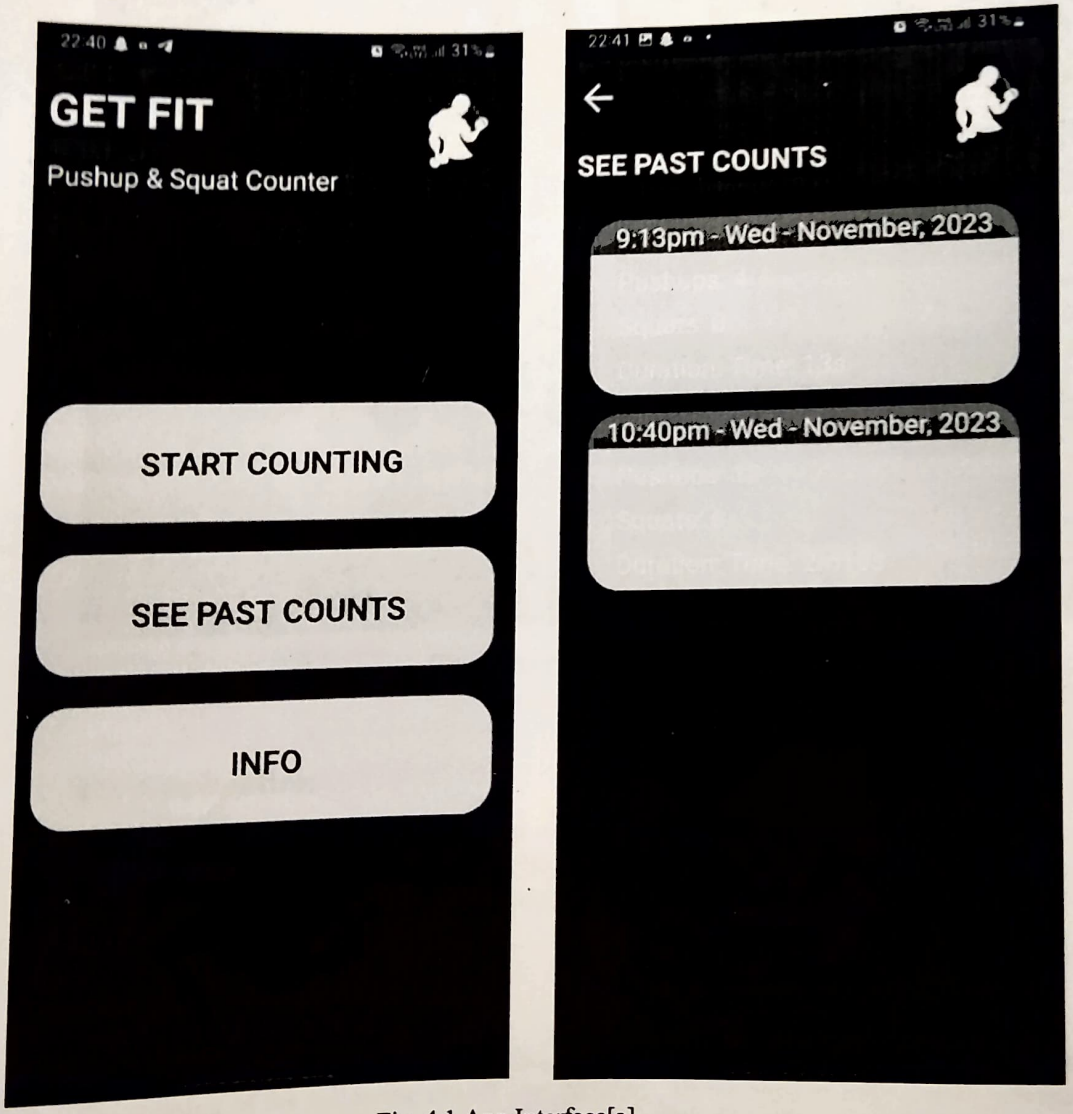


Fig. 4.1 App Interface[a]

