

# Technique of video streaming using opnet tools computer science essay

[Technology](#), [Computer](#)



With the popularization of mobile technique, many users obtain various multimedia services through heterogeneous internet. Among these services, video streaming application is most challenging. Because of time constraint and VARIABLE BITRATE (VBR) property of a video, the problem of streaming high quality video in insufficient external WAN bandwidth. To solve this problems we are reviewing different technique like OPTIMAL CACHE ALGORITHM, MOSES (mobile streaming for video surveillances) etc. To make the good quality video streaming, we have to work on some different parameters like latency, image quality, video fluidity and frame losses.

The mobile technique is most popularized and brought a great revolution in this 21st century. There are some terms like mobile video surveillance, video streaming which helps to do the mobile technology more and more advanced.

This paper is basically focus on how the video streaming done using OPNET tools. For this we refer to the broad class of emerging real-time video surveillance. In mobile video streaming all the issues related with video garbing, processing, interpretation and dispatching of multimedia data becomes more challenging due to the presence of mobile platforms either in the transmitting or receiving side, wirelessly interconnected.

For video streaming Givaldi and Prati proposed a streaming system called MOSES (mobile streaming for video surveillance), that effectively implements the described general purpose architecture for mobile video surveillance. MOSES supports video streaming in different condition, aiming at low-latency transmission over limited bandwidth network. The video stream is provided

with a sufficient quality to be correctly analyzed by both human-based and computer-based video surveillance layers. To this aim we propose a optimization of the streaming process with an adaptive control of the streaming parameters.

In this paper we also discussed how OPNET can be applied in modern video streaming technique. Network simulation is a major part of this OPNET modeler. It is useful to create the network and for the video streaming process.

Basic steps which are used for video streaming technique are following:-

Video Compression

Principles and practice of video coding

Basics behind MPEG compression algorithms

Current image & video compression standards

Video Communication & Video Streaming I

Video application contexts & examples: DVD and Digital TV

Challenges in video streaming over the Internet

Techniques for overcoming these challenges

Video Communication & Video Streaming II

## Video over loss packet network and wireless links at 'Error-resilient video communications Today

There are lots of streamed video techniques are available till now.

JPEG :- It is a joint photographic experts group, which is basically a single frame image compression. It mainly consists of minimum implementation, which are required to support some specific applications.

MPEG:-It is a moving picture experts group. This process will work under the direction of ISO (International Standard Organization). In this basically, the ISO do coding of moving pictures.

H. 261:-This is one of the best processes found in the field of video compression. This process was completed with the help of algorithm known as motion compression algorithm. The H. 261 video technique is use for the communication channel.

### RELATED WORKS:-

In this paper we are reviewing different algorithm's which are proposed by some reacher fellow's on video streaming technique. They proposed different algorithms to resolve the problems of video streaming. In this paper, we are reviewing the following algorithms which are already proposed in the video streaming field.

Cut-off Cache (CC) Algorithm :-

This algorithm was proposed by Zhang et al. This algorithm use to handle the video staging process.

In cut-off cache algorithm, the frames which are available inside the given video are sequentially compare with given cut-off rate.

Cut After Smoothing Algorithm:-

This is the next version of CC algorithm which was also proposed by Zhang et al.

In this he had given the information about the utilization of WIDE AREA NETWORK bandwidth. This is also used to handle the video staging in more effective way.

Optimal Cache (OC) algorithm:-

The Optimal cache (OC) algorithm, is basically proposed to compute the video caching with linear complexity ( $O(n)$ , where  $n$  is the number of frames). The concept behind the OC algorithm is same as the CC algorithm but the main advantage is we can also use the concept of WAN bandwidth.

Cache Selected After Smoothing Algorithm (CSAS).

In this algorithm the researcher integrates two video processor's and then combine it with cache selected process.

After some years Chang, Ho and Oyang gave some other contribution on this field. They just tried to propose some other algorithm's which is helpful for video streaming of high bandwidth.

Priority Selected Cache(PSC) algorithm:-

PSC algorithm is the modified version of the optimal cache algorithm. In this we have to select the frame data which are having maximum number of high priority.

In this we have to replace the low priority frame with the high priority frames.

Review Analysis:-

In this paper we are basically dealing with the OPNET modeler. The original OPNET simulation model for MPEG-2 streaming was developed in the year 2000 by Srinivas Kandala and Sachin Despande.

Theoretical Concepts:-

Any video if we will take for an experiment it basically contain certain frames and that frames are having particular size. The following three variables which helps us for video streaming.

Scene Length Distribution :-A particular movie or video which we have to compress is having certain scene in it. We have to divide those scenes with particular length. That process is called scene length distribution.

Frame Size Distribution :- We know that one particular scene will contain certain frames . Now the frame type or size is essential aspect of model. Each and every frame has certain size.

Stream Structure:- When we divide the particular video in certain scene and frame length than we can see that each scene containing certain pictures that's called GOP( group of pictures). This is called the stream structure.

Node Model Design:-

Now in this paper we are theoretically defining how we can create a node model using OPNET which helpful for us in video streaming technique. There are certain processes in OPNET by the help of that we can create a video streamed model.

In OPNET we have to use constant bitrates stream (CBR). When we use CBR, the process model in OPNET is very simple, just use the standard. Simple source module and set the frame size and frame interarrival time to the desired value. When a stream is used scenes with high entropy get more bandwidth resulting in a higher visual quality. Because different streams tend to have high entropy. A scene at different moments in time, a bitrates is divided very efficiently, when several streams are transmitted over a packet switched network. Hence, by the help of this process we can easily make an OPNET model which helps in video streaming.

CONCLUSION:-

The theoretical concepts of video streaming using OPNET modeler are explained in this paper. An OPNET model was used to program low level process modules. The packet segmentation support allows the model to be used over several underlying protocols. The simulation results shows that it is based on the high level characterized in the time domain, the behavior of streamed video using OPNET models and streamed video using different algorithm is similar. For video streaming we basically have to follow some steps like video compression, video streaming 1, video streaming 2 etc.

Current image and video compression standards:-

STANDARD

APPLICATION

BITRATE

JPEG

Continuous-tone still-image compression

Variable

H-261

Video telephony and teleconferencing over ISDN

P \* 64 kb/s

MPEG-1

Video on digital storage media (CD-ROM)



1. 5 Mb/s

MPEG-2

Digital Television

2-20 Mb/s

H. 263

Video telephony over PSTN

33. 6-? Mb/s

MPEG-4

Object-based coding, synthetic content, interactivity

Variable

JPEG-2000

Improved still image compression

Variable

H. 264/MPEG-4 AVC

Improved video compression

10's – 100's Kb/s

After reviewing all the above algorithm which are proposed till today we can conclude that , all the algorithm are used for different purpose in video streaming technique. Like some algorithm's are used only for normal streaming but Cache Selected After Smoothing Algorithm (CSAS) and Priority Selected Cache (PSC) algorithm are basically used for the video streaming which are having very good quality with less bandwidth and low latency.

The upcoming techniques for video streaming process are peer-to-peer, internet technique, wireless video streaming technique.