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HUMAN ACTIVITY RECOGNITION

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Abstract: *Human activity recognition has turn out to be a study region of great attentiveness because of its variety important and advanced applications, comprising automated observation. During current situation the complete and detailed examination has been carried out regarding the growth it has taken place in this area. The proposed system aims an arrangement that can be used for the purpose of surveillance and observing applications. In this paper a part of inventive human action recognitions for video surveillance using image data set is presented. The customary investigation camera system involves humans to watch the cameras for 24/7 which are weirdly unproductive and elegant. Therefore, this paper will make availability for the required inspiration for categorizing act efficiently in present. This project helps in the recognition of moderate human activity using image processing techniques.*

KEYWORDS- *Fully Convolutional Network, CNN Architecture, computer vision, deep learning, manufacturing, safety, Activity.*

I. INTRODUCTION

Human activity recognition is the study that includes the proper identification of activities performed by humans, tested in different ways. The sensation-based activity recognition uses sensors, like accelerometers and gyroscopes, for representing the acceleration and angular velocity. Sensation-based approaches that are considered to be senior in assessing other methods, like vision-based, that use cameras and microphones for recording the actions performed by humans. They are unpretentious for the users, as they are not demanding video confidentially and domestic context, less sensitive to environmental noise, cheap and efficient in terms of power consumption. Moreover, the wide spreading of embedded sensors in smartphones makes these devices universal. This prototype works on videos, which are big challenge how the videos are identified. Conventional classification methods are strengthened features that are caused and extracted from the kinetic signals. Feature extraction method needs to have the knowledge human experience or appliance domain. Typical human activity recognitions do not scale for difficult motion designs. CNN has the power of distinguishing between both spatial and temporal needs amongst signals, and might efficiently model scale invariant.

II. RELATED WORKS

G. Akilanda sowmya, P.Sathiya, Dr.P Anandha Kumar, [1] in this paper, wave pattern is used to spot various human actions. For extracting the foreground images form background texture structures for producing configuration. Method used for extraction of images are using Gaussian. Pre-processing methods is scale back to reduce the noise content from each of the frame. To produce the wave pattern energy function is used. K-Nearest neighbor algorithm is used for categorizing the actions. The accuracy rate of the system is 93.33%. Discussion: Good accuracy, less memory usage, high training time and processing time.

Long Cheng Yani Guan, Kecheng Zhu, Yiyang Li, [2] It's difficult to understand the accuracy of the activities that are performed by the humans. To solve this issue, this paper is using wearbale sensors for the classification of the actions performed by humans. Three different algorithms namely support vector machine, hidden markov model and artificial neural network are used for recognizing the actions. . Finally the results prove that all the three algorithms are acceptable for activity recognition.

Performance Discussion: Getting Decision form the sensors gives the accurate value and its not image process. Used not applicable for image process.

Xudean,Yinghao Cai,Shuao Wang,and Leije Zhang, [3] In this paper deep learning concepts are used for better usage of datasets for feature extraction. Here some of the advanced neural network concepts of deep learning and their applications are used. Discussion: as per paper we can get the Knowledge of Deep Learning and how it can implanted on human Activity set.

Erhan, Aydın. İbrahim Alper, [4] Here the work focuses on the recognition of actions using smartphone sensors using various machine learning classifications. Data is retrieved from accelerometer and gyroscope sensors are classified to recognize the actions. Final result of this method is related in terms of efficiency and precision. Discussion: This Depends on the smartphone activity values. This will located with sensor of mobile. This May help to the future ML analyses.

G P Hegde Nireeksha, Nithini B K, Soundarya M B, Supreetha B V, [5] This paper focuses on various studies on activity recognition and steps that are involved in recognizing the actions performed using different methods for classification of human activity frames. Discussion: Better understanding of video processing and implementation.

III. PROPOSED SYSTEM

In this paper, we are predicting the activities of the people. As per the existing system either vision or sensor is sufficient to identify the activity. But this prototype works on videos, which are big challenge how the videos are identified. For this proposed neural network technology which is capable of image processing to identify the videos action. Here used UCF dataset it contain multiple actions. This will predicted by our Convolutional Neural Network.

IV. ARCHITECTURE

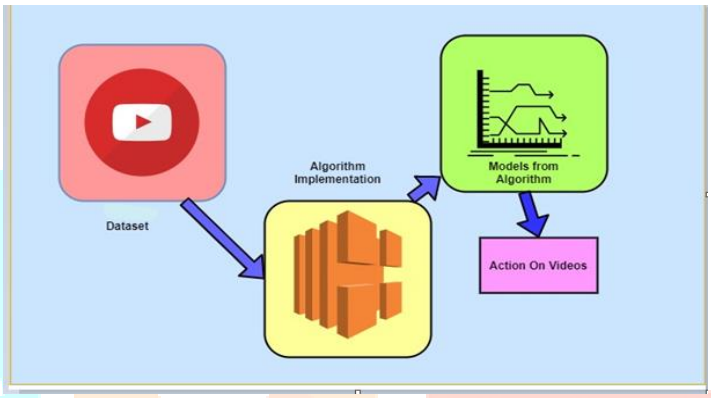

Fig 1. architecture

Step1: First Collect the Dataset;
Step2: It will Load to algorithm for training;
Step3: Compare with Sample video with Trained Model; Step4: Prediction of Action on videos

