

SECURITY MONITORING DEVICE AND METHOD OF MONITORING A LOCATION

FIELD OF THE INVENTION

The present invention relates to a security monitoring device and a method of
5 monitoring a location and in particular to a security monitoring device storing security
footage and information related to the security footage separately.

BACKGROUND OF THE INVENTION

Traditional security monitoring devices store or transmitted security footage along with
information related to the security footage as one file. Typically the information is
10 embedded in the footage in a strip along the bottom of the footage. Transmitting the
footage and the data together requires a large communications pipe. Transmitting only
the information required is more efficient as a smaller communication pipe is needed.

WO 2005/111785 describes a method for managing fixed-area video segments from
fixed-area security cameras using a media asset management system which includes
15 collecting the fixed-area video segments from the fixed-area security cameras,
associating corresponding geospatial data with each fixed-area video segment, and
creating a search thesaurus including search descriptors with cross-references there
between. The footage and data are both transmitted to a central location

It is the object of the present invention to store information including at least time and
20 location separately from the security footage in a storage medium. The present
invention would only communicate information including at least time and location to
the central monitoring system. The benefit of doing so is that less data transfer costs are
incurred by transferring only the time and location, as opposed to the entire footage
which would consume a lot of bandwidth.

25 The term “comprising” as used in this specification means “consisting at least in part
of”. When interpreting each statement in this specification that includes the term
“comprising”, features other than that or those prefaced by the term may also be present.
Related terms such as “comprise” and “comprises” are to be interpreted in the same
manner.

As used herein, the term "internet" should be interpreted broadly, to include other types of networks that connect together electronic devices such as computers, mobile telephones, PDAs, and the like, and the term "internet" will include other electronic communication networks, such as intranets, or WAN, LANs, wireless networks etc.

5 As used herein the term "and/or" means "and" or "or", or both.

As used herein "(s)" following a noun means the plural and/or singular forms of the noun.

It is intended that reference to a range of numbers disclosed herein (for example, 1 to 10) also incorporates reference to all rational numbers within that range (for example, 1,
10 1.1, 2, 3, 3.9, 4, 5, 6, 6.5, 7, 8, 9 and 10) and also any range of rational numbers within that range (for example, 2 to 8, 1.5 to 5.5 and 3.1 to 4.7).

The entire disclosures of all applications, patents and publications, cited above and below, if any, are hereby incorporated by reference.

In this specification, where reference has been made to external sources of information,
15 including patent specifications and other documents, this is generally for the purpose of providing a context for discussing the features of the present invention. Unless stated otherwise, reference to such sources of information is not to be construed, in any jurisdiction, as an admission that such sources of information are prior art or form part of the common general knowledge in the art.

20 SUMMARY OF THE INVENTION

It is an object of the present invention to provide an improved security monitoring device that overcomes the above disadvantages or at least provides the public or industry with a useful choice.

In a first embodiment the present invention consists in a security monitoring device for
25 recording security footage at a location, said device comprising:

a controller, to control said device;

a camera for obtaining security footage of the device surroundings;

a location information device adapted to provide location information to said controller;

5 storage for storing security footage photographed by said camera along with other information, said other information including at least time and location, said security footage and other information being stored separately but associated by time; and

communication means for said controller to communicate said other information to a central monitoring system.

Preferably said location information device is a mobile telephone

10 Preferably said location information is obtained by cellular site triangulation.

Preferably said location information is GPS location information.

Preferably said mobile telephone is programmed to provide GPS location information based on the results of cellular triangulation.

15 Preferably said controller monitors said security footage for events and stores information on said events within said other information, and communicates said other information to said central monitoring system.

Preferably a mobile telephone is used as said communication means.

20 Preferably in response to a request from said central monitoring system said controller communicates security footage of a requested time period to said central monitoring system.

Preferably said camera is a digital video camera.

In a first embodiment the present invention consists in a method of monitoring a location, comprising the steps of:

25 obtaining security footage of the location;
obtaining location information;

storing said security footage along with other information, said other information including at least time and location, said security footage and other information being stored separately but associated by time; and

communicating only said other information to a central monitoring system.

