TECHNOLOGY

Environmental Signatures for Forensic Analysis and Alignment of Media Recordings

OVERVIEW

In the modern era, a huge amount of digital information is available in the form of audio, image, video, and other sensor recordings. Stored on disks and other storage devices, this information has metadata describing the time and place of recording. However, digital tools can be used to modify the stored information. For example, digital editing software can be used to cut a clip from an original audio or insert a clip from one audio into another audio, or manipulate the metadata field to alter the recording date. Similar
changes can also occur with video surveillance and other recordings. In the absence of any cryptographic protection and watermarking techniques during initial data acquisition, such modifications can be difficult to detect. Developing forensic tools to authenticate data using natural timestamp in the stored digital data presents an attractive direction to complement the existing technologies.

University of Maryland researchers have devised a novel natural timestamp for audio and visual recordings. By detecting the natural interference caused by the 50/60 Hz electrical network frequency (ENF), an audio/visual recording can be authenticated in time and even location. This system will also allow users to determine if a recording has been tampered with or edited in any fashion. Furthermore, this technology will enable new alignment and stitching methods in professional A/V editing software, creating an easy way to synchronize various recordings.

APPLICATIONS

- Information Assurance
- Audio/Video Stitching and Synchronization

ADVANTAGES

- ENF is generated independent of recording device
- Inherent time and location data

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Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

LICENSE STATUS

Available for exclusive or non-exclusive license

CATEGORIES

- Information Technology

EXTERNAL RESOURCES

- US Patent 9,363,467

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