Litigation Search Report CRU 3999

Reexamination Control No. 90/019,682

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Search Notes

U.S. Patent No. 7,446,803

1. Performed a KeyCite Search in Westlaw, which retrieves all history on the patent including any litigation.

2. Performed a search on the patent in Lexis CourtLink for any open dockets or closed cases.

3. Performed a search in Lexis in the Federal Courts and Administrative Materials databases for any cases found.

4. Performed a search in Lexis in the IP Journal and Periodicals database for any articles on the patent.

5. Performed a search in Lexis in the news databases for any articles about the patent or any articles about litigation on this patent.

Litigation: No Cases Found

Citing References (15)

Treatment	Title	Date	Type	Depth	Headnote(s)
—	1. RF 058268/0086 Out Of Plan	Dec. 02, 2021	Assignments	—	—
—	2. RF 014809/0968 Out Of Plan	Dec. 15, 2003	Assignments	—	—
—	3. METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR ANNOTATING VIDEO CONTENT WITH AUDIO INFORMATION Out Of Plan US PAT 11195557 , U.S. PTO Utility	Dec. 07, 2021	Patents	—	—
—	4. METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR ANNOTATING VIDEO CONTENT Out Of Plan US PAT 10811056 , U.S. PTO Utility	Oct. 20, 2020	Patents	—	—
—	5. SYSTEM AND METHOD TO CREATE A MEDIA CONTENT SUMMARY BASED ON VIEWER ANNOTATIONS Out Of Plan US PAT 10313750 , U.S. PTO Utility	June 04, 2019	Patents	—	—
—	6. SCOREBOOK CREATING APPARATUS, SCOREBOOK CREATING SYSTEM, SCOREBOOK CREATING METHOD, PROGRAM, IMAGING DEVICE, AND REPRODUCING METHOD Out Of Plan US PAT 10115021 , U.S. PTO Utility	Oct. 30, 2018	Patents	—	—
—	7. VIDEO MONITORING SYSTEM FOR AN EXIT Out Of Plan US PAT 9866799 , U.S. PTO Utility	Jan. 09, 2018	Patents	—	—
—	8. METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR MANAGING VIDEO INFORMATION Out Of Plan US PAT 9459761 , U.S. PTO Utility	Oct. 04, 2016	Patents	—	—
—	9. IDENTIFYING A LOCALE FOR CONTROLLING CAPTURE OF DATA BY A DIGITAL LIFE RECORDER BASED ON LOCATION Out Of Plan US PAT 9270950 , U.S. PTO Utility	Feb. 23, 2016	Patents	—	—
—	10. ESTABLISHING USAGE POLICIES FOR RECORDED EVENTS IN DIGITAL LIFE RECORDING Out Of Plan US PAT 9164995 , U.S. PTO Utility	Oct. 20, 2015	Patents	—	—
—	11. VIDEO MONITORING SYSTEM USING AN ALARM SENSOR FOR AN EXIT FACILITATING ACCESS TO CAPTURED VIDEO Out Of Plan US PAT 9123223 , U.S. PTO Utility	Sep. 01, 2015	Patents	—	—
—	12. DIGITAL LIFE RECORDER WITH SELECTIVE PLAYBACK OF DIGITAL VIDEO Out Of Plan US PAT 9105298 , U.S. PTO Utility	Aug. 11, 2015	Patents	—	—

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**13.** METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR MANAGING VIDEO INFORMATION Out Of Plan US PAT 8701005 , U.S. PTO Utility	Apr. 15, 2014	Patents	—	—
—	**14.** ELECTROMAGNETIC TREATMENT OF TISSUES AND CELLS Out Of Plan US PAT 7967839+ , U.S. PTO Utility	June 28, 2011	Patents	—	—
—	**15.** ELECTROMAGNETIC TREATMENT OF TISSUES AND CELLS Out Of Plan US PAT APP 20120035608 , U.S. PTO Application	Feb. 09, 2012	Patents	—	—

☐ US7446803B2 - Synchronous video and data annotations

Bibliographic information & Images ⌃

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2008-11-04

Granted

Application number and date
US10736113 ↗ (/api/control?client=&query=AN:("US10736113")&autosearch=true)
2003-12-15

Priority number and date
US10736113 ↗ (/api/control?client=&query=PRN:("US10736113")&autosearch=true)
2003-12-15

Ultimate owner
Dominion Harbor Enterprises ↗ (/api/control?client=&query=uo:("Dominion%20Harbor%20Enterprises")&autosearch=true)

