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SEFM-Cloud: A Structure of Social Video Efficient & Flowing Adaptive Mobile Video in the Clouds

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ABSTRACT :

Data sharing is another common habituated property to the common people. These data sharing include video data in social networks, this was done regularly through mobile devices like smart phones, tablets, laptops etc. We focused on difficulties on video interchange over mobile networks. Mobile network consist limited bandwidth and long buffering time. To overcome these issues we propose adaptive mobile video streaming and efficient public video sharing. These two approaches show scalable results in social network environment. With this framework, the overloading buffering time and disruptions can be avoided. The gap between the traffic demand and the link capacity, along with time-varying link conditions, results in poor service quality of video streaming over mobile networks such as long buffering time and intermittent disruptions.

Leveraging the cloud computing technology, we propose a new mobile video streaming framework, dubbed SEFM-Cloud, which has two main parts: AMoV (adaptive mobile video streaming) and ESoV (efficient social video sharing). AMoV and ESoV construct a private agent to provide video streaming services efficiently for each mobile user. For a given user, AMoV lets her private agent adaptively adjust her streaming flow with a scalable video coding technique based on the feedback of link quality. Likewise, ESoV monitors the social network interactions among mobile users, and their private agents try to prefetch video content in advance. We implement a prototype of the SEFM-Cloud framework to demonstrate its performance.

Index Terms:

AMoV and ESoV,Scalable Video Coding, Adaptive Video Streaming, Mobile Networks, Social Video Sharing, Cloud Computing.

INTRODUCTION:

Over the past decade, increasingly more traffic is accounted by video streaming and downloading. In particular, video streaming services over mobile networks have become prevalent over the past few years While the video streaming is not so challenging in wired networks, mobile networks have been suffering from video traffic transmissions over scarce bandwidth of wireless links. Despite network operators' desperate efforts to enhance the wireless link bandwidth (e.g., 3G and LTE), soaring video traffic demands from mobile users are rapidly overwhelming the wireless link capacity. While receiving video streaming traffic via 3G/4G mobile networks, mobile users often suffer from long buffering time and intermittent disruptions due to the limited bandwidth and link condition fluctuation caused by multi-path fading and user mobility. Thus, it is crucial to improve the service quality of mobile video streaming while using the networking and computing resources efficiently . Recently there have been many studies on how to improve the service quality of mobile video streaming on two aspects: Scalability: Mobile video streaming services should support a wide spectrum of mobile devices; they have different video resolutions, different computing powers, different wireless links (like 3G and LTE) and so on.

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The available link capacity of a mobile device may vary over time and space depending on its signal strength, other users traffic in the same cell, and link condition variation. Storing multiple versions (with different bit rates) of the same video content may incur high overhead in terms of storage and communication. to address this issue, the Scalable Video Coding (SVC) technique (Annex G extension) of the H.264 AVC video compression standard defines a base layer (BL) with multiple enhance layers (ELs). These sub streams can be encoded by exploiting three scalability features: (i) spatial scalability by layering image resolution (screen pixels), (ii) temporal scalability by layering the frame rate, and (iii) quality scalability by layering the image compression. By the SVC, a video can be decoded/ played at the lowest quality if only the BL is delivered. However, the more ELs can be delivered, the better quality of the video stream is achieved.

Adaptability: Traditional video streaming techniques designed by considering relatively stable traffic links between servers and users, perform poorly in mobile environments . Thus the fluctuating wireless link status should be properly dealt with to provide 'tolerable" video streaming services. To address this issue, we have to adjust the video bit rate adapting to the currently time-varying available link bandwidth of each mobile user. Such adaptive streaming techniques can effectively reduce packet losses and bandwidth waste. Scalable video coding and adaptive streaming techniques can be jointly combined to accomplish effectively the best possible quality of video streaming services. That is, we can dynamically adjust the number of SVC layers depending on the current link status.

