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Deep Neural Network based Action Recognition Considering Audio and Video Content

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ABSTRACT: Video Content recognition in data analytics with deep learning has received important attention in various applications of social media. Thus, a deep active learning method with a new query strategy is proposed in this implementation for Video Content recognition from images. As the rate of data generated by social media applications is needed powerful data handling mechanism. The big data generated by this application gets difficult to categories data by content basis. But currently the scenario is that there is not sufficient content aware data classification available. The existing work is totally based on tag and Meta data based classification which leads data conflicts. To overcome this problem we are going to invent sport video based data classification system.

KEYWORDS: Active learning, deep learning, Video Content recognition.

I. INTRODUCTION

Now a day's lots of web contents generated every day by social and sport applications such as hot-star, start sport channels, JIO TV, YouTube etc. So there is also need of sports video analysis systems which should be classifying video contents efficiently. The video content mining is based on machine learning approaches because of their deep learning scope [4]. The general procedure of a content-aware video analysis system includes feature extraction, information reasoning, and knowledge arrangement [1]. The video contents can be classified by using meta data of videos as well contextual features of videos [3]. The proposed work focused on content aware video classification instead of spatiotemporal viewpoint.

Video analysis based on content or actions in videos instead of Meta data of videos. Giving best result over big data challenges in sport data analysis discussed in existing surveys [2]. We are going to overcome existing drawbacks of video classification in sport videos. We are going to develop video analysis technique which can accurately recognize video actions. We believe that our survey can advance the field of research on content-aware video analysis for sports and classification of video.

II. LITERATURE SURVEY

1. "A cloud-based large-scale distributed video analysis system,"

Digital content consumption is exploding thanks to the advances of the distributed cloud-computing infrastructures and the consumer electronics. Further challenges have been posed to engineers and researchers to satisfy the ever increasing user needs not only for high quality video delivery, but also for richer experience. In order to support various video analysis tasks in addition to Trans coding, a software platform is designed based on the Google cloud computing infrastructure with the features to be flexible, scalable, robust, and secure. In this paper, we discuss the scope, requirements, constraints, features of such a system, the problems we met and how they are resolved. The power of cloud-based computing has brought the user experience of the digital content consumption to the next level, enabling streaming of both user-generated and high value content globally. YouTube and Google Play Movies are now available in over 100 countries and serve more than 1 billion users. At peak, 65% of internet traffic is driven by YouTube, Google Play Movies and Netflix. Unique challenges have been posed to engineers and researchers caused by large amounts of data, device variety, many different video formats and transcodes, and low-latency requirements. Video coding is one of the most important topics. It seeks from the source coding perspective to optimize the rate-distortion trade-offs of a video which in turn helps to reduce the bandwidth usage, increase the visual quality of the video, and reduce the startup latency for playbacks.

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2. "Traffic Monitoring using Video Stream with Machine Learning: Based on Big Data Process with Cloud".

Traffic Monitoring is a challenging task on crowded roads. Traffic Monitoring procedures are manual, expensive, time consuming and involve human operators. Large-scale storage and analysis of video streams were not possible due to limited availability. However, it is now possible to implement object detection and tracking, behavioral analysis of traffic patterns, number plate recognition and surveillance on video streams produced by traffic monitoring. In Big Data, video streams (datasets) are so large that typical database systems are not able to store and analysis the datasets. Storing and processing big volume of data requires scalability, Fault Tolerance and availability. Thus, Big Data and Cloud computing are two compatible concepts as cloud enables Big Data for traffic monitoring using Hadoop technology with machine learning algorithm. Analysis results are stored in Hive, which is a data warehouse built on top of Hadoop. This data includes overall traffic speed, traffic volume, and individual vehicle speed. Hive provides data summarization, query, and analysis. To circumvent the requirements of lane discipline and sensor arrays, we propose a data-driven approach to road traffic analytics using digital video. Different video devices capture video in different file formats. A video file format can be considered as a logical container that wraps compressed video and audio. The results presented are influenced by the use of Map Reduce framework. We plan to work on enhancing high-level event recognition and prediction as well as classifying vehicles. We will also investigate and validate the relationship between collision probability and safety.

3. "Similarity Estimation for Large-Scale Human Action Video Data on Spark".

The amount of human action video data is increasing rapidly due to the growth of multimedia data, which increases the problem of how to process the large number of human action videos efficiently. Therefore, we devise a novel approach for human action similarity estimation in the distributed environment. The efficiency of human action similarity estimation depends on feature descriptors. Existing feature descriptors such as Local Binary Pattern and Local Ternary Pattern can only extract texture information but cannot obtain the object shape information. To resolve this, we introduce a new feature descriptor, namely Edge based Local Pattern descriptor (ELP). ELP can extract object shape information besides texture information and ELP can also deal with intensity fluctuations. Moreover, we explore Apache Spark to perform feature extraction in the distributed environment. Finally, we present an empirical scalability evaluation of the task of extracting features from video datasets.

