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Yoga poses classification by machine learning

Yoga pose estimation is one of the problems in computer vision that has exposed many challenges in the past. In order to analyze human activities a number of techniques are available like video surveillance, biometrics, assisted living, at-home health monitoring etc. Post Covid, the idea about exercise of human beings have been changed and people usually prefer exercising at home but feel the need of an instructor to evaluate their exercise form. It's not possible every time that yoga instructor is available. Therefore there is a need for a self-instruction exercise system which can help to identify/estimate right yoga pose to allow people to learn and practice exercises correctly by themselves.

Initially this project works on 8 poses i.e. it classifies the types of poses by using MLPClassifier (https://scikit-learn.org/stable/modules/generated/sklearn.neural_network.MLPClassifier.htr MLP stands for Multi-layer Perceptron classifier which in the name itself connects to a Neural Network. Unlike other classification algorithms such as Support Vectors or Naive Bayes Classifier, MLPClassifier relies on an underlying Neural Network to perform the task of classification. This project harnesses the capabilities of MVP and used a

Demo's BOT

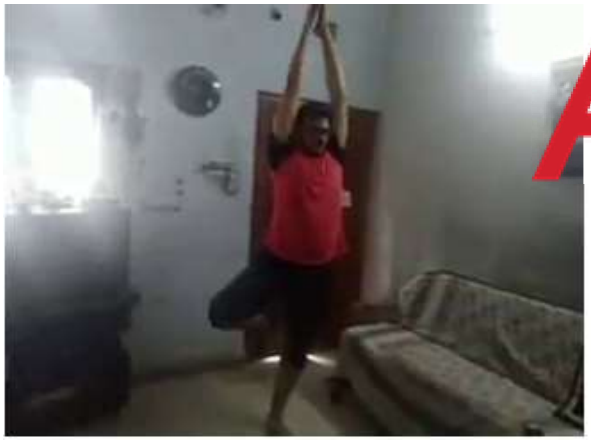
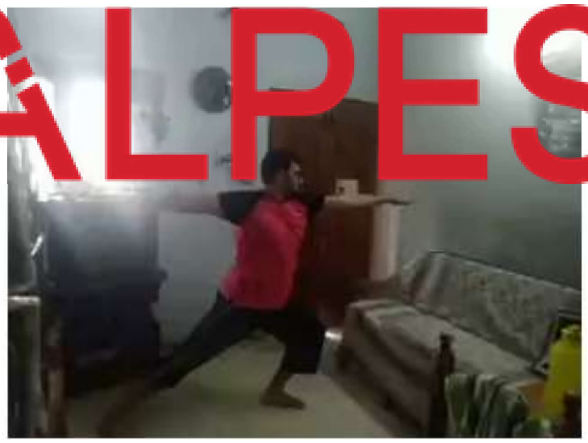
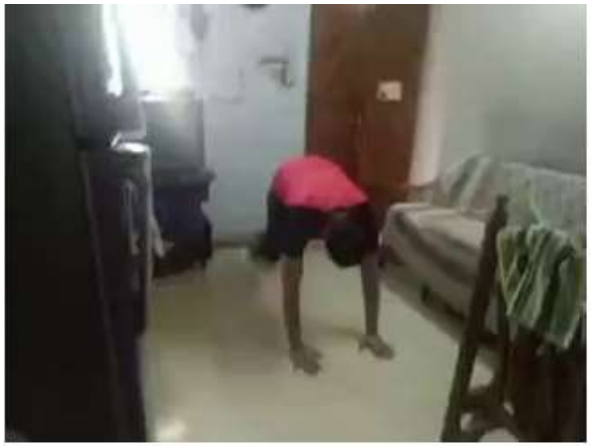
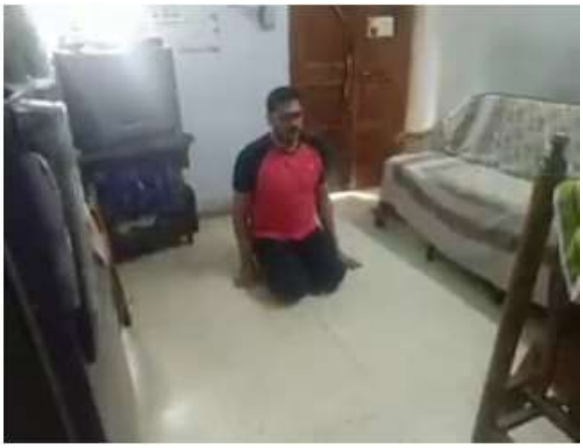
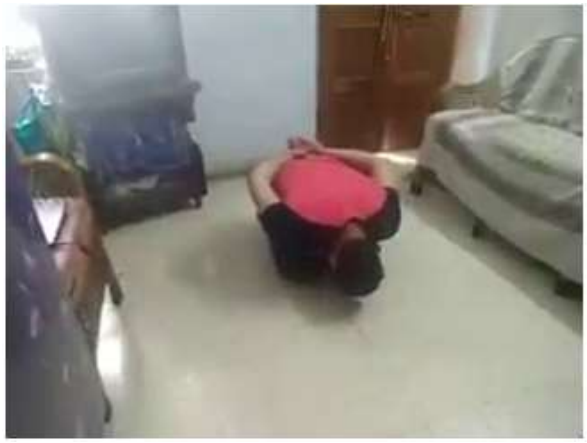
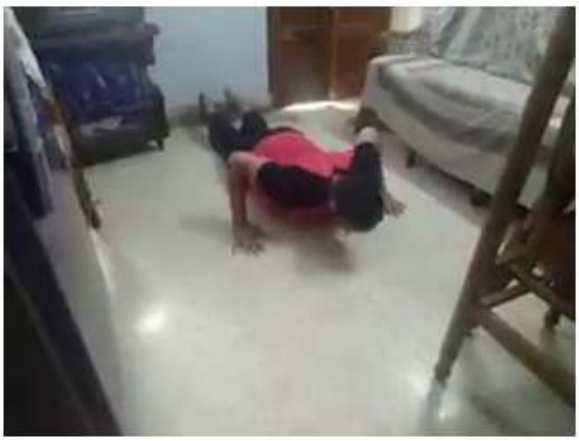
Following are the steps performed in the project to estimates Yoga pose:

These are 18 body points, which represent the human. First when the image is given, we use pose estimation and get the human body (http points(Skeleton) as shown in figure below.

To train 18 points, we used MLP classifier for classification. These training data have the correct poses and MLP classify the correct pose. After that we execute cosine similarity against the correct pose and get the score of it. However if no human body is there it detects as “No Human Body” with a score.

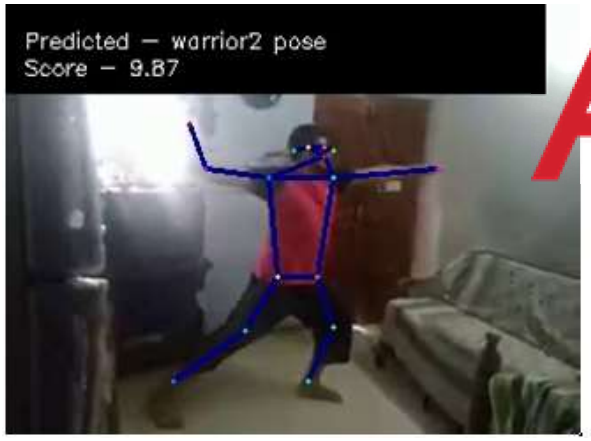
Below we have shown the inputs and outputs obtained by executing the project:

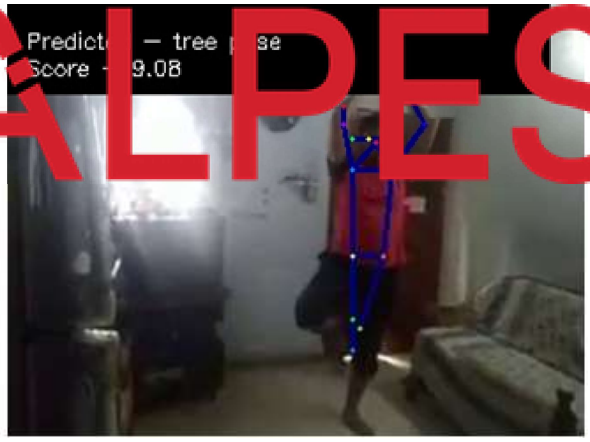
Input: **Demo's BOT**

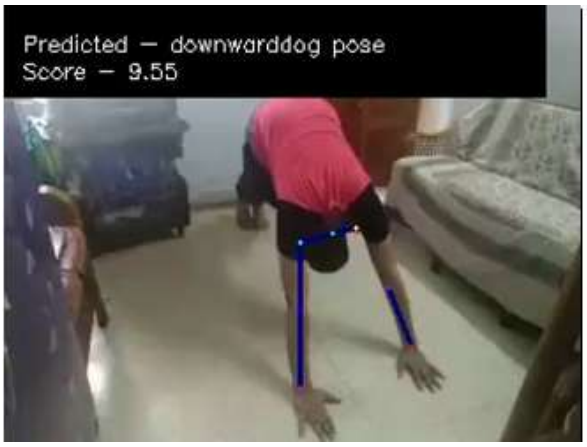







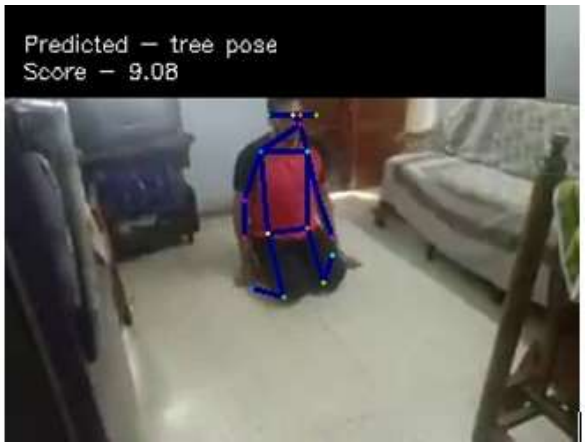
Output:

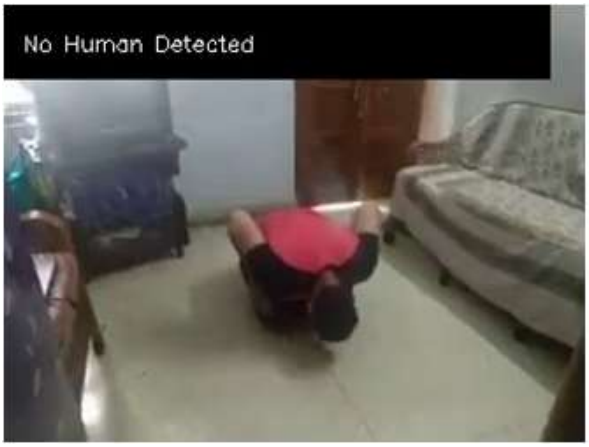
Demo's BOT

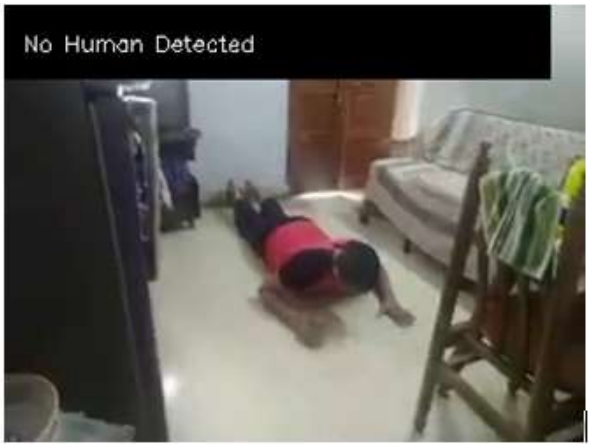












References:

[1]: https://sites.google.com/view/yoga-82/home (https://sites.google.com/view/yoga-82/home)

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