However most of the proposals seeking to jointly utilize the video scalability and adaptability rely on the active control on the server side. That is, every mobile user needs to individually report the transmission status (e.g., packet loss, delay and signal quality) periodically to the server, which predicts the available bandwidth for each user. Thus the problem is that the server should take over the substantial processing overhead, as the number of users increases. Cloud computing techniques are poised to flexibly provide scalable resources to content/service providers, and process offloading to mobile users. Thus, cloud data centres can easily provision for large-scale real-time video services as investigated in Several studies on mobile cloud computing technologies have proposed to generate personalized intelligent agents for servicing mobile users, e.g., Cloudlet and Stratus This is because, in the cloud, multiple agent instances (or threads) can be maintained dynamically and efficiently depending on the time-varying user demands.Recently social network services (SNSs) have been increasingly popular.

There have been proposals to improve the quality of content delivery using SNSs . In SNSs, users may share, comment or re-post videos among friends and members in the same group, which implies a user may watch a video that her friends have recommended Users in SNSs can also follow famous and popular users based on their interests (e.g., an official face book or twitter account that shares the newest pop music videos), which is likely to be watched by its followers. In this regard, we are further motivated to exploit the relationship among mobile users from their SNS activities in order to prefetch in advance the beginning part of the video or even the whole video to the members of a group who have not seen the video yet.

It can be done by a background job supported by the agent (of a member) in the cloud; once the user clicks to watch the video, it can instantly start playing. We design a adaptive video streaming and perfecting framework for mobile users with the above objectives in mind, dubbed SEFM-Cloud. SEFM-Cloud constructs a private agent for each mobile user in cloud computing environments, which is used by its two main parts: (i) AMoV (adaptive mobile video streaming), and ESoV (efficient social video sharing). The contributions of this paper can be summarized as follows:

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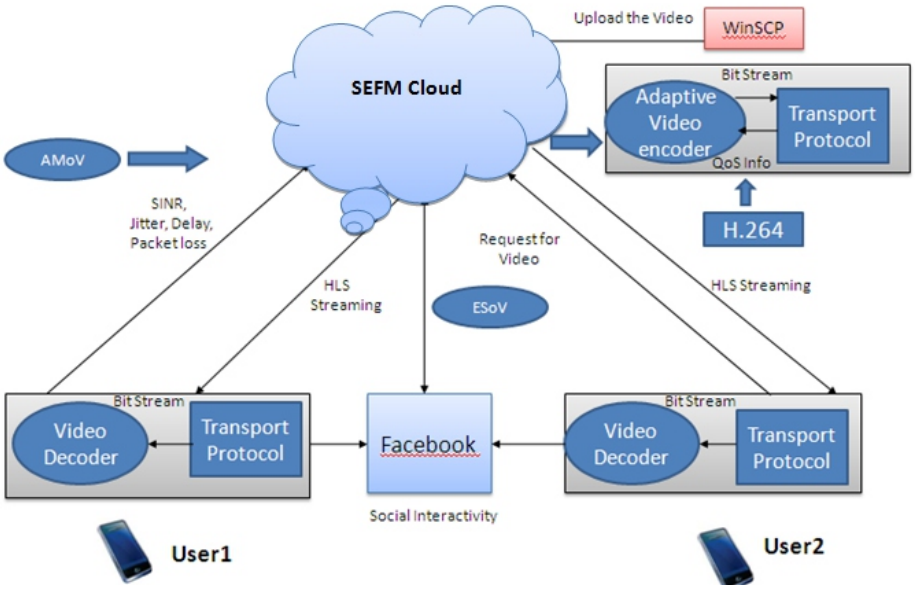

Figure:-AMoV and ESoV

AMoV offers the best possible streaming experiences by adaptively controlling the streaming bit rate depending on the fluctuation of the link quality. AMoV adjusts the bit rate for each user leveraging the scalable video coding. The private agent of a user keeps track of the feedback information on the link status. Private agents of users are dynamically initiated and optimized in the cloud computing platform. Also the real-time SVC coding is done on the cloud computing side efficiently.SEFM-Cloud supports distributing video streams efficiently by facilitating a 2-tier structure: the first tier is a content delivery network, and the second tier is a data center. With this structure, video sharing can be optimized within the cloud. Unnecessary redundant downloads of popular videos can be prevented .

