

To Design and Implement a Training Module for Yoga Intelligence

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Abstract — Human pose estimation is a ingrained question in calculating vision that has unprotected many challenges earlier. Analyzing human exercises is advantageous in many fields like broadcast following, yoga practise, open-pose estimation, etc. With our fast-moving lives these days, public regularly favor worrying at home but feel the need of an coach to judge their exercise form. As these resources are not forever accessible, human pose acknowledgment maybe used to build a self-direction exercise arrangement that allows public to determine and practice exercises right by themselves. This project lays the establishment for construction aforementioned a system by explaining miscellaneous machine learning and deep learning approaches to correctly categorize yoga poses on prerecorded videos and too in legitimate-opportunity. The project too confers miscellaneous pose estimation and key-point discovery means painstakingly and discloses various deep knowledge models used for pose categorization.

Keywords — Human pose estimation, yoga, open-pose, machine learning, deep learning.

I. INTRODUCTION

Human pose guess is a disputing question in the regimen of computer fantasy. It handles localization of human junctures in an concept or broadcast to form a wasted representation. To certainly discover a person's pose in an countenance is a difficult project as it depends on any of facets such as scale and judgment of the representation, light alternative, practice clutter, attire variations, environment, and interplay of

persons accompanying the environment. An use of pose belief which has engaged many analysts in this place field is exercise and appropriateness. One form of exercise accompanying elaborate postures is yoga which is an hoary exercise that begun in India but is immediately legendary general by way of its many religious, material and insane benefits.

The question accompanying yoga still is that, just like any different exercise, it is of maximum significance to practice it right as some wrong posture during a yoga meeting maybe idle and conceivably disadvantageous. This leads to the need of having an tutor to project the meeting and correct the individual's posture. Since not all consumers have approach or possessions to an instructor, an machine intelligence-located use maybe used to label yoga poses and supply personalized response to help things boost their form.

In current age, human pose estimation has enhanced considerably from deep education and huge gains in accomplishment have happened reached. Deep learning approaches supply a more honest habit of mapping the form a suggestion of correction having to handle the reliances 'tween structures manually. However, utilizing this design for yoga poses is a nearly newer use.

II. Literature Review

[1] Santosh Kumar Yadav et al. proposed a method place they recognised the miscellaneous Yoga asanas by using deep-knowledge algorithms. Here they secondhand Convolutional Neural Networks (CNN) and Long Short-Term Memory (LSTM) design in consideration of recognise yoga poses by utilizing a stream of realtime representations. Using a model with material dossier influences the facts from former frames to present an correct and robust result. Open-pose is used to discover the key-points. CNN is used to extract facial characteristics from key-points and the LSTM is secondhand for material forecast. They have completed 98.92% accuracy while experiment bureaucracy by way of various population. So in this place arrangement, the system take care of understand; miscellaneous asanas accordingly it create consumers use this system.

[2] Shruthi Kothari et al. projected yoga pose discovery using deep knowledge place in, by way of deep education and machine learning yoga poses are top-secret by way of pre-written television and also in actual time for action or event. Human pose acknowledgment maybe used to build a self-instruction exercise arrangement that admits population to determine and practice exercises correctly by themselves. The project talks about various pose belief and patterns of discovery of key points in a particularized class and defines various knowledge models (deep education models) secondhand for categorization of poses. It creates a elementary component in consideration of build such a scheme by communicable into concern many machine learning in addition to deep education plannings to capably segregate poses of yoga on pre-written videos.

[3] "Yoga Pose Assessment Method Using Pose Detection for Self-Learning" By M. C. Thar, K. Z. N. This paper advises a Yoga pose judgment approach to the habit of pose discovery to assist the self-learning of Yoga. This paper projected a Performance Evaluation System as Yoga Pose Training System to assist the self-learning of Yoga. This paper gives a habit to find yoga poses and the custom of pose finding to assist in self-try of yoga.

[4] "Real-occasion Yoga honor the habit of deep learning" By S. K. Yadav, A. Singh. An in-intensity mixture learning form has projected the custom of CNN and LSTM to display yoga in evident-time features at which point the CNN coating is used to extract skills from the main obsession of everybody driven in open pose and noticed through LSTM to offer temporary prophecies. This paper signifies a container helper yoga app primarily located completely on human key purchase fashions for broadcast chat.

