Literature Survey on Streaming and Sharing of Videos in Mobile Network

[1] Suganthi.S
Department of Computer Science and Engineering
Akshaya College of Engineering and Technology, Coimbatore

[2] Margret Sharmila.F
Department of Computer Science and Engineering
Akshaya College of Engineering and Technology, Coimbatore

[3] Kannan.E
Department of Computer Science and Engineering
Akshaya College of Engineering and Technology, Coimbatore

Abstract

video traffic demand over mobile networks have been difficult task, the quality of service get reduced when there is a gap between the traffic demand and link capacity. the quality of video streaming gets poor when there occurs the long buffering and intermittent disruptions. In the cloud computing technology we propose a new mobile video streaming framework consist of AMES cloud ,which is dubbed with :adaptive mobile video streaming and efficient social video sharing these construct a private agent to provide video streaming efficiently for each mobile user. AMoV uses the scalable video coding technique to adjust the streaming .ESoV monitors the social network interactions among mobile users and as to prefetch video in advance. the private agents in the clouds can effectively provide the adaptive streaming, and perform video sharing based on the social network
.

1. Introduction

With the vital development of Internet and communication technology, the demand of people for multimedia communications in daily life is growing, more and more users are getting multimedia communication services through different networks and different terminals, which directly resulted in the heterogeneity of multimedia communication network environment. User terminals of multimedia communication are various, such as different types of mobile phones, PDA, tablet PCs, etc. These terminals are different in processing capability, screen resolution and power consumption, which directly constitutes the diversity of multimedia communication terminals Mobile video streaming services should support a wide spectrum of mobile devices; they have different video resolutions, different computing powers, and different wireless links. Storing multiple versions with different bit rates of the same video content may incur high overhead in case of storage . To overcome this issue, the Scalable Video Coding (SVC) technique of the H.264 AVC video compression standard defines a base layer with multiple enhance layers. By the SVC, a video can be decoded, played at the lowest quality if only the BL is delivered. the better quality of the video stream is achieved when more EL is delivered. SVC is a powerful tool for us to solve the problems of network heterogeneity and diversity of terminal Multimedia in communication. Scalable video coding and adaptive streaming techniques can be jointly combined to accomplish effectively the best possible quality of video streaming services.

2. Cloud computing technique

Cloud computing techniques are used to flexibly provide scalable resources to content, service providers, and process offloading to mobile users. Thus, cloud data centers can easily provision for large-scale real-time video services as. Several studies on mobile cloud computing technologies have proposed to generate personalized intelligent agents for servicing mobile users, hence, in the cloud, multiple agent instances or mulithreads can be maintained dynamically and efficiently depending on the time-varying user demands.

3. Analysis Of Weekly Behaviors based Mobile Video Services

The purpose of this search is to identify the extensions. the empirical law that states that users with multiple visits in one day over a long interval have a higher probability of revisiting in the following month than other users, in the mobile broadband context.

3.1 TCW METHOD

The preliminary study of commercial mobile broadcast Internet users was made using click stream logs. The patterns obtained indicated that a user that returns to a Web site after a certain length of time has a greater probability of returning to the same Web site in the following month.

In order to encapsulate this rule in an efficient method, the author proposed a method called the *time slot count in a window method* . When there are multiple visits for the time slots in a window, a user is marked as a revisiting user in the following month.

3.2 DRAWBACK

- Each service has its own unique characteristics. This research has limitations because it was performed on a single service. As it includes the service specificity and the collection of profile is achieved only limited and there is a lack of analysis of content characteristics
- The detailed analysis of observed services is not covered in this paper. Even though the interval by which observed content is updated is less regular than the content described in news services, this lack of analysis of content characteristics represents a drawback of this paper.

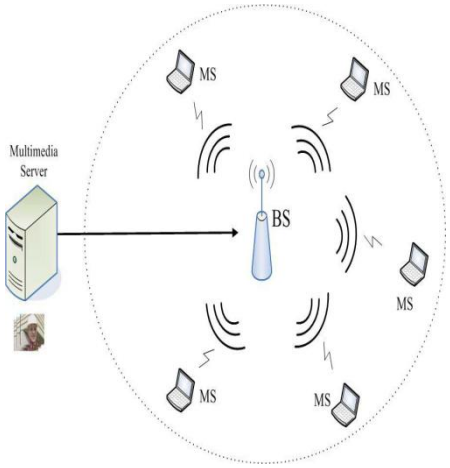

Fig 1.The point to multi-point system.[10]

4. Scalable video coding

SVC is an extension to the H.264/AVC standard. It is classified as a layered video codec which can encode a video stream in several types and numbers of enhancement layers on top of the H.264/AVC-compatible base layer. These enhancement layers can be added or removed from the bit stream during streaming without re-encoding of the media. The transmission rate of scalable video streams in the mobile network can be controlled by using TCP- friendly rate control. The streams are encoded using the Scalable Video Coding (SVC) extension of the H.264/AVC standard. Adding or removing the layers is decided based on the TFRC during varying channel conditions of the mobile network SVC provides a high-quality multimedia communication services in heterogeneous network environment, especially when the client processing power, system resources, and network state unknown. The SVC vedio stream have flexible scalability, and high quality coding efficiency.

