"YOGA WITH AI"

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Abstract - Yoga plays a vital importing lucky person mentally and physically fit with the help of yoga both can be done. Not only help us to stay fit mentally but also physically spiritual exercises can help us to cure some diseases 100%. yoga is consisted of different asana that is posture. each postures have its own benefit significance.

Key Words: **Artificial intelligence,Yoga, Human Pose Estimation ,Yoga Pose Classification**

1. INTRODUCTION

In This project we used human pose estimation and deep learning in order to train our model estimation of human poses can be classified into two types-

1) discriminative = first one is discriminative in this estimation of human pose with the help of image (static and stable objects)

Deep learning overview - a vital aspect in deep learning is built on artificial neural network. Start to end architecture is provided by deep learning for reading some key information from the given data set (image videos etc.). Different techniques and methods for identifying those human poses

2) generative= it contains posters which include moving objects (moving up and down or side wise)

Index Terms—Human pose estimation, yoga, OpenPose, ma- chine learning, deep learning.

1.1 up -down method

A)   Up -down method- it is the most commonly used method basically it has the feature of breaking the main task into smaller and multiple parts of the given task. those smaller parts include identifying the pose that is the object analyzing the pose.

It has three basic principles

1) human candidate detector

2) analyzing human candidates

3) tracking the human poses

Primary motive is to identify the human (candidate) letter it starts tracking the human pose some researchers have given precision of 69.4 % of pose estimation and 68.9% for post tracking hence there is a chance of improvement always.

1.2 bottom-up method

A)   Bottom-up method- in this web only focus on the key points in the human body that is the subject and then we organize it into several data mechanism it primarily focuses on the numbers of subjects in the image all the important features are taken from the data (image)

2. REVIEW OF LITERATURE

2.1 PoseNet -is another deep learning framework similar to OpenPose which is used for identification of human poses in images or video sequences by identifying joint locations in a human body. These joint locations or keypoints are indexed by

"Part ID" which is a confidence score whose value lies in the range of 0.0 and 1.0 with 1.0 being the greatest. The PoseNet model's performance varies depending on the device and output stride [14]. The PoseNet model is invariant to the size of the image, thus it can predict pose positions in the scale of the actual image irrespective of whether the image has been downscaled.

In PoseNet, the SoftMax layer is replaced by a sequence of fully connected layers. A high-level architecture of PoseNet is shown in Fig. 1 The first component in the architecture is an encoder which is responsible for generating the encoding vector v, a 1024-dimensional vector that is an encoded representation of the features of the input image. The second component is the localizer which generates vector u which denotes localization features. The last component is a regressor which consists of two connected layers that are used to regress the final pose.

2.2 OpenPose: It was created in Carnegie melon university. The standard feature of openpose is that there is multiple purpose , multi person, real-time detection programs which has changed the entire world of pose detection. It is inclusive of ears, eyes, neck, nose, elbows, shoulders knees, wrist, ankle , hips etc. key points.

It is widely used in sports surveillance, pose detection , activity detection, health yoga, and pose identification.
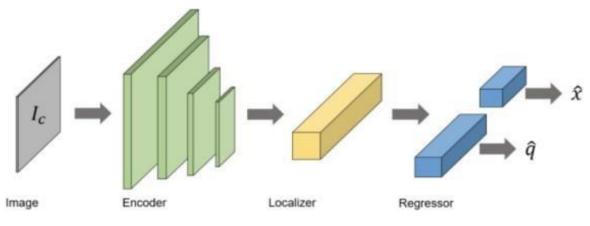
Fig.1 image processing diagram

Detecting the key points of every human in the given photo/ video/ data is the primary step of openpose. features are extracted from the image using some of the layers. There are some others stages such as refinement making analyzing the key points .

2.3 Methodology - Sugar which model can be done with the help of deep learning, training your model finding the key points in the human joint which is displayed in the input (photo/ video) the help of open pose.

Model must have features like extracting CNN data (convolution neural network), LSTM (long short - term memory). To perform the given task more efficiently where the poses are the postures of yoga are performed in real time.

The appraisal of the model will be done by the people classification schools will be given by the people when the user will start performing yoga the system model will start
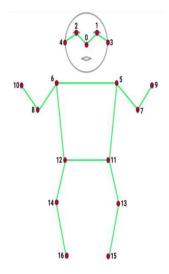
identifying the posture.

1) Classification score = number of correct predictions/ total number of predictions made

It showcases that the accuracy of the trained model and the task perform by the model

data set - the data set used for this project was available publicly and it was a part of PoseNet kaggle collection. It is consisted of photos videos of the poses performed by the user all the videos were recorded in Indore premises all the users perform those poses in different ways which help us to collect the data more efficiently and differently. Bhujangasan (cobra pose), padmasana (lotus pose), shavasana (corpses pose), tadasana (mountain pose) these are the poses we used the average length of all the videos is about 45 to 60 seconds.

3.Data processing- The primary function is analyzing and detecting the key points from the given input pauses from a video frame or from the photos using PoseNet. It can be done

in two ways when the user is performing live can extract those key points from the webcam when it is a pre-recorded video it can extract from the video played the data is stored in JSON format on on each frame the model collects the key points that is the data using open pores these data include location of different body parts in the played video on the data collected from the webcam.

Key Points Identified by PoseNet:

Advantages – • Improve Health

• Save Time

• Save Money (U don't need to hire instructor)

Disadvantages – • Limited Number of Pose

• Can't use without internet and webcam

Future work –

The proposed models currently classify   only 3 yoga asanas. There are a number of yoga asanas, and hence creating a pose estimation model that can be successful for all the asanas is a challenging problem. The dataset

3. CONCLUSIONS

Estimation of human pose is a topic which is very much pursued by the researchers over the years. Human pose identification or estimation is a different kind of problem as compared to the other problems of computer applications. It is used in preventing injuries, improving injuries, in gym, fitness, sports, yoga, improving someone's posters or their exercises. Yoga is an ancient Indian practice it can change our lifestyles it can make us healthy if we do it properly and perfectly. Deep learning methods are widely used in this field

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