CONTENT DRIVEN VIDEO RECOMMENDER SYSTEM

Prof.J V vadavi

(*Associate Professor)*

jvvadavi@gmail.com

Prof.Shreedhar Yadawad

(Assistant Professor)

shreeyadawad@gmail.com

Dept. of Computer Science Engineering, SDM College of Engineering and Technology Dharwad

Ms. Amrutha Mallela,Ms Hima Hegde,Ms Kavita Javalagi,Ms Manjusha Byadgi

(amruthamallela2@gmail.com,himahegde21@gmail.com,kavitaj179@gmail.com,manjusha.byadgi@gmail.com)

***Abstract*- YouTube is the world's most popular online video community. Recommender systems are one of the most widespread applications of machine learning technology. The system runs object detection over the videos accessed by the user and recommends a set of new videos with the help of Content-based Filtering Algorithm. The work combines two extensively studied research fields, recommender systems and computer vision that are also rapidly growing and popular techniques on commercial markets. To get the recommendation results, this algorithm firstly extracts some objects to represent these videos, and then summarizes the user profile with the above mentioned objects. The ensemble methods are applied over the generated dataset. Lastly, it compares user profile with each video in the system and finds out the most similar ones to recommend. The system follows a client server architecture where the client requests a video and the server responds to the request by playing the requested video along with a set of recommendations. A recommender system is one of the major techniques that handles information overload problem of Information Retrieval by suggesting users with appropriate and relevant items.**

***Keywords*-Recommender system,Content Based Filtering,Computer vision,Dataset,YOLO.**

I.INTRODUCTION

1.1 Purpose:

The current YouTube video recommender systems work majorly by extracting metadata and regress to generate future views. The most important part of a YouTube post is the content (video) itself. Thus the purpose of our project is to see how the content of the video i.e., the objects present in it can be used to recommend videos in YouTube.

1.2 Background:

Recommender systems are techniques or programs in which most relevant items are supposed to be recommended to users. In order to do this, information related to the items, users and previous interactions between these two are usually analyzed by algorithms. The breakthrough and rapid adoption of deep learning in 2012 brought into existence modern and highly accurate object detection algorithms and methods such as R-CNN, Fast-RCNN, Faster-RCNN, RetinaNet and fast yet highly accurate ones like SSD and YOLO. There are millions of expert computer programmers and software developers that want to integrate and create new products that uses object detection.

1.3 *The Proposed System:*

In this work, a video recommender system that uses object detection to extract visual video features will be implemented and studied. The features (objects) are usually inputs to machine learning algorithms that learns from data in order to predict values of new unobserved data. The underlying hypothesis is that there might exist a correlation between visual objects in the videos and the user preferences. If this is the case, these video features would lead to better recommendation results. All the data used in this project derives from YouTube. The aim is to perform content based filtering on the obtained dataset to recommend videos.

II.METHODOLOGY

The youtube video recommender system consists of four stages.By following these stages it can recommend videos by object identification .Those stages are

- Downloading Videos
- YOLO Object Detection
- Training Videos
- Recommendation

2.1 *Downloading Videos*

In this stage,it downloads videos from youtube based on the URLs specified.It stores the downloaded videos in a folder created by the user.

2.2 *YOLO Object Detection*

YOLO (You Only Look Once) is a method / way to do object detection. It is the algorithm /strategy behind how the code is going to detect objects in the image.

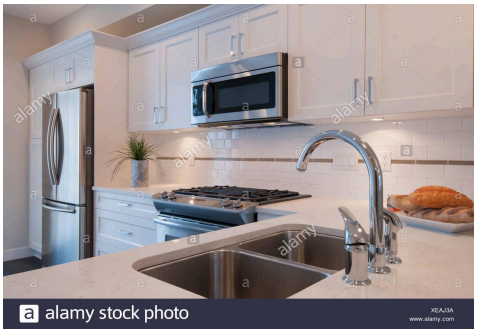

Fig.1 Image used for detection using YOLO

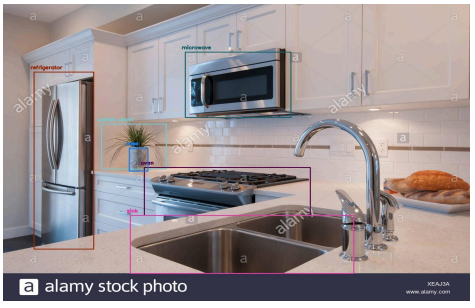

Fig.2 Objects detected using YOLO.

2.3 *Training Videos*

Once the object detection is done for the downloaded videos, a comparative analysis(Objects) is done. Then the training process takes place.

2.4 *Recommendation of Videos*

Once the training is done to the predefined videos appropriate videos are recommended based on the objects in the frame.

III. SYSTEM ARCHITECTURE

3.1 Data Collection

During the generation of personalized video recommendations we consider a number of data sources. The main important data considered is objects in the video.

3.2 *Recommendation Generation*

Based on similarities in the objects of the considered videos particularly trained recommendations are generated.

3.3 *Recommendation Service*

Once we get the generated videos for the particular URL based on the pre training activity ,we serve the recommendations

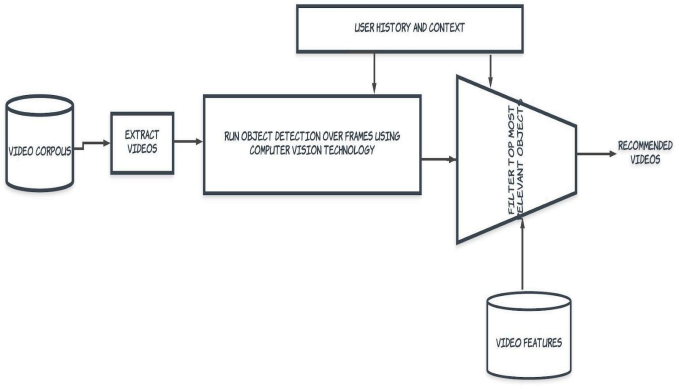

Fig.3 System Architecture

IV.RESULTS

Fig.4 Result Screenshot.

The following resultant screenshot shows the objects detected from given URL and from the pretrained videos it gives the score of common objects , on the basis of which it recommends the video.

V.CONCLUSION

In this paper, we have demonstrated about the youtube video recommender system. There are lots of techniques and approaches available for video recommendation.The artistry above discussed includes the methods for recommending videos based on objects detected in the video.There are several drawbacks that should be considered before implementing

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