4.1 TFRC

The bit rate of the stream can be dynamically adapted to the changing channel conditions which greatly improves all performance indicators such as interruption time, loss rate, delay and buffer requirements. This also implies that more users could be admitted to the cell and it would still be able to guarantee certain service qualities. This is especially true in loaded situation where there are not enough radio resources to combat bad reception quality in order to maintain guaranteed throughput to some users. However, since the TFRC was not designed for a mobile environment, we expect that it can be further optimized.

4.2 H.264/SVC

In the scalable video coding extension of the H.264/AVC standard, an exhaustive search technique is used to select the best coding mode for each macroblock. This technique achieves the highest possible coding efficiency, but it demands a higher video encoding computational complexity which constrains its use in many practical applications. This proposes combined fast sub-pixel motion estimation and a fast mode decision algorithm for inter-frame coding for temporal, spatial, and coarse grain signal-to-noise ratio scalability. The correlation is used between the macroblock and its enclosed partitions at different layers.

It has been observed that there is a high correlation between the MB and its enclosed partitions when estimating the motion at different resolutions. Therefore a two step fast sub-pixel motion estimation scheme based on this observation has been developed.

1) In the first step, if the 16×16 MB finds a best match in the full-pixel motion search that does not change after performing the sub-pixel motion search (cond_1), then the sub-pixel motion search for all the enclosed 16×8 and 8×16 blocks is disabled.

2) Similarly, if in the second step the 8×8 block partitions of the 16×16 MB find the same best match in the full and sub-pixel motion searches (cond_2), the subpixel motion search for all the enclosed 8×4, 4×8 and 4×4 sub-blocks is disabled.

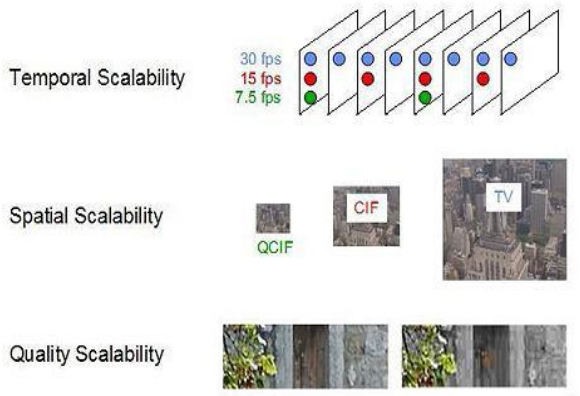

Fig 2 The layers of SVC[11]

4.3 DRAWBACK

Decision algorithm for inter-frame coding in SVC by exploiting the correlation between a macroblock and its partitions in different layers. When compared to the JSVM software this algorithm achieves a reduction of 45% encoding time on average, with a negligible average PSNR loss and bit-rate increase in temporal, spatial and SNR scalability. This saved computation can advance the progress in the realisation of the H.264 scalable extension in real-time applications and low complexity coding systems.

5. Streaming

It difficult to find many types of media within a single web-page such as 3D animations, sound, video clips, online radio and TV services. Streaming is the technology which enables this, by viewing a media while downloading it. Peer-To-Peer (P2P) network is at the moment one of the most effective solution to improve the bandwidth and distribute streaming data within a large scale overlay, involving potentially thousands of nodes.

5.1 PEERSTREAMING

PeerStreaming general architecture follows a client/server scheme and the P2P network helps the server in distributing the media content. In addition, when a peer has viewed the media, it gets at the same time a copy on its local hard-drive, it can now provide the media to other requesting peers, lightening the load on the server. Any peer in the network could then provide the whole or part of the media to a client. It is important to design lightweight peers, which are not so dependent on each other. A peer helping the server delivering the data should perform simple operation with low CPU load since the peer might perform some other tasks in parallel. The client has more responsibility and should perform more complex tasks: coordinating the peers, retrieving the media from multiple peers, performing load balancing, handling peers online/offline status and displaying the media in real-time. It is primordial to understand that both, servers, serving peers and clients are all nodes in the overlay network. A server is a peer, which has the data and sends it to the client, a serving peer is a machine in the P2P overlay, which has also the data or part of it and sends it to the client. A client is a peer, which requests data from the network.

5.2 COOLSTREAMING

CoolStreaming is a data-driven overlay network for. This application coded in Python language creates its own overlay P2P network following a mesh topology. Its architecture is divided into three layers: network layer, streaming layer and display layer. Using an efficient scheduling algorithm to fetch video segments from each peer and a strong buffering system, Cool Streaming achieves a smooth video playback and a very good scalability as well as performance. The system has been extensively tested over the Planet Latest-bed . Their technical report shows that the overall streaming rate and playback continuity of CoolStreaming system is proportional to the amount of peers online at any given time.