Based on the analysis of the SNS activities of mobile users, ESoV seeks to provide a user with instant playingof video clips by prefetching the video clips in advance from her private agent to the local storage of her device. The strength of the social links between users and the history of various social activities can probabilistically determine how much and which video will be perfected.The rest of the paper is organized as follows. We first introduce related work in SectionII, and explain the SEFM-Cloud framework in Section III. The adaptive video streaming service and the efficient social video sharing will be detailed in Sections I and , respectively. Then the operations of SEFM-Cloud is illustrated in Section Finally, we evaluate the prototype implementation in Section, and conclude the paper in this Section .

Problem Statement:

Cloud computing promises lower costs, rapid scaling, easier maintenance, and service availability anywhere, anytime, a key challenge is how to ensure and build confidence that the cloud can handle user data securely. Some of the disadvantages are it always uses the maximum link capacity for video streaming and it cannot control the resolution. In case of weak signal user gets paused on the screen till video streams so cannot maintain constancy also in the video streaming. It is crucial to improve the service quality of video streaming while using the networking and computing resources efficiently.

Problem Solution:

We propose an adaptive mobile video streaming and sharing framework, called SEFM-Cloud, which efficiently stores videos in the clouds (VC), and utilizes cloud computing to construct private agent (subVC) for each mobile user to try to offer “non-terminating” video streaming adapting to the fluctuation of link quality based on the Scalable Video Coding technique. Also SEFM-Cloud can further seek to provide “non buffering” experience of video streaming by background pushing functions among the VB, subVBs and localVB of mobile users. We evaluated the SEFM-Cloud by prototype implementation and shows that the cloud computing technique brings significant improvement on the adaptively of the mobile streaming. We ignored the cost of encoding workload in the cloud while implementing the prototype.

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Advantage:

Some of the advantages are Video can be played at the lowest quality if only BL(Base Layer) is delivered and also it is Used for video conferencing and Mobile to high-definition broadcast.

IMPLEMENTATION:

Implementation is the stage of the project when the theoretical design is turned out into a working system. Thus it can be considered to be the most critical stage in achieving a successful new system and in giving the user, confidence that the new system will work and be effective.

The implementation stage involves careful planning, investigation of the existing system and it's constraints on implementation, designing of methods to achieve changeover and evaluation of changeover methods.

Algorithm used :

Algorithm 1 Matching Algorithm between BW and Segments:

i = 0
BW0 = RBL
Transmit BL0
Monitor BW0practical
repeat
Sleep for Twin
Obtain pi, RTTi, SINRietc., from client's report
Predict BWi+1estimate(or BWi+1estimate = BWipractical)

k=0
BWEL=0
repeat
k++
ifk >= j break
BWEL=BWEL+ RELk
UntilBWEL>= BWi+1estimate- RBL
Transmit BLi+1 and EL1 i+1, EL2 i+1,...,Elk-1i+1
Monitor BWi+1practical
i++

Until All video segments are transmitted .

Admin:

In this module, Admin have three sub modules. They are,Upload Video: Here Admin can add a new video. Its used for user for viewing more collections.User Details: Admin can view the user those have regestred in this site.Rate videos: This module for avoiding unexpected videos from users. After accept/reject videos then only user can/cannot view their own videos.

User1:

In this module, it contains the following sub modules and they are,News Feed: Here user of this social site can view status from his friends like messages or videos. Search Friends: Here they can search for a friends and send a request to them also can view their details. Share Video: They can share videos with his friends by adding new videos also they share their status by sending messages to friends.Update Details: In this Module, the user can update their own details.

User2:

In this module, user can register their details like name, password, gender, age, and then. Here the user can make friends by accept friend request or send friend request.They can share their status by messages also share videos with friends and get comments from them.

CONCLUSION:

In cloud computing the scalable video coding technique and adaptive video streaming techniques can be combined to form the effectively best quality of video streaming services. The aim of proposed system is that it will reduced the traffics and provides the maximum utilization of the bandwidth capacity. As per the methodology it proposes the algorithmic approach for the conversion of video format to other depending upon the strength of signal received from the system. It also proposes the preservation over cloud computing. In that the server will automatically detect the signal and subsequently convert the video in the most optimal streams.

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FUTURE WORK:

• Way forward for this project is large scale implementation with the consideration of saving energy , reducing cost and improving the security and also reducing the buffering time for downloading all types of video's.

• And it will be enhanced in all social networks we will be downloading the videos without any buffering.

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