Multimedia System Homework 1

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1. MPEG – 1

Audio

MPEG-1 Audio Layer II, created for applications where lower compression efficiency could be tolerated in return for a less complex algorithm that could be executed with simpler hardware requirements.[[1]](#endnote-1)

Video

ISO/IEC 11172-2 specifies a video codec which was originally designed for the application domain of video for CD storage.

A number of requirements apply in the context of storage and replay of stored data, which mainly are related to random access:

* The video sequence must be replayable forward and backward.
* Fast forward/reverse modes have to be supported.
* Editing must be possible.

MPEG-1 Video is a format that is now also widely used for video storage and replay on PCs, video file transfer over the Internet, etc.[[2]](#endnote-2)

2. MPEG – 2

Audio

MPEG-1 Layers II (MP2) are perceptual audio coders for 2-channel audio content. Layer II provides for a higher compression efficiency for a slightly higher complexity. Layer II requires bit rates in the range of 192 to 256 kb/s for near CD quality.[[3]](#endnote-3)

MP2 remains a dominant standard for audio broadcasting[[4]](#endnote-4)

Video

purpose

ISO/IEC 11172-2 extends the specifications of MPEG-1 Video for more generic classes of video sources and applications. It supports interlaced video and more rigid display timing constraints.

applications

MPEG-2 is mainly used for consumer-level video broadcast (e.g. DVB) and storage (e.g. DVD), as well as for professional applications such as video storage in studios.

3. MPEG – 4

Audio

Purpose

Advanced Audio Coding(MPEG – 4 Audio) is appropriate for applications involving storage or transmission of mono, stereo or multi-channel music or other audio signals where quality of the reconstructed audio is paramount.

Application

AAC has seen considerable adoption by industry. It has application in compression for PC-based and portable devices, compression for terrestrial digital audio broadcast, streaming of compressed media for both Internet and mobile telephone channels.[[5]](#endnote-5)

Video

Rectangular

Purpose

ISO/IEC 14496-2 specifies a video codec which allows efficient compression of rectangular (frame-based) video. Support is given for manifold applications, ranging from extremely low rates and resolutions as required by mobile video transmission up to high rates, resolutions and fidelity as applicable in the field of professional production.

Application

Frame-based MPEG-4 Video is a format that is used for efficient storage of video content and for video streaming over the Internet and mobile networks, as well as for professional applications such as video storage in studios.

Non-rectangular

Purpose

ISO/IEC 14496-2 specifies the coded representation of picture information in the form of natural or synthetic visual objects such as video sequences of rectangular or arbitrarily shaped pictures, moving 2D meshes, animated 3D face and body models, and texture for synthetic objects.

Applications

Arbitrary-shape MPEG-4 Video is a format that can be used for a wide range of interactive and content-related applications, such as interactive movies and games with user-selected insertion and replacement of scene parts, insertion of segmented video objects in graphics and multimedia presentations.[[6]](#endnote-6)

4. MPEG – 7

Audio

Purpose

The MPEG-7 Audio standard contains description tools for audio describing content. The extraction of lower level descriptors is normative and is based on the audio signal itself. With the help of low level descriptors it is possible to search and filter audio content in regard to for e.g. spectrum, harmony, timbre and melody.[[7]](#endnote-7)

Applications

* Digital Library: Image/video catalogue, musical dictionary.
* Multimedia directory services: e.g. yellow pages.
* Broadcast media selection: Radio channel, TV channel.
* Multimedia editing: Personalized electronic news service, media authoring.
* Security services: Traffic control, production chains...
* E-business: Searching process of products.
* Cultural services: Art-galleries, museums...
* Educational applications.
* Biomedical applications.[[8]](#endnote-8)

5. MPEG 21

Purpose

MPEG-21 is based on two essential concepts:

* definition of a Digital Item (a fundamental unit of distribution and transaction)
* users interacting with Digital Items[[9]](#endnote-9)

Application

The MPEG-21 standard, from the Moving Picture Experts Group, aims at defining an open framework for multimedia applications. It’s application that using electronic commerce for multimedia contents. [[10]](#endnote-10)

**References**

1. <https://en.wikipedia.org/wiki/MPEG-1_Audio_Layer_I> [↑](#endnote-ref-1)
2. <https://mpeg.chiariglione.org/standards/mpeg-1/video> [↑](#endnote-ref-2)
3. <https://mpeg.chiariglione.org/standards/mpeg-2/audio> [↑](#endnote-ref-3)
4. <https://en.wikipedia.org/wiki/MPEG-1_Audio_Layer_II> [↑](#endnote-ref-4)
5. <https://mpeg.chiariglione.org/standards/mpeg-4/audio> [↑](#endnote-ref-5)
6. <https://mpeg.chiariglione.org/standards/mpeg-4/video> [↑](#endnote-ref-6)
7. <https://mpeg.chiariglione.org/standards/mpeg-7/audio> [↑](#endnote-ref-7)
8. <https://en.wikipedia.org/wiki/MPEG-7> [↑](#endnote-ref-8)
9. <https://en.wikipedia.org/wiki/MPEG-21> [↑](#endnote-ref-9)
10. <http://www.ktword.co.kr/abbr_view.php?m_temp1=2391> [↑](#endnote-ref-10)