Algorithm is like a machine, we need to train them using some data. Here for training we are using images and for prediction we are using videos. We need to pass all the data to CNN algorithm. It'll observe all the data called as labels. We need to divide the data or images to arrays which are numbers. Data stored into labels which are converted into label binarizer i.e., it'll be converted as numbers as JPEG, PNG etc, formats are not understood. We are dividing the data into 2 parts 75% and 25% (Test size =0.25) out of 100 images. Ones the data enter into algorithm it will train the train data i.e., It'll compare with rest data because it's self-checking (it'll identify by itself).

The architecture that is used here is ResNet-50. It has multiple layers: i) the data will be read as arrays (i.e., the image will be converted to arrays) because it'll observe the data from first end to last end. ii) convolutional layer and pooling layer: It'll observe the features of data like color, pixels etc. and training themselves and ones it'll get all features of the data it'll move to next layer that is fully connected (Classification layer)(its help for classifying the images), in that dataset name will be stored to image. Any image that is identified will be added to label (Which category it belongs to). iii) the method is using matrix method. It'll be classified based on the input given. Array conversion is the property or value it'll identify all the features in pooling layer and finally classification is done. iv) Pass any random image it'll go through the algorithm and retrieve the features and classification is done. Comparison of the data is done and it'll check whether the model or property is already there and what is the label for that.

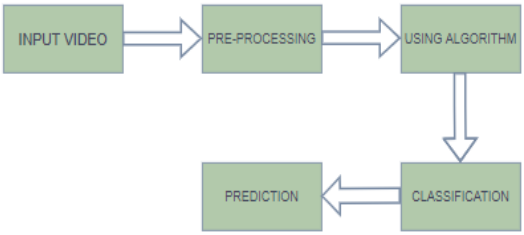

Fig 2. data flow diagram

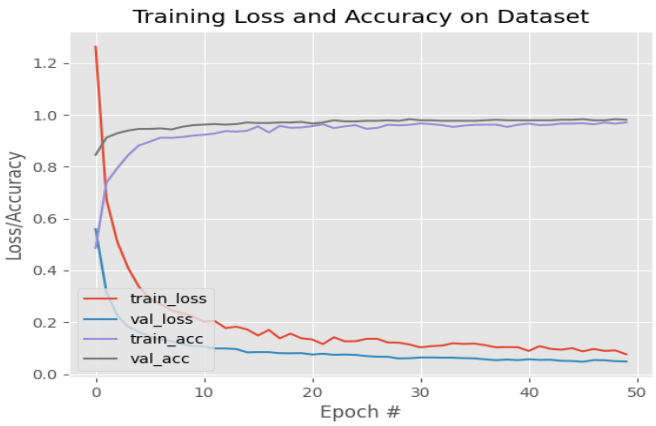

Fig 3. training loss and accuracy

V. RESULT ANALYSIS

For training the data we have used images and for predicting we are using videos. Few of the training images are:

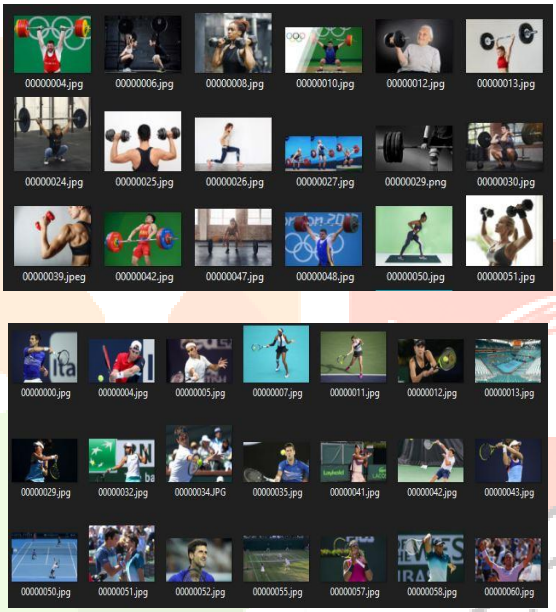

Fig 4. training images

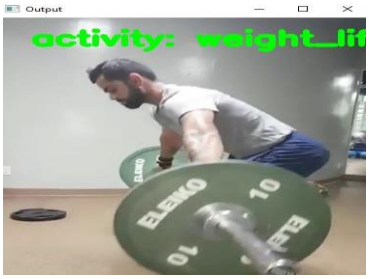

Fig 5. activity weight lifting

Fig 6. activity tennis

VI. CONCLUSION

In this paper, the proposed paper focuses on Computer Vision for the prediction of the activities of the action on videos. This focuses on recognition of simple activity like normal activities by using image processing techniques. This project will provide the required drive for identifying the human action efficiently in real-time.

VII. REFERENCES

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