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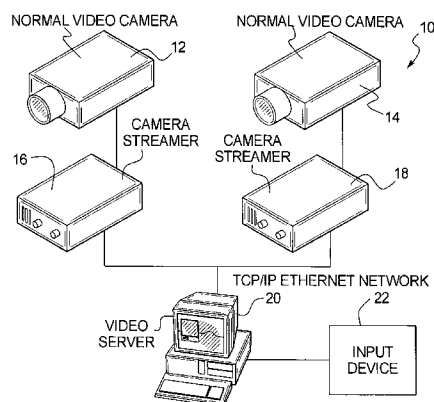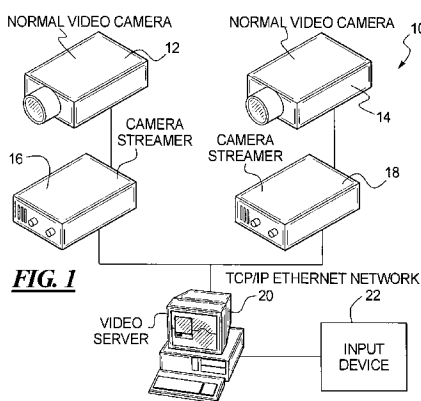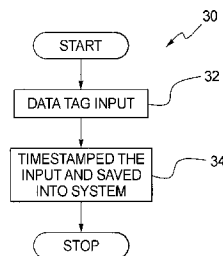Woei Ling Leow ↗ (/api/control?client=&query=in:("Woei%20Ling%20Leow")&autosearch=true)

Legal representative
Kris T. Fredrick ↗ (/api/control?client=&query=ag:("Kris%20T.%20Fredrick")&autosearch=true)

Clipped image
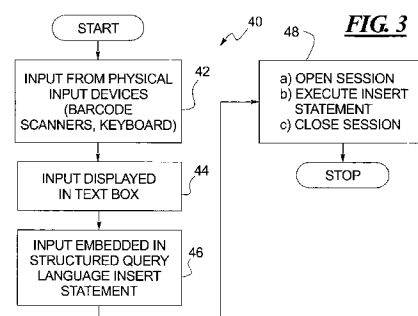

NORMAL VIDEO CAMERA 12
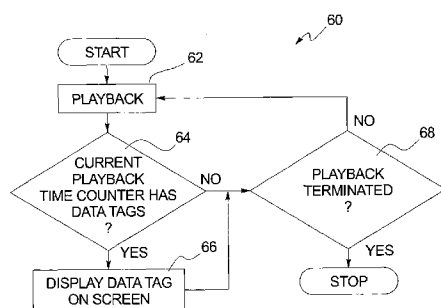NORMAL VIDEO CAMERA 10
14
CAMERA STREAMER
CAMERA STREAMER
16
18
TCP/IP ETHERNET NETWORK
20 22
VIDEO SERVER
INPUT DEVICE

Drawing image

NORMAL VIDEO CAMERA 12
NORMAL VIDEO CAMERA 10
CAMERA STREAMER
CAMERA STREAMER 14
16
18
FIG. 1
TCP/IP ETHERNET NETWORK
20 22
VIDEO SERVER
INPUT DEVICE

30
START
DATA TAG INPUT 32
FIG. 2
TIMESTAMPED THE INPUT AND SAVED INTO SYSTEM 34
STOP

Drawing image

START
40 48
FIG. 3
INPUT FROM PHYSICAL INPUT DEVICES (BARCODE SCANNERS, KEYBOARD) 42
a) OPEN SESSION
b) EXECUTE INSERT STATEMENT
c) CLOSE SESSION
STOP
INPUT DISPLAYED IN TEXT BOX 44
INPUT EMBEDDED IN STRUCTURED QUERY LANGUAGE INSERT STATEMENT 46

FIG. 4 50
START
INPUT DATA TAG SEARCH STRING 52
56
FORMAT THE RETURNED ROWS FROM QUERYING SYSTEM TO DISPLAY ON SCREEN ALONGSIDE WITH THE VIDEO
54
58
COMPOSE SQL QUERY WITH SEARCH STRING AUTOMATICALLY TO PERFORM SEMANTICS OF RETURNING ALL ROWS CONTAINING THE STRING
USER CAN SELECT VIDEO SEQUENCES TO PLAYBACK THAT MATCH ALL/PARTIALLY WITH THE TAGGED STRING FROM HUMAN-COMPUTER INTERFACE
STOP

Drawing image

FIG. 5

60
START 62
PLAYBACK
64
CURRENT PLAYBACK TIME COUNTER HAS DATA TAGS ?
NO
68
PLAYBACK TERMINATED ?
NO
YES 66
DISPLAY DATA TAG ON SCREEN
YES
STOP

Abstract

A video surveillance system captures video of a protected area, stores the video in a computer readable memory, stores data annotations in the computer readable memory where the data annotations are searchable using a search criteria, and stores links that link the stored data annotations to corresponding video segments of the stored video so that the data annotations can be used to search for a video segment of interest. The data annotations are searched using the search criteria, and the video segment of interest linked to the data annotation found as a result of the search is displayed.

