Virtual Yoga Trainer

CMPE 272 | Group 3

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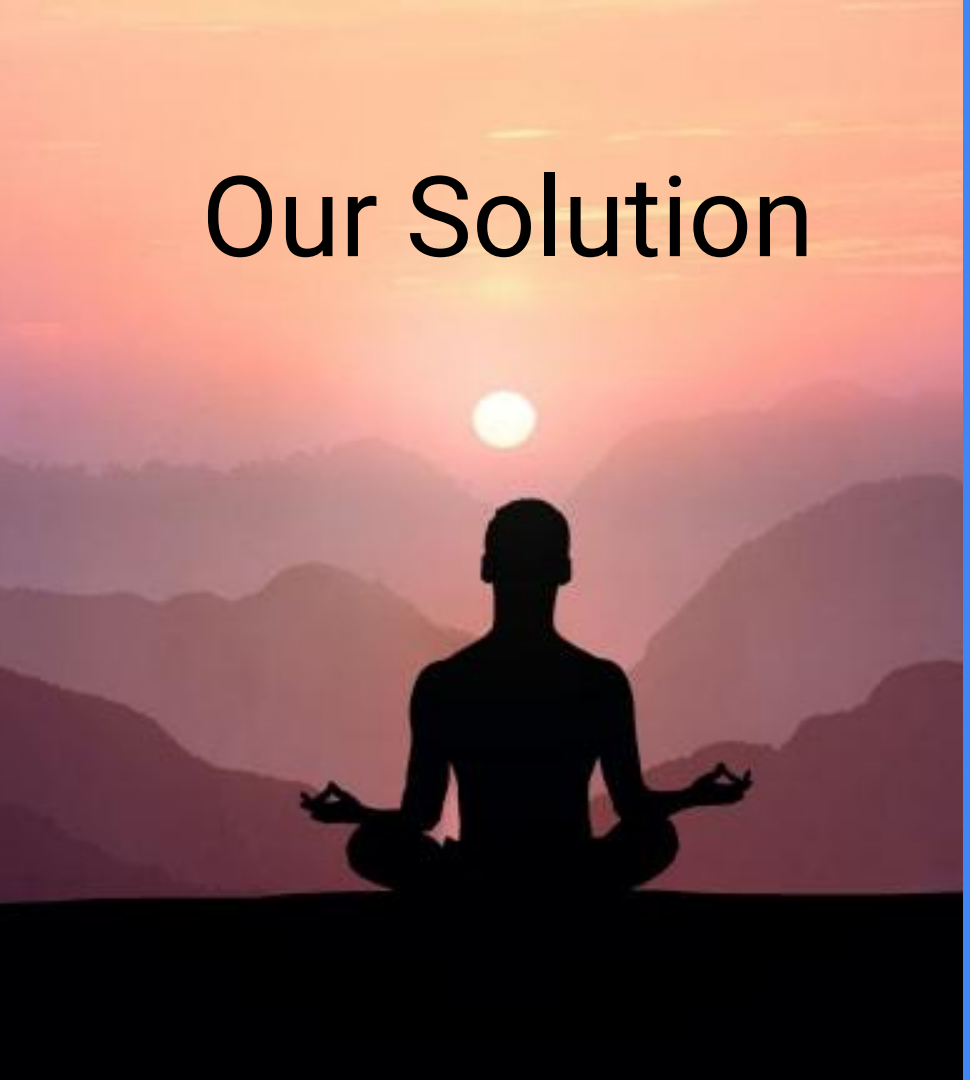
The Problem

1. Obesity in Millennial Generation and need for fitness in elder generation.
2. Quality Yoga training is expensive and not easily accessible on demand.
3. Inaccurate Yoga workout may lead to injuries.
4. Accessibility of Yoga Trainings.