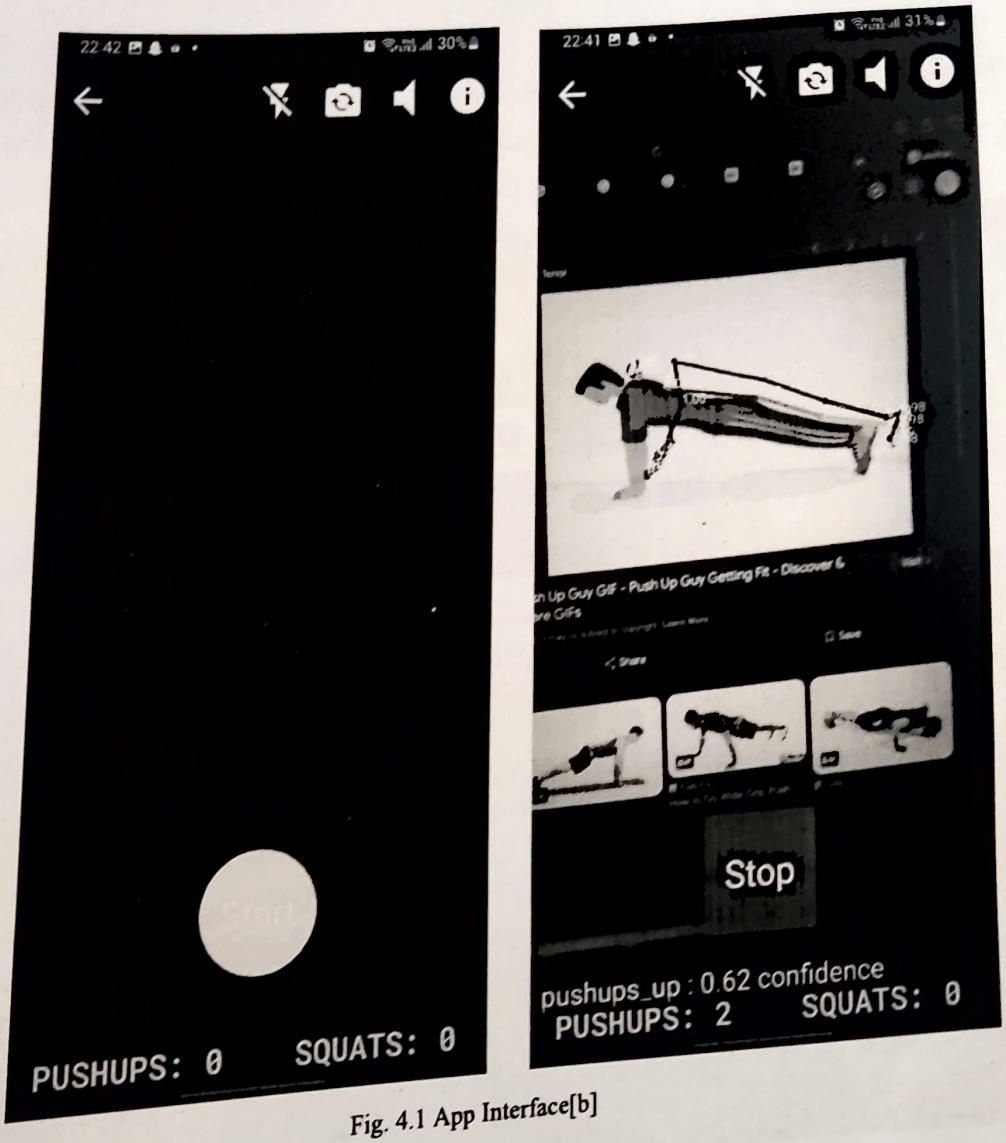


Fig. 4.1 App Interface[b]

4.3 Application

- The app assists you in improving your workout posture and reducing your risk of injury.
- It makes it simple and convenient for beginners to learn workout forms.
- The app allows you to keep track of your workouts.

4.4 Problems faced

- We needed a powerful computer for this , and because of this our work flow was slow.
- The training of the following model was difficult , so we have to train it with less images as we trained it manually we made it for limited exercises.
- This ML tool kit was new so proper resources were not available on internet for this.

4.5 Limitations

If we have to make a more accurate model for correct posture then we must have to train it with a very big data set that is not possible with the current resources we have.

There is a lot of competition in the market, see fig 4.2.

