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Some Compression Techniques of Audio and Video Files Using Encoding and Decoding In Multimedia Systems

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Abstracts: This paper advocates that how to compress audio and video in multimedia using encoding and decoding techniques. This accommodates multimedia, digital audio, error quantization, audio compression, coding of wave form and H.323 etc.,

Keywords: Multimedia, digital video, ADC, audio, video, perceptual coding, masking etc.,

I. INTRODUCTION

This journal details innovative research ideas, emerging technologies, state-of-the-art methods and tools in all aspects of multimedia computing, communication, storage, and applications. It features theoretical, experimental, and survey articles. Coverage in multimedia systems includes: Integration of digital video and audio capabilities in computer systems, Multimedia information encoding and data interchange formats, Operating system mechanisms for digital multimedia, Digital video and audio networking and communication, Storage models and structures, Methodologies, paradigms, tools, and software architectures for supporting multimedia applications, Multimedia applications and application program interfaces, and multimedia end system architectures.

II. MULTIMEDIA

The wireless web is an exciting newly created but it is not the one and only one. When the word is mentioned, both the propeller heads and the suits begin salivating as if on the cue. Multimedia is just two or more media. Many people often refer to pure audio, such as internet telephony or internet radio as like multimedia. A better term is streaming media, but we will follow the real-time audio to be multimedia as well.

III. DIGITAL AUDIO

A sound (audio) wave is a one dimensional wave (1D). When a sound wave strikes a microphone, the microphone generates an electrical signal, which represents the sound amplitude as a time function. The representation, processing, storage and transmission of such audio signals are a major part of the study of multimedia systems. In general, the frequency range of the human hearing is from 20 Hz to 20,000 Hz. The measurement of frequency range of sound is in terms of “decibels (dB)”. Consider, ‘a’ and ‘b’ are two powers of ranges corresponding to their respective ratios can be conventionally expressed by using the formula of decibels as shown below.

$$D B = 10 \log_{10} (a/b)$$

Audio waves can be converted into digital format by using ADC (analog digital converter). An ADC takes an electrical voltage as input and generates a binary number as output.

IV. QUANTIZATION ERROR

The error can be introduced by finite number of bits per sample is said to be the quantization errors. Two most suitable examples, where sampled sound is used are the telephone and audio compact discs. Pulse code modulation can be used within the telephone system.

V. AUDIO COMPRESSION

The compact disc (cd) quality audio requires a transmission bandwidth 1.411 mbps. The substantial compression is needed to make transmission over the internet practical. The audio compression technique can be categorized into two ways. They are:

- A. Waveform coding
- B. Perceptual coding

- 1) *Wave form coding*: In waveform coding the signals can be transforms mathematically by a Fourier transformation into its frequency components. The amplitudes of each component is then encrypting in a minimal way of representation.
- 2) *Perceptual coding*: It will exploit various types of flaws in the human auditory system to encrypt a signal in such a way that it sounds the same to human listener.

VI. H.323

H.323 entitled as the virtual telephone systems and the equipment for local area networks (LAN) which provides a non-promised quality of service. It is an architectural overview of internet telephone than a specific protocol. It references a large number of specific protocols for speech coding, cell setup, signaling, data transport etc.,

The following protocol stack will demonstrate various positions of all the protocols.

	SPEECH		CONTROL	
			G.7XX	
	RTP	RTCP	H.225 (RAS)	Q.93 CALL SINALLING
	H.245 CALLCONTROL			
	UDP		TCP	
INTERNET PROTOCOL (IP)				
DATALINK PROTOCOL				
PHYSICAL LAYER PROTOCOL				

VII. VIDEO COMPRESSION

Video compression is the process of encoding a video file in such a way that it consumes less space than the original file and is easier to transmit over the network/internet. It is a type of compression technique that reduces the size of video file formats by eliminating redundant and non-functional data from the original file. Video compression is performed through a video codec that works on one or more compression algorithms. Usually video compression is done by removing repetitive images, sounds and/or scenes from a video. For example, a video may have the same background, images or sound played several times or the data displayed /attached with video file is not that important. Video compression will remove all such data to reduce the video file size. Once a video is compressed, its original format is changed into different format depending on the codec used. The video player must support that video format or be integrated with the compressing codec to play the video file.

VIII. CONCLUSION

Some audio and video compression techniques using encoding and decoding in multimedia system will perform to compressing the audios from large memory size to small memory size using encoding and decoding in multimedia systems. By using waveform coding, perceptual coding and H.323 a more suitable to compressing the audio files and video files.

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