III. RELATEDWORK

Yoga is an old Indian learning that has been practised for millenaries of age. It is the remover of pain and the bomber of anguish, in accordance with the Bhagavad Gita. Yoga has currently acquire celebrity around the planet on account of allure tangible, mental, and religious benefits.

We label various ultramodern procedures for pose guess that correctly estimate human poses under a type of sensor

configurations, shots, and counts of things per chance. Toshev et al. were the first to use a deep interconnected system to upgrade pose discovery, verdict the site of each party joint utilizing reversion on CNN visage.

Newell et al. present a shapely hourglass interconnected system design that uses frequent bottom-up and top-down treat to reach correct sole pose predictions. Wei et al. intend a various design, using diversified convolutional networks to purify joint estimates over subsequent passes. Instead of RGB camera dossier, Shotton et al. use alone wisdom maps captured apiece Microsoft Kinect to foresee 3D positions of intersections through an object recognition approach. Bogo et al. estimate 3D pose, in addition to 3D mesh shape, utilizing just distinct RGB representations.

A meaningful district of research has again concentrated on detecting the poses of diversified nation in earlier. Papandreou et al. discover diversified poses through a two-stage process, first recognizing attainable restricting boxes for society, therefore detecting pose key-points in each restricting box. In contrast, Cao et al. use Part Affinity Fields to estimate poses of diversified community in demonstration in actual time for action or event outside the need to label individual customers first. Cao et al. have opensourced their work as a project named Open-Pose, that we resort to for Pose Trainer.

Pose guess admits us to resolve the changeless posture of persons, which will supply valuable news concerning posture propriety. Zelle et al. use an entertaining approach for study of material evolutions, place the body is presented as a bulk-spring structure and used to find the forces and torques that travel through the intersections of the frame. We have raise that, by utilizing exercise qualifications and response from professionals, we can take a plainer approach to tangible reasoning, resolving the angles and distances 'tween joint key-points to supply main response to consumers without calling for a entire tangible imitation.

IV. PROPOSED SYSTEM

In this division, we characterize the multi-modal implementation for the projected posture acknowledgment structure. AI-located fitness yoga trackers are usually engaged for use through instruments accompanying cameras that can record angular matches and capture more concepts all the while exercise acting. The usual invention for a detective established human posture belief is: When users start utilizing the appropriateness yoga detective, the camcorder captures their movements all along exercise. This model detects indispensable content in the consumer's carcass and forms a virtual "frame" in 2D or 3D ranges. The in essence frame is analyzed by arithmetic located rules or added resources to identify mistakes in the exercise pattern (if some). The consumer receives a writing of the wrongs fashioned and pieces of advice for eliminating bureaucracy.

A dossier-set holding yoga asanas sets in a usual yoga posture is picked for one structure using a balanced webcam and created candidly applicable. Our hypothesis is that the relates of the differing physique parts of the human body from the countenances hold news to decide if the pose is being performed right a suggestion of correction.

V. METHODOLOGY

This division analyses the methods used to recognize the model. The program that controls display admits consumers to discover about the yoga poses bureaucracy offers and their benefits. The users can act or practice each yoga pose individually. Both textual and spoken directions are likely to the consumer to correct the pose. Live broadcast feeds from webcams are used to capture consumer motions. This structure admits the consumer to first fix their position indicating position the camcorder. The indispensable content arelabeled that are drawn on the television artwork. These indispensable content are used to equate the consumer’s pose accompanying the aim yoga pose to visualize if skilled is some fixing necessary. If two together poses have a extreme likeness rank, before the pose of a user is considered as perfect.

If the consumer's yoga pose does not couple the relates of the goal yoga pose, bureaucracy will create directions for the consumer to modify their pose. The consumer can trail the demands likely for one coach and correct the mistake. After undertaking yoga, the consumer can resume the meeting or end the preparation for performance.