4. "Optasia: A relational platform for efficient large-scale video analytics," in Proceedings of the Seventh ACM Symposium on Cloud Computing".

Camera deployments are ubiquitous, but existing methods to analyze video feeds do not scale and are error-prone. We describe Optasia, a dataflow system that employs relational query optimization to efficiently process queries on video feeds from many cameras. Key gains of Optasia result from modularizing vision pipelines in such a manner that relational query optimization can be applied. Specifically, Optasia can (i) de-duplicate the work of common modules, (ii) auto-parallelize the query plans based on the video input size, number of cameras and operation complexity, (iii)offers chunk-level parallelism that allows multiple tasks to process the feed of as ingle camera. Evaluation on traffic videos from a large city on complex vision queries shows high accuracy with many fold improvements in query completion time and resource usage relative to existing systems.

5. "Vehicle logo recognition system based on Convolutional neural networks with a pre-training strategy".

For most of the vehicle logo recognition algorithms, the logo is difficult to be pinpointed, and the recognition is roughly to be done in bad environment. Even though the recognition accuracy of convolution neural network (CNN) is relatively high, it also needs a large number of samples. This paper proposes a multi-scale parallel convolution neural network (multi-scale parallel CNN) to recognize vehicle-logo and improves the existing vehicle detection method. The multi-scale convolution kernel is used to extract features from original data in a parallel way. This method can keep high accuracy in the condition of illumination change and noise pollution, and can adapt to the harsh environment. Experimental results show that the classification accuracy of the method is as high as 98.80% on our owe dataset and 99.80% on the dataset used in other paper, which demonstrates strong generalization ability of our proposed algorithm.

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III. EXISTING SYSTEM APPROACH

In existing on machine learning and Meta data based video data classification techniques we come on conclusion that there is not any promising solution for correct data classification [3]. So wrong tag or meta generates data conflicts and which leads wrong data suggestions to users [1]. All work is relay on tag based so there is need of content based data classification. Existing work on sport video classification is used recorded video sequences from YouTube and its Meta data files such as comments, like, and dislikes. Which will chances of wrong data classification without seeing content

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of video data [2]. So there is need of strong content based data classification systems in video data classification for better video suggestion purpose. So we are working on sport video data for giving most promising solution over existing methods.

IV. PROPOSED SYSTEM APPROACH

In a proposed system, we are proposing experiment on Video Content detection and video classification by using deep neural network. In a proposed system, we are going to overcome existing drawbacks of data classification techniques of video data by providing content aware data classification scheme. Our work is based on deep learning techniques for video analysis with better performance and Video Content detection with advantages of accuracy in video classification [1].

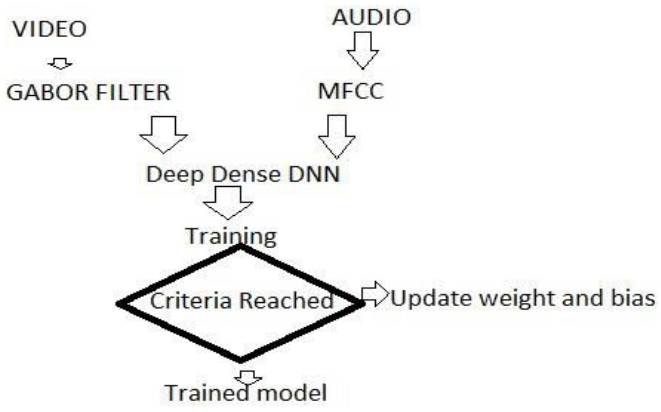

Fig.1 Block Diagram of Proposed System

We are proposing Video Content recognition and data classification management scenario [3]. We propose a new Convolutional neural network based video action data detection and classification. We are going to solve existing data classification problem by using python machine learning approach. We are going to overcome existing drawbacks of video classification in sport videos [5].

- Our work is based on machine learning techniques for video analysis based on content or actions in videos instead of Meta data of videos.
- We are going to develop video analysis module wise:

1) Action Recognition
2) Audio Detection
3) Video Detection
4) Video Content detection
5) Video classification

Main motive behind this system is to give promising solution by video type recognition which alternatively reduces the wrong data classification and suggestion rate. To intensive task of monitoring sport data as well as explore accurate data classification mechanism, researchers seek the advanced computer vision algorithms to develop intelligent video classification systems. In proposed system is based on deep neural network for Video Content detection.

V. CONCLUTION

We have proposed efficient video analysis techniques based on Deep Neural Network. We have developed most promising solution for internet content classification based on content feature of videos instead of spatiotemporal information [3]. Giving best result over big data challenges in Video Action data analysis discussed in existing surveys. We have developed video analysis technique which can accurately recognize video actions. We believe that our implementation can advance the field of research on content-aware video analysis for sports.
For future work, we can implement this technique for multiple type of video dataset.

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