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(71) Applicants and
(72) Inventors: **VANMAN, Robert, Vernon** [US/US]; 6803 Shoreview Drive, McKinney, TX 75070 (US). **GOBLE, Simon, Christopher** [GB/US]; 3102 Greer Road, Palo Alto, CA 94303 (US).

(74) Agents: **ROBINSON, Ross, T.** et al.; Jenkens & Gilchrist, Suite 3700, 1445 Ross Avenue, Dallas, TX 75202 (US).

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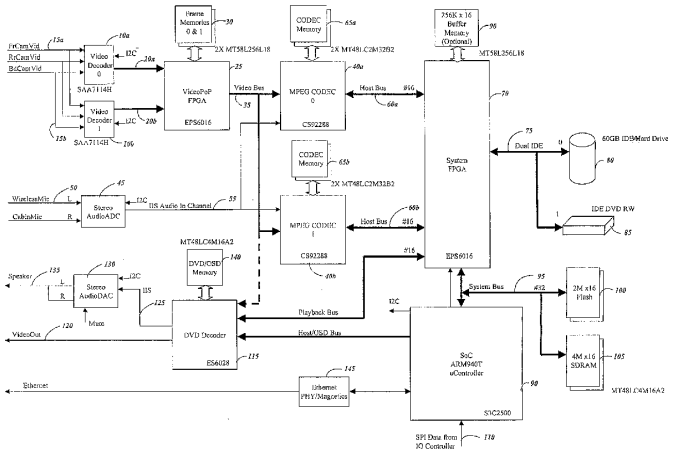
(54) Title: METHOD OF AND SYSTEM FOR MOBILE SURVEILLANCE AND EVENT RECORDING



(57) Abstract: A data-encoding system includes a source of unencoded data, and a first encoder interoperably coupled to the source, wherein the first encoder is adapted to receive the unencoded data, encode the unencoded data, and output encoded data at a first data rate. The data encoding system further includes a second encoder interoperably coupled to the source, wherein the second encoder is adapted to receive the unencoded data, encode the unencoded data, and output encoded data at a second data rate in which the second data rate exceeds the first data rate. This Abstract is provided to comply with rules requiring an Abstract that allows a searcher or other reader to quickly ascertain subject matter of the technical disclosure. This Abstract is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims.

WO 2006/044476 A2

METHOD OF AND SYSTEM FOR MOBILE SURVEILLANCE AND EVENT RECORDING

CROSS-REFERENCE TO RELATED APPLICATIONS

[001] This patent application claims priority from, and incorporates by reference the entire disclosure of, U.S. Provisional Patent Application No. 60/617,988, filed on October 12, 2004.

BACKGROUND OF THE INVENTION

[002] This invention is directed to a video surveillance system, and in particular, by way of example and not limitation, to a video surveillance system adapted to be mounted in a law enforcement vehicle for producing a permanent digital evidentiary record, on a multi-media disc, of a traffic stop or other event and incidents occurring after a suspect's vehicle has been stopped.

[003] In law enforcement, a reliable witness that is incapable of perjury is needed to substantiate actions taken by a law enforcement officer and to protect the officer against false allegations by persons involved in an incident. An excellent witness of this type is a video recording of the incident, now widely used in traffic stops and criminal investigations, which can be reviewed after the incident and archived. By recording the incident first-hand as it actually happens, video recordings serve to eliminate conflicting individual interpretations of the incident and facilitate effective and efficient law enforcement.

[004] Vehicle-mounted video cameras to make video records of an incident or scene external to the law enforcement vehicle are well known in the art. For example, U.S. Pat. No. 4,949,186 to Peterson discloses a vehicle-mounted system in which a video-cassette recorder is housed in a vault located in the trunk of a patrol car. U.S. Pat. No. 5,677,979 to Squicciarini et al discloses a video surveillance system which integrates the outputs of a video camera, a radar unit, a remote control, and a wireless microphone to produce a comprehensive video recording of an incident from its beginning to the end. This system also uses a video cassette recorder to capture the incident on videotape. However, VHS and digital video tapes are bulky, requiring considerable space for storage, are susceptible to damage, and degrade over time. Additionally, the data on tapes may only be accessed sequentially.

SUMMARY OF THE INVENTION

[005] A video-data chapter segmentation method includes monitoring for at least one external start trigger, and responsive to detection of at least one of the at least one external start trigger, creating a chapter start point at a point in the video data corresponding to a specified time preceding the at least one detected external start trigger. The method further includes initiating recording of the video data beginning at the point in the video data and monitoring for at least one stop trigger. The method still further includes responsive to detection of at least one of the at least one stop trigger, creating a chapter stop point at a point in the data corresponding to a specified time preceding the at least one detected stop trigger.

