trAIner

virtual personal fitness assistant

Karthick T.
Infas I.M
Jathurshan P.
Gowreeshan S.
Aasath A.F.
Arsath M.M.

PRODUCT INTRO

A mobile virutal personal fitness trainer application to virtually assist users to maintain correct posture during exercises using cutting edge technology and keep them motivated and maintain a well maintained physique in this pandemic situation and thereafter for transforming more fitter person.

PROBLEM

Reasons for developing this app

Pandemic

1 Gyms and public places are closed

2 Obese population

Wrong postures and body alignment

3 Injury risk
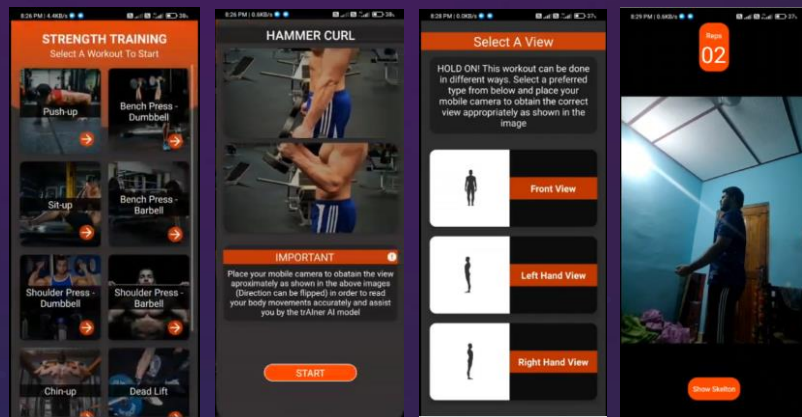
4 Need of a trainer

SOLUTION

OUR APP !

- A virtual personal fitness trainer application

- Notify users regularly and keep them motivated

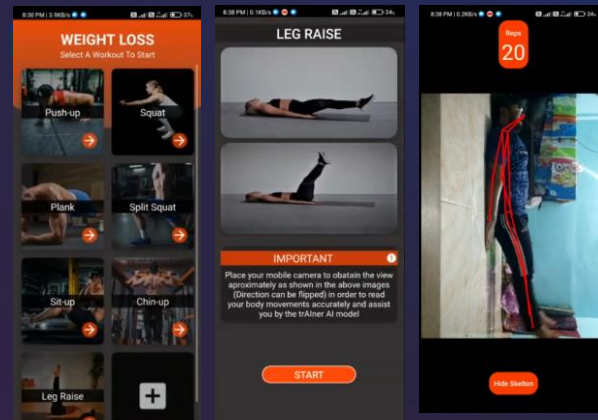- Alert the user when they are doing exercise incorrectly

- Games to get fit leisurely

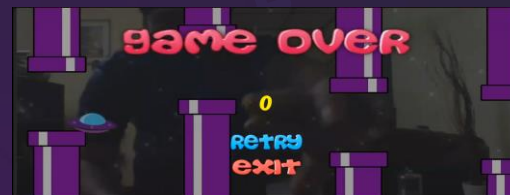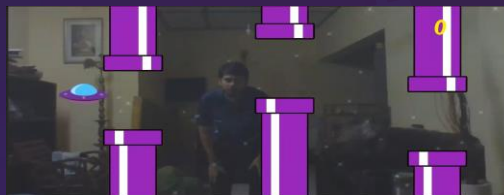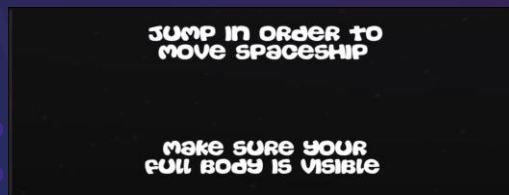- Challenges and rewards

APPLICATION FEATURES
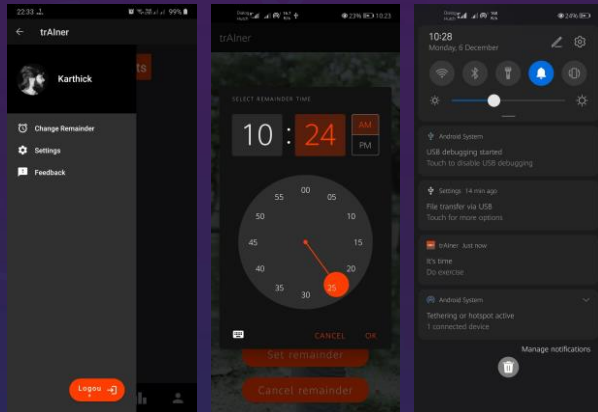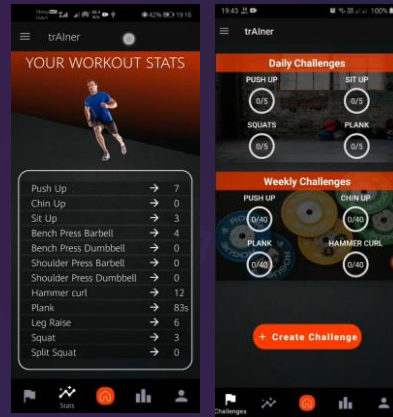
Strength