5 Preferably said location information is obtained from a mobile telephone

Preferably said location information is obtained by cellular site triangulation.

Preferably said mobile telephone is programmed to provide GPS location information.

Preferably including the steps of:

monitoring said security footage for events;

10 including information on said events with said other information, and

communicating said other information to said central monitoring system.

Preferably said mobile telephone is used to communicate said other information.

Preferably including the steps of communicating security footage of a requested time period to said central monitoring system in response to a request from said central

15 monitoring system.

BRIEF DESCRIPTION OF THE DRAWINGS

Disclosed embodiments and methods of utilizing the invention will be further described, with reference to the accompanying figures, by way of example only and without intending to be limiting, wherein:

20 **Figure 1** shows a schematic view of the security monitoring device, illustrating the core components of the present invention;

Figure 2 shows a schematic view of how location information is obtained by the present invention through cellular site triangulation; and

25 **Figure 3** is a flow chart illustrating how a location is monitored by the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 illustrates a security monitoring device 101. Referring to Figure 1, the security monitoring device 101 consists of a controller 102 to control the security monitoring device 101 and a camera 103 which is used to obtain security or other footage of the device surroundings. The controller 102 may be and is not restricted to an electronic chip with a central processing unit. The camera 103 may be and is not restricted to a digital video camera.

The security monitoring device 101 also includes a storage medium 104 which is used to store footage photographed by the camera 103 along with other information which includes at least time and location. The footage is correlated with a relational identifier such as the current time. Other identifiers that could be used include a counter.

The storage medium 104 may be but is not restricted to a hard disk, magnetic tape or a solid state device. The security monitoring device 101 also includes a communication device 106 that includes but is not restricted to Ethernet or fiber optic cards, modems and transceivers. The communication medium 107 may include but is not restricted to wired communications, wireless communications or any form of electromagnetic communications. Examples of wired communications include Ethernet and fibre optics. Examples of wireless communications include radio frequency communications, microwave communications and infra red communications.

The footage and other information in addition to being stored on the storage medium 104 can be transmitted through a communication device 106 via a communication medium 107 to a central monitoring system 108.

The security monitoring device 101 further consists of a mobile telephone 105 adapted to provide location information to the controller 102. The mobile telephone 105 is adapted to provide location information to the controller 102. The mobile telephone 105 would typically be adapted by installing software on the mobile telephone 105 with the necessary data transfer cables to connect the mobile telephone 105 with the controller 102. The aforementioned location information may include but is not restricted to GPS location information, and is in one embodiment, is obtained by cellular site triangulation but may be provided by other means. The mobile telephone 105 can be also be used concurrently as a communication device 106.

In an alternative embodiment the location information can be obtained via another device such as a GPS receiver.

In a preferred embodiment, the security monitoring device 101 records security footage at a location and the controller 102 monitors the security footage for events and stores
5 information on the events along with other information including at least the time and the current location of the security monitoring device 101.

An event can be generated by external system connected to the system, example a door open, close event by a door access system. Or when a particular item is sold, example cigarettes, when the point of sale cash register system is accessed. An external system
10 109 could be a store cash register or card readers at a train station.

An event can also be generated from the camera footage itself, via video content analysis, using a content analysis system 110, for example to detect unattended baggage.

Any information obtained is stored separately and is correlated with a relational
15 identifier such as time. The controller 102 communicates this information to the central monitoring system 108.

When footage is desired in one embodiment the central monitoring system 108 sends a request for security footage to the controller 102 on the security monitoring device 101 via a communication medium 107. This request could be in the form of a query for a
20 particular time period i.e. security footage from 12PM – 1AM. The controller 102 would then retrieve the requested footage from the storage medium 104 by querying it with a relational identifier such as time. The controller 102 would then send the footage of the requested time period via a communication medium 107 to the central monitoring system 108.

25 Referring to Figure 2, an example of cellular site triangulation is illustrated. It involves the calculation of the location of a mobile telephone 105 based upon at least two radio control signals each received from a different base station 201. Cellular site triangulation is disclosed in at least US 6,201,973 which is hereby incorporated by reference in full. Cellular site triangulation is a process by which the location of a radio
30 transmitter can be determined by measuring either the radial distance, or the direction,

of the received signal from two or three different points. Figure 2, provides a schematic view of how cellular site triangulation is used by the present invention.