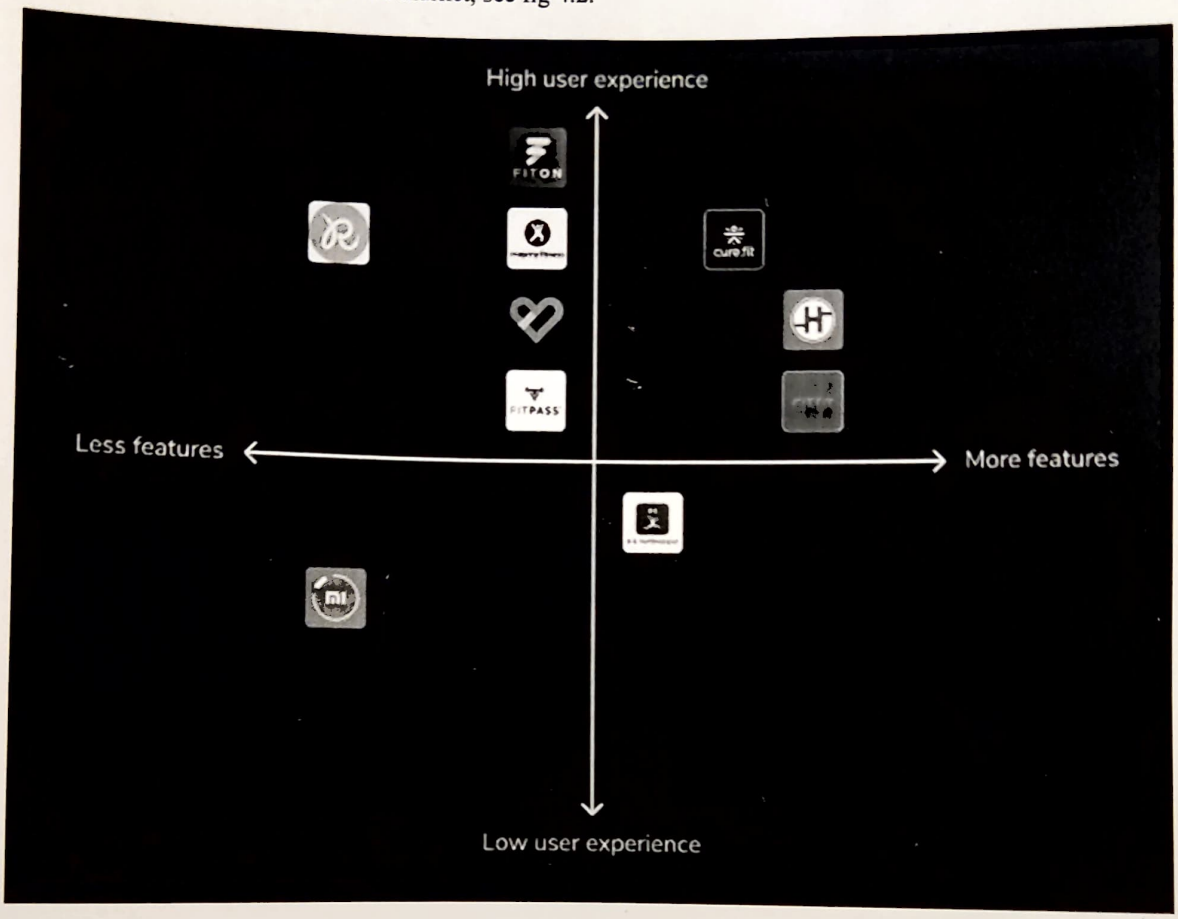


Fig. 4.2 Competition Analysis

4.6 Conclusion

Finally, the workout app with ML represents a significant advancement in fitness technology. It uses machine learning to provide users with real-time feedback on their exercise postures, improving the effectiveness and safety of their workouts. The app demonstrates the potential of technology in revolutionizing fitness routines by overcoming challenges such as data quality, model training, and real-time processing. This app is a testament to the fusion of cutting-edge technology with health and wellness because it encourages a more personalized and informed approach to exercise. The app's continuous improvement and refinement will most likely shape the future of fitness applications, promoting healthier lifestyles around the world.

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