[006] A video-data chapter segmentation computer system includes a processor and a memory. The memory includes software instructions adapted to enable the computer system to perform the steps of monitoring for at least one external start trigger, and responsive to detection of at least one of the at least one external start trigger, creating a chapter start point at a point in the video data corresponding to a specified time preceding the at least one detected external start trigger. The software instructions are further adapted to enable the computer system to perform the steps of initiating recording of the video data beginning at the point in the video data, monitoring for at least one stop trigger, and responsive to detection of at least one of the at least one stop trigger, creating a chapter stop point at a point in the data corresponding to a specified time preceding the at least one detected stop trigger.

[007] A data-encoding system includes a source of unencoded data, and a first encoder interoperably coupled to the source, wherein the first encoder is adapted to receive the unencoded data, encode the unencoded data, and output encoded data at a first data rate. The data encoding system further includes a second encoder interoperably coupled to the source, wherein the second encoder is adapted to receive the unencoded data, encode the unencoded data, and output encoded data at a second data rate in which the second data rate exceeds the first data rate.

[008] A data-encoding method includes a first encoder interoperably coupled to a source of unencoded data receiving the unencoded data, encoding the unencoded data, and outputting encoded data at a first data rate. The method further includes a second encoder interoperably coupled to the source receiving the unencoded data, encoding the unencoded data, and outputting encoded data at a second data rate, wherein the second data rate exceeds the first data rate.

[009] A data-overflow-handling method includes storing at least one of captured audio data, video data, and metadata to a first directory of a non-removable data storage medium, and determining whether an event is being recorded. The method further includes responsive to a determination that an event is being recorded, storing an image of the stored at least one of captured audio data, video data, and metadata to a second directory of the non-removable data storage medium. The method still further includes determining whether a predefined capacity threshold relative to a removable data storage medium has been exceeded, and responsive to a determination that the predefined capacity threshold has been exceeded, creating a third directory of the non-removable data storage medium. The method still further includes determining whether data in the second directory of the non-removable storage medium has not been stored to the removable data storage medium, and responsive to a determination that data in the second directory of the non-removable storage medium has not been stored to the removable data storage medium, storing any unstored data in the second directory to the removable data storage medium. The method further includes determining whether the second directory contains finalization files, and responsive to a determination that the second directory contains finalization files, finalizing the removable storage medium and providing a prompt to insert another removable storage medium. The method still further includes responsive to a determination that the second directory contains no finalization files, returning to the step of determining whether data in the second directory of the non-removable storage medium has not been stored to the removable data storage medium.

[0010] A data-overflow-handling computer system includes a processor and a memory. The memory includes software instructions adapted to enable the computer system to perform the steps of storing at least one of captured audio data, video data, and metadata to a first directory of a non-removable data storage medium, determining whether an event is being recorded, and responsive to a determination that an event is being recorded, storing an image of the stored at least one of captured audio data, video data, and metadata to a second directory of the non-removable data storage medium. The memory further includes software instructions adapted to enable the computer system to perform the steps of determining whether a predefined capacity threshold relative to a removable data storage medium has been exceeded, and responsive to a determination that the predefined capacity threshold has been exceeded, creating a third directory of the non-removable data storage medium. The memory further includes software instructions adapted to enable the computer system to perform the steps of determining

whether data in the second directory of the non-removable storage medium has not been stored to the removable data storage medium, and responsive to a determination that data in the second directory of the non-removable storage medium has not been stored to the removable data storage medium, storing any unstored data in the second directory to the removable data storage medium. The memory further includes software instructions adapted to enable the computer system to perform the steps of determining whether the second directory contains finalization files, and responsive to a determination that the second directory contains finalization files, finalizing the removable storage medium and providing a prompt to insert another removable storage medium. The memory still further includes software instructions adapted to enable the computer system to perform the step of responsive to a determination that the second directory contains no finalization files, returning to the step of determining whether data in the second directory of the non-removable storage medium has not been stored to the removable data storage medium.

[0011] A method for archiving data includes receiving data, storing the data on a first data storage medium, and selecting a portion of the data. The method further includes determining if at least one environmental factor indicates that environmental conditions are acceptable for storing the selected portion of the data on a second data storage medium. The method still further includes responsive to a determination that the at least one environmental factor indicates that environmental conditions are acceptable, storing the selected portion of the data on the second data storage medium.

[0012] A computer system for archiving data includes a processor and a memory. The memory includes software instructions adapted to enable the computer system to perform the steps of receiving data, storing the data on a first data storage medium, and selecting a portion of the data. The memory further software instructions adapted to enable the computer system to perform the steps of determining if at least one environmental factor indicates that environmental conditions are acceptable for storing the selected portion of the data on a second data storage medium, and responsive to a determination that the at least one environmental factor indicates that environmental conditions are acceptable, storing the selected portion of the data on the second data storage medium.

[0013] A data security method includes performing a checksum on data contained on a removable data storage medium, and storing the checksum on the removable data storage medium in at least one of an encrypted and a hidden form. The method further includes storing

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