Philips Content Identification

Video and audio watermarking for rights protection, tracking and monitoring

CineFence...
Forensic watermarking solutions for Digital Cinema

Features at a glance

Video
- Payload size: 35 bits/5 minutes
- Robustness: the watermark will survive:
  - Camcorder capturing
  - Subsequent compression down to MPEG-2 1.0 Mb/s
  - Subsequent compression down to DivX 400 Kbit/s
  - Subsequent compression down to Video CD
- VHDL Embedding core
  - Resolutions: 2K and 4K
  - Frame rate: 24 and 48 frames per second
  - Real-time embedding during play-out
  - No pre-processing required
- Supporting Altera/Xilinx
- Detection application
  - Detector can detect in all common video formats such as MPEG2, H.264, DivX, WMV etc.
- DCI compliant

Audio
- Payload size: 35 bits/5 minutes
- Robustness: the watermark will survive:
  - Over-the-air microphone capturing
  - Subsequent compression, such as MP3, WMA, AC3
  - Amplitude compression
  - Time scaling
- Embedding library
  - API with ANSI-C interface
  - Sample frequencies: 48 kHz and 96 kHz
  - Real-time embedding during play-out
  - No pre-processing required
- Detection application
  - Detection in every file format after conversion to WAV
- DCI compliant

Although the text seems to be cut off, it appears to be discussing the features of CineFence, a forensic watermarking solution for digital cinema. The document mentions video and audio features, robustness against various compression and capture methods, and support for common video formats like MPEG2, H.264, DivX, and WMV.
Controlling camcorder piracy
Camcorder copying by cinema visitors can be considered one of the most important leakage sources for video piracy. For various technological reasons, this problem has been proved to be extremely difficult to handle for the content industry. However, in line with the present industry trend towards digital cinema, Philips has now created an unrivaled, new watermarking solution to get a better grip on cinema piracy: CineFence.

The CineFence product is able to link camcorder-captured movies back to the cinema where the camcording occurred and is available for video and audio content.

DCI compliant embedding and detection software.
The CineFence embedder is able to watermark in video as well as audio content. The delivered software, which is fully DCI compliant, can be integrated in a media block and automatically brands every played-out movie with a unique watermark in the video or audio stream. This watermark is so robust that it can even survive camcorder and microphone capturing and all currently available compression techniques without any problem.

CineFence Video is available as a VDHL embedding core and is able to embed in 2K and 4K resolutions with rates of 24 and 48 frames per second. The video payload size is 35 bits per 5 minutes and therefore fully meets the forensic marking requirement of the Digital Cinema System Specification V1.0.

For audio embedding, Philips provides an ANSI-C library, which supports 48 and 96 kHz PCM audio content and can be integrated on a DSP. The audio payload size amounts to 35 bits per 5 minutes, which also complies with the forensics-requirement of the above-mentioned DCI Specification.

Detecting the watermark.
When a camcorder-copied film is then found on the Internet, it can be analyzed with separate CineFence detection software indicating in which movie theatre it was recorded. This enables content owners to collect better information about regional camcording piracy and hence get substantially more control of the problem.

The CineFence Video detector can detect in all common video formats, while the Audio detector is able to perform detection in all audio formats after conversion to WAV audio format.

The video and audio applications are commercially available separately, but of course a watermarking combination of both CineFence Video and Audio would be the strongest solution to identify the cinema where a pirated movie has been camcorded!

Business Unit Content Identification
CineFence is a product development of Philips Content Identification, which has an extensive product portfolio of world-class watermarking and fingerprinting solutions. Philips Content Identification is an independent and trusted supplier that can help you maintain control of your valuable content copyright.

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