**PYTHON MINI PROJECT FOR CIA-2**

**SPORTS VIDEO CLASSIFICATION**

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**Dataset Descriptions:**

The dataset consists of two main folders – train and validate. The train folder consists of subfolders having large numbers of images each depicting a different kind of sports. We have taken random five sports for classification. Because more the number of sports classes makes the training time slower. The different sports in the dataset are Cricket, Swimming, Basketball, Bungee jumping, Table tennis. The validate folder consists of similar formatted images. There is a folder named validate in out dataset, the images in that folder were used to validate the efficiency of our model and to check if it is predicting correctly. This dataset is the one on which this model trains to detect the sport being played. Here we have stored out dataset in the github repository so that, the access of the dataset becomes easier.

Git hub repository link: https://github.com/Susa-43/Sports\_Classification\_dataset.git

**Techniques used**:

The techniques used are Input Video to Frame Conversion, Skeletonization, Feature Extraction, Classification and Graph Generation from metrics. The Input Video is converted into frames using OpenCV then each frame is processed to analysis using the pose estimation model in Media-pipe. The processed video undergoes skeletonization, there are 33 Pose landmarks in human body, the main focus is on Left elbow ,knee and right elbow, knee which performs the most significant movements in a human body. Here we obtain the angles between slopes from the skeletonized video, these angles are the differences in angles of different slopes. These slopes belong to lines which connects to form the angles .This phase is the main focus of the project where the video is classified to the sport it belongs to. We have used YOLOv5 an existing model, which is trained by our data set. when yolov5 is trained it creates a weight named best.pt in the location runs/trains-cls/exp/weights and this weight helps to predicts the sports from the video input. This obtains Input from the video and converts it into classified output and it is stored in runs/predict-cls. The prediction metrics can be obtained from the CSV file “result.csv” in present in location runs/trains-cls/exp. From the classification model we obtain loss and accuracy graph, this shows how precise is our prediction. The graph is plotted using Matplotlib, pandas, it uses the data present in “result.csv”, the file created after the prediction is made.

**COLAB LINK:**

https://colab.research.google.com/drive/1935aJFQVJXs2y52TqnkfHch7qcjE95QN?usp=sharing

**Output:**



