YOGA POSTURE DETECTION APPLICATION SUMMARY

Pose estimation is a machine learning task that estimates the pose of a person from an image or a video by estimating the spatial locations of specific body parts (keypoints).

It was aimed for a raspberry pi device with a webcam. After further exploration, we decided to make it a web application which would be cross-platform. We have created a full-fledged web application so no external interfacing was required.

There is no need to attach additional sensors as the live recording of the person would be carried out by the webcam on the laptop itself.

Build flow steps:

1) Dataset collection and augmentation
2) Training and testing the ML model
3) Front-end of the application

The Dataset was simply collected from free image websites on the internet.

We have used MoveNet as the pose estimation model that can detect 17 key points on the body. It can run in real-time on most devices including smartphones.

The steps after this were as followed:

- ➔ Imported movenet.py- for pose estimation model. (https://blog.tensorflow.org)
- ➔ Preprocessing.py - generated .csv file from dataset.
- ➔ Training.py - trained the ML model and created model.json. This was uploaded on Cloud so to avoid running a separate backend server.
- ➔ The following dataset was used for the training of the ML model.
- ➔ Finally, the frontend of the application was fully developed using React.js.