5.3 RESULTS

The PeerStreaming application has been tested in two ways: with and without embedded coded media. Embedded coding is a special feature of the Microsoft DirectShow framework In both tests, the streaming rate is between 16 and 128 kbps.

5.4 DRAWBACK

This survey does not present all available P2P streaming applications. Many other systems exist such as Split Stream. The chosen applications describe different methods to perform P2P media streaming and are examples of different P2Pstreaming topologies. ESM, P2PCast and Zebra base their streaming overlay on a structural approach. Using trees, the flow of data is clearly specified from one node to the other. This approach, mostly adapted to live streaming, tries to reproduce the IP multicast scheme. However, these types of system suffers under highly dynamic networks and require complex algorithms to rebuild each tree so that the streaming session does not get interrupted.

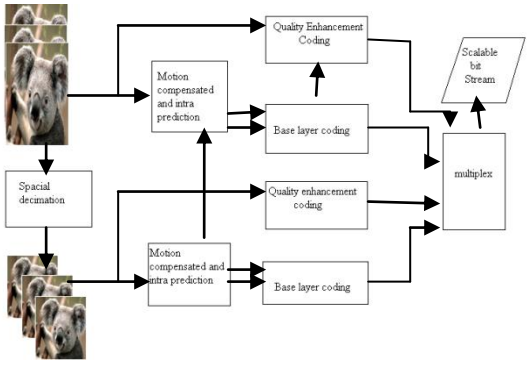

Fig 3.SVC encoding framework[11]

6. Proposed Solution

- The proposed method uses a larger unit of observation compared to the daily method. This brings with it a trade-off between processing freedom and high recall rate.
- The service specificity and profile specificity can be improved.
- The work will includes two cases: one is optimizing the computational complexity of SVC, the other is researching the self-adaptive error resilient tools and schemes.
- The main focus is to deliver the best possible streaming quality to a large pool of users. And to reduce the complexity by using simple algorithms.

7. Conclusion

AMES cloud ,which is the combination of adaptive mobile video streaming and efficient social video sharing these construct a private agent to provide video streaming efficiently for each mobile user.

The prefetching of videos can be improved by using scalable video coding efficiently and also by predicting users behavior.

8. References

[1] Sun X, Wu F, Li S, et al. Macroblock-based progressive fine granularity scalable video coding[C]. IEEE International Conferenceon Multimedia and Expo(ICME), Tokyo, August, 20011[5] FangDing. Study of dynamic identified test of drivers [D]. Chang'anUniversity, 2005:14-21.

[2] Chang "Radio resource management of heterogeneous services inmobileWiMAX systems" Wireless Communications, IEEE [see alsoIEEE Personal Communications] Feb 2007

[3] James She, Fen Hou, Pin-Han HoAn "Application-Driven MAC-layerBuffer Management with Active Dropping for Real-time VideoStreaming in 802.16 Networks IEEE International Conference onAdvanced Networking and Applications(AINA'07)

[4] T.Wiegand, G. Sullivan, J. Reichel, H. Schwarz, M. Wien (Editors)"Joint draft 9 of SVC amendment (revision 2)," Document JVTV201Marrakech, Morocco, January 13-19, 2007

[5] D.Taubman.High performance scalable image compression withEBCOT[J]. IEEE Transactions on image processing,2000,9(7):1158–1170

[6] T. Yamakami, "A time slot count in window method suitable for longtermregularity-based user classification for mobile internet," in *MUE2008*. IEEE Computer Society Press, April 2008, pp. 25–29.

[7] "A long interval method to identify regular monthly mobileinternet users," in *AINA2008 Workshops/Symposium (WAMIS 2008)*.IEEE Computer Society Press, March 2008, pp. 1625–1630.

[8] "A space-optimal month-scale regularity mining method with onepathand distributed server constraints for mobile internet," in *ICMB2009*. IEEE Computer Society, June 2009, p. 42.2423

[9] Ktawut Tappayuthpijarn Guenther Liebl, Thomas Stockhammer Adaptive Video Streaming over a Mobile Network with TCP-Friendly Rate Control *IWCMC'09, June 21–24, 2009, Leipzig, Germany.*

[10] Jen-Chun Chiang, Hsiang-Fu Lo, Wei-Tsong Lee Scalable Video Coding of H.264/AVCVideo Streaming with QoS-based Active Dropping in 802.16e networks,IEEE transaction 2008 IEEE.

[11] Su Yang, Zhang Wei, Liu Ling Multimedia Communication and Scalable Video Coding 2011 Fourth International Conference on Intelligent Computation Technology and Automation 2011 IEEE.

[12] Toshihiko Yamakami An Empirical Analysis of Weekly Behaviorsof Monthly Subscription-based Mobile Video Services 2010 Ninth International Conference on Mobile Business / 2010 Ninth Global Mobility Roundtable