Project Synopsis

Project Team :

1. Akash Hegde - 1RN14IS010
2. Akshay Sudhir Hulekal - 1RN14IS013
3. Hitesh B. Rao - 1RN15IS406
4. Mithun Bharadwaj B. V - 1RN14IS059

Project Title : Recognizing Set of Human Activities from Video Dataset using Machine Learning .

Aim : To implement a state-of-the-art video feature extraction on a given dataset and train a classifier to perform Activity Recognition, using deep learning techniques.

Abstract : This document gives a brief explanation about the human activity recognition problem and the possible solution implementation on a part of the KTH dataset.

Description :

Activity recognition deals with educating computer or machine for our desired outcomes. The issue of human activity recognition is a very important problem in computer vision. The recent technological advancement in deep learning is providing countless possibilities in solving this problem. The intention of this project is to build better solutions to the problem of this kind. But the part of the problem that makes activity recognition unpredictable is the innumerable ways in which humans think in order to accomplish a given task. For this, we need a huge number of instances in the form of a dataset. This is an endless and laborious task, but there is always a particular pattern in which events occur and a basic set of rules that have to be followed. An attempt is made to extract these loopholes and provide favourable results. Data sets play a vital role in solving this paramount problem. Not many clean and big enough datasets are available for this task that fairly represent real-world conditions. KTH dataset is a dataset consisting of six different human activities which can be used to train a classifier and extract features from it. The

aim of this work is to effectively train a deep network based on the dataset and extract a suitable representation for video-native tasks.

Using TensorFlow along with other supporting Python libraries, an attempt is made to train a classifier on the given part of KTH dataset consisting of many videos. This classifier is then tested on a particular test set and the outcomes and errors (if any) are noted down.

Hardware Requirements :

- Processor : Multi-core x64-based architecture CPU, with a GPU to effectively train the classifier.
- Hard disk capacity : 500GB, to accommodate training and test sets, with evaluation.

Software Requirements :

- Operating System : Windows 8.0 or higher.
- Programming Languages : Python and its frameworks.
- Front-end : Django and supporting libraries.
- Back-end : KTH Dataset, TensorFlow and supporting libraries.