Original

Claims

1. A surveillance system comprising: a camera arranged to output images of a protected area; an input device arranged to provide a data annotation; and a server arranged to synchronously store the images and the data annotation so that the data annotation can be used to search for a segment of the images; wherein the server is arranged to time stamp the data annotation; and further wherein the server is arranged to directly compare the time stamp of the data annotation to an image count when searching for the segment of the images.

2. The surveillance system of claim 1 wherein the server is arranged to cause the segment of the images matching the time stamp to be displayed.

3. The surveillance system of claim 1 wherein the camera comprises a video camera, and wherein the server comprises a video server.

4. The surveillance system of claim 1 wherein the camera comprises an IR camera.

5. The surveillance system of claim 1 wherein the camera comprises a thermal imager.

6. The surveillance system of claim 1 wherein the server is arranged to save the data annotation in SQL readable form.

7. The surveillance system of claim 6 wherein the server is arranged to time stamp the data annotation.

8. The surveillance system of claim 7 wherein the server is arranged to match the time stamp of the data annotation to an image count when searching for the segment of the images.

9. The surveillance system of claim 6 wherein the server is arranged to receive an SQL search string corresponding to the data annotation to be searched and to search for the data annotation based on the SQL search string.

10. The surveillance system of claim 9 wherein the server is arranged to match the data annotation found as a result of the search to the segment of the images.

11. A method comprising: storing surveillance video in a memory; storing data annotations in the memory, wherein the data annotations are useful in searching for a video segment of the surveillance video of interest; and, synchronizing the stored data annotations to the corresponding video segments of the stored video so that the data annotations can be used to search for the video segment of interest; wherein the data annotations include a time stamp; and further comprising directly comparing the time stamp of the data annotations to an image count when searching for the segment of the images.

12. The method of claim 11 further comprising searching for a particular data annotation.

13. The method of claim 12 further comprising comparing the time stamp of the particular data annotation to a timing of the video when searching for the video segment of interest.

14. The method of claim 13 further comprising displaying the video segment of interest that matches the time stamp of the particular data annotation.

15. The method of claim 11 further comprising searching the data annotations using a search criteria.

16. The method of claim 15 wherein the synchronizing of the stored data annotations to the corresponding video segments comprises time stamping the data annotations with corresponding time stamps.

17. The method of claim 16 further comprising searching for a particular data annotation.

18. The method of claim 17 wherein the searching includes matching the time stamp of the particular data annotation to a timing of the video.

19. The method of claim 18 further comprising displaying the video segment of interest that matches the time stamp of the particular data annotation.

20. The method of claim 15 wherein the searching of the data comprises using SQL to conduct the search.

21. The method of claim 20 wherein the synchronizing of the stored data annotations to the corresponding video segments of the stored video comprises time stamping the data annotations with corresponding time stamps, wherein the searching comprises matching the time stamp associated with the stored data annotation that corresponds to the search criteria to a timing of the video, and wherein the method further comprises displaying the video segment of interest whose timing matches the time stamp associated with the stored data annotation that corresponds to the search criteria.

22. A surveillance method comprising: capturing images of a protected area; storing the images in a computer readable memory; storing data annotations in the computer readable memory, wherein the data annotations are searchable using a search criteria; and, storing a link that links the stored data annotations to corresponding image segments of the stored images so that the data annotations can be used to search for an image segment of interest; wherein the data annotations include a time stamp; and further comprising directly comparing the time stamp of the data annotations to an image count when searching for the segment of the images.

23. The surveillance method of claim 22 further comprising searching for a particular data annotation using the search criteria.

24. The surveillance method of claim 23 further comprising displaying the image segment of interest linked to the particular data annotation found as a result of the search.

25. The surveillance method of claim 22 further comprising searching for a particular data annotation using the search criteria.

26. The surveillance method of claim 25 further comprising comparing the time stamp corresponding to the particular data annotation found as a result of the search to a timing of the images when searching for the image segment of interest.

27. The surveillance method of claim 26 further comprising displaying the image