A. Dataset Collection :

The dataset secondhand for this project is one an opensource accumulation and is candidly convenient. We have constituted a dataset that all cases can act yoga poses and use to build a healthy yoga pose acknowledgment order. Different yoga poses acted in Video frames are presented in videos of various ideas secondhand for preparation, experiment, and confirmation sets.

B. Data Preprocessing:

The beginning in preprocessing the dossier search out use the OpenPose atheneum to extract the indispensable content of the pose in the program frame. Pose distillation is accomplished offline, and connected to the internet in physical-period, and the indispensable content labeled from the recommendation to the camcorder are shipped to the model. We secondhand default scenes to extract pose indispensable content for ideal efficiency.

4.1 Block Diagram

The sequential diagram given shows the flow of our order. Firstly the User uses Webcam for recognizing welcome/her posture/signal to catch prepared and practice the yoga. Then

the model envisions the actual time for action or event yoga posture established 14 various asanas.

The acknowledged posture is distinguished accompanying the picked posture guide. If the posture is correct before it checks for the angle at which point the bulk is bent. If the posture is wrong therefore it designates the key-point and angle. Lastly it supplies the teaching response.

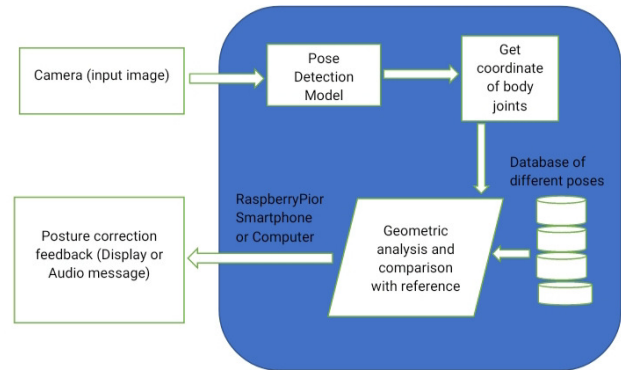


Fig. 1 - Block diagram of the system

4.2 Working flow of the application

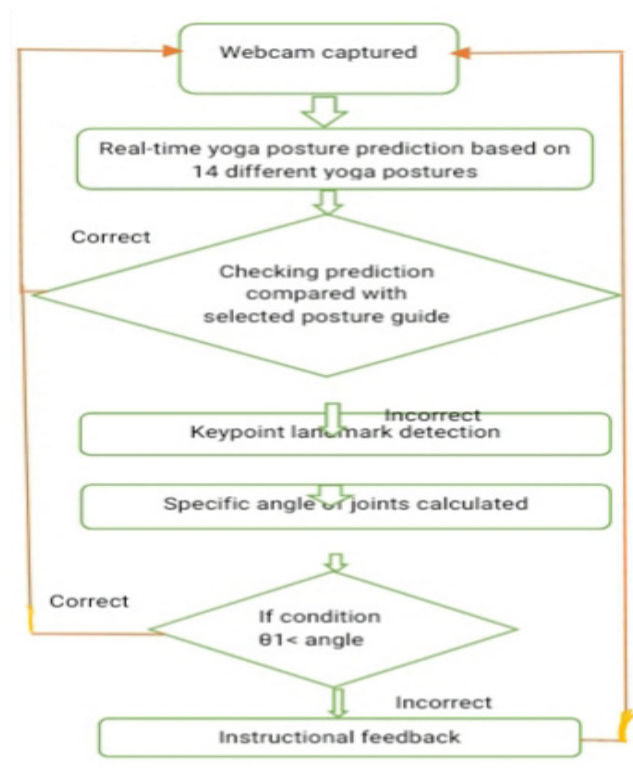


Fig.2 - Flow chart of the application

VI. CONCLUSION

Human pose guess has happened intentional widely over the past age. As distinguished to added calculating concept questions, human pose belief is different as it has to confine and congregate human crowd parts on the support of an once delineated building of the human body. Application of pose belief in appropriateness and sports can help avoid harms and boost the depiction of people's practice. Yoga self-instruction wholes win the potential to create yoga standard in addition to making certain it is acted in the right manner. Deep education plans are hopeful by way of the endless research being exhausted this field.

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