Our Solution

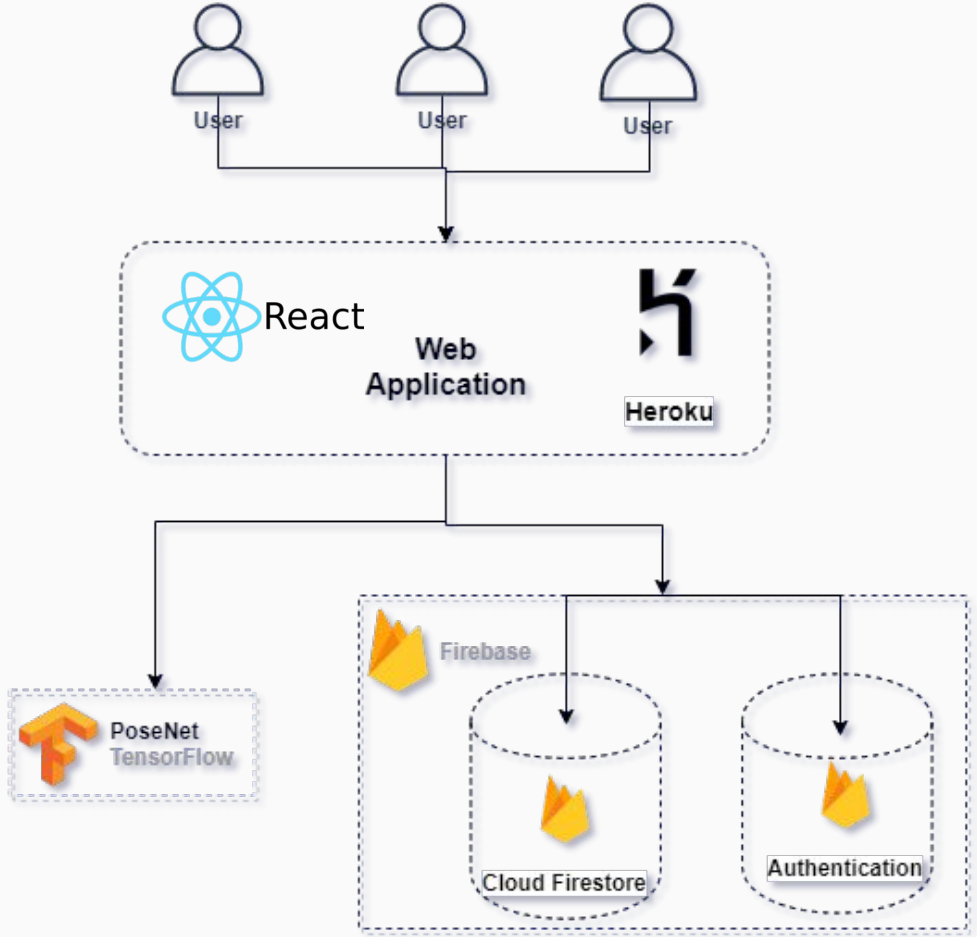


1. Virtual Yoga trainer web App uses front camera of the device to detect and correct Yoga poses with PoseNet API.
2. Inexpensive and available to anyone interested in Learning or practicing yoga.
3. Automatically tracks and displays user’s progress.
4. Provides information about a variety of yoga poses.

Architecture Diagram

Technology stack

- JavaScript
- React.js
- Firebase
- Tensorflow.js
- Heroku



Demo

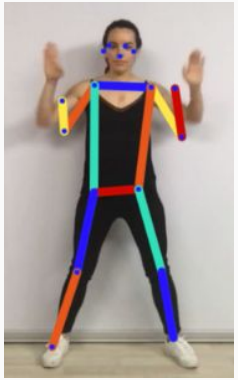
Hosted Application

Weighted Cosine Distance for Pose Tracking

What is COCO?

COCO is a large-scale object detection, segmentation, and captioning dataset. COCO has several features:

- Object segmentation
- Recognition in context
- Superpixel stuff segmentation
- 330K images (>200K labeled)
- 1.5 million object instances
- 80 object categories
- 91 stuff categories
- 5 captions per image
- 250,000 people with keypoints




```
"keypoints": [
{
      "score": 0.9114565849304199,
      "part": "leftAnkle",
      "position" : { "x": 233.76255302955937, "y": 326.54484230260744
}
```


$$D(Fxy, Gxy) = \sqrt{2 * (1 - cosineSimilarity(Fxy, Gxy))}$$

Future Scope

1. Provide customised workout sessions for a user.
2. Diverse workouts targeted to achieve user specific requirements.
3. Plan to extend it to mobile application.
4. Integration with hardware like Smartwatches for fitness tracking.