Weight Loss

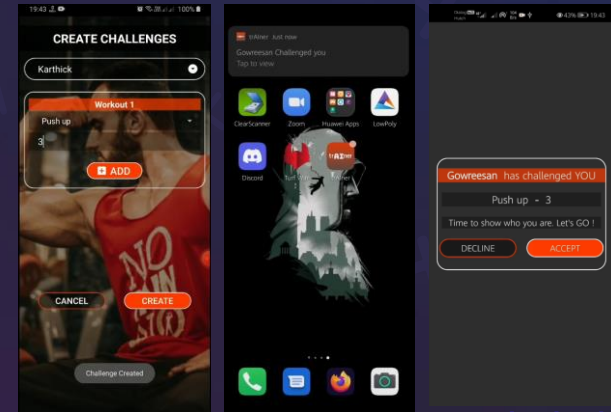Mini game

APPLICATION FEATURES

Daily remainder

Display stats and static challenges

User created challenge

TECH STACK

BACK-END

FIREBASE
Cloud Firestore
Authentication
Cloud function - Ts
>Flexible and Scalable
>Offline support

NATIVE ANDROID DEVELOPMENT

Android Studio - Kotlin
Figma - UI
>High performance

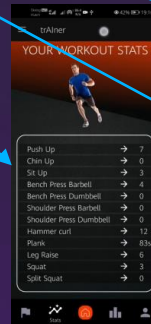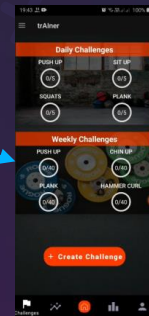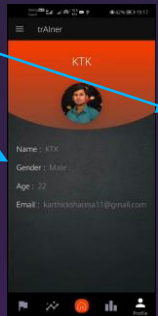### POSE ESTIMATION

Tensorflow
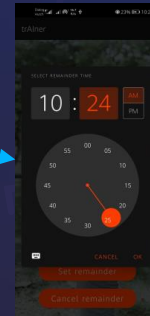OpenCV
Python
+ -> Google colab
>Open source and Community support

GAME

Unity – C#

DEMO
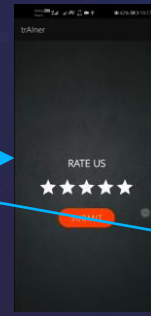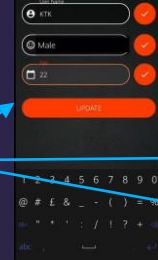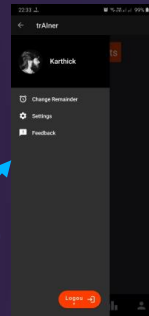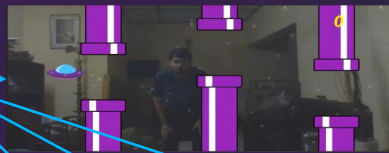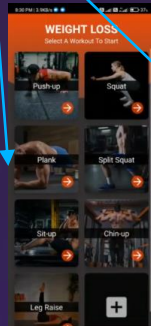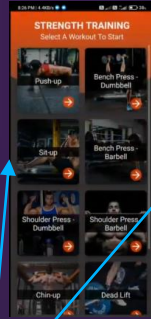
KEY CHALLENGES

01 Hard to find occluded parts

Model prediction on hidden body part is poor

02 Alarm Receiver not works

Receiver not works all time, even if it works it doesn't notify on exact time

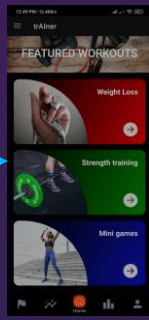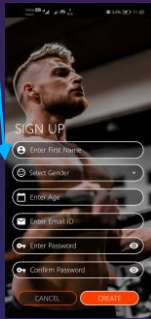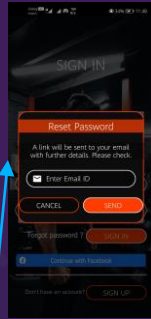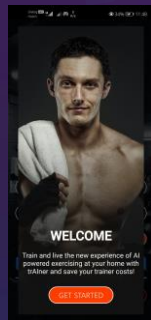## 03 Google Colab

Interrupts in middle of training and cannot access resources sometimes

04 Not good with complex poses

And also not predicting well in fast paced situation

05 Android NN API < CPU ?

NN API accelerators performance is worse than CPU on NN API supported devices (> Android 8.1)

CONCLUSION

Eventhough we couldn't implement user created exercises, atleast we ended up with a working solution for the main problem, which is doing exercises wrongly.

REFERENCES

- **Bottom-Up Human Pose Estimation by Ranking Heatmap-Guided Adaptive Keypoint Estimates -** https://arxiv.org/abs/2006.15480

- **Feature Pyramid Network for Object Detection -** https://arxiv.org/abs/1612.03144

- **Open pose -** https://github.com/CMU-Perceptual-Computing-Lab/openpose

THANKS!

Any questions?