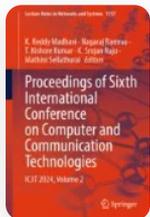


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Investigating Yoga Pose Identification and Categorization Using Random Forest Algorithm

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Abstract

Indian culture has long been connected to the ancient art of yoga. In addition to offering mental tranquility, it aids in improving physical fitness. Yoga is challenging in classrooms now that COVID-19 has been around, and it may be quite harmful if done unsupervised. The goal of the paper is to categorize different yoga positions using a unique design. With little delay, the suggested algorithm estimates and groups yoga postures into five major types. The photos are first skeletonized in the suggested architecture before being incorporated into the model. For body key point identification, the MediaPipe library is used throughout the skeletonization process. In this study, the accuracy of many machine learning models with and without skeletonization is compared. When skeletonized photos were used to train the network, various learning models produced the best results. A comparison is made to demonstrate the beneficial effect of skeletonization on the outcomes produced by different models. Here, we create a method to recognize the many postures that yoga practitioners do. The method uses open-source data that has fifteen volunteers performing six different yoga poses. The first step of the system is to use the media pipeline to extract points of data from the video collection. Posture estimate library. The second stage involves applying machine learning algorithms based on classification to preprocess, train, and evaluate the gathered data. There are several machine learning techniques used, including naïve Bayes classifiers, random forest, logistic regression method, and support vector machine. The accuracy score attained by the proposed system accuracy is 92% with a reduced loss of 0.013. The system is designed to function with static pictures, live videos, and threshold values, meaning that it will reject solutions that fall below a certain threshold.

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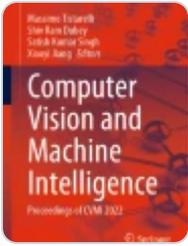
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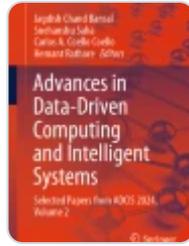
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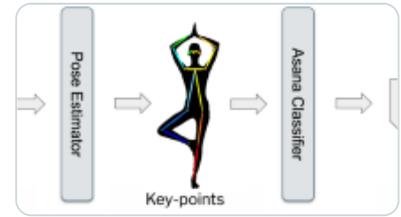
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