Referring to Figure 3, the method of the present invention will be illustrated. The present invention to monitor a location obtains security footage of the location 301. The
5 present invention additionally obtains location information from a mobile telephone adapted to provide location information 302 or from another device such as a GPS device.

The security monitoring device 101 of the present invention stores 303 the other information including at least time and location separately, from the security footage in
10 storage medium 104.

The security monitoring device 101 of the present invention then communicates the other information to the central monitoring system 108. In the first instance only the other information is communicated 304 to the central monitoring system 108. The benefit of doing so is that less data transfer costs are incurred by transferring only the
15 other information, typically time and location, as opposed to the entire footage which would consume a lot of bandwidth.

If some particular footage is required, the central monitoring system 108 can send a request to the controller 102 on the security monitoring device 101 via a communication medium 107. The controller 102 responds by sending footage of a requested time
20 period via a communication medium 107 to the central monitoring system 108.

In a further embodiment if footage of the current view of the camera is required by a central monitoring location the controller 102 can in addition to storing the footage locally, transmit the footage to the central monitoring system 108.

This invention may also be said broadly to consist in the parts, elements and features
25 referred to or indicated in the specification of the application, individually or collectively, and any or all combinations of any two or more of said parts, elements or features, and where specific integers are mentioned herein which have known equivalents in the art to which this invention relates, such known equivalents are deemed to be incorporated herein as if individually set forth.

CLAIMS

1. A security monitoring device for recording security footage at a location, said device comprising:

a controller, to control said device;

a camera for obtaining security footage of the device surroundings;

a location information device adapted to provide location information to said controller;

storage for storing security footage photographed by said camera along with other information, said other information including at least time and location,

said security footage and other information being stored separately but associated by time; and

communication means for said controller to communicate said other information to a central monitoring system; wherein said location information is obtained by cellular site triangulation.
2. A security monitoring device for recording security footage at a location, as claimed in claim 1, wherein said location information device is a mobile telephone.
3. A security monitoring device for recording security footage at a location, as claimed in any one of the previous claims wherein said location information is GPS location information.
4. A security monitoring device for recording security footage at a location, as claimed in claim 3 wherein said mobile telephone is programmed to provide GPS location information based on the results of cellular triangulation.
5. A security monitoring device for recording security footage at a location, as claimed in any one of the previous claims wherein said controller monitors said

security footage for events and stores information on said events within said other information, and communicates said other information to said central monitoring system.

6. A security monitoring device for recording security footage at a location, as claimed in any one of the previous claims wherein a mobile telephone is used as said communication means.

7. A security monitoring device for recording security footage at a location, as claimed in any one of the previous claims wherein in response to a request from said central monitoring system said controller communicates security footage of a requested time period to said central monitoring system.

8. A security monitoring device for recording security footage at a location, as claimed in any one of the previous claims wherein said camera is a digital video camera.

9. A method of monitoring a location, comprising the steps of:

obtaining security footage of the location;

obtaining location information;

storing said security footage along with other information, said other information including at least time and location, said security footage and other information being stored separately but associated by time; and

communicating only said other information to a central monitoring system; wherein said location information is obtained by cellular site triangulation.

10. A method of monitoring a location, as claimed in claim 9, wherein said location information is obtained from a mobile telephone.

11. A method of monitoring a location, as claimed in claim 9 or claim 10 wherein said mobile telephone is programmed to provide GPS location information.

12. A method of monitoring a location, as claimed in claim 9 or claim 10 including the steps of:

monitoring said security footage for events;

including information on said events with said other information, and
communicating said other information to said central monitoring system.

13. A method of monitoring a location, as claimed in any one of the previous claims wherein said mobile telephone is used to communicate said other information.

14. A method of monitoring a location, as claimed in any one of the previous claims including the steps of communicating security footage of a requested time period to said central monitoring system in response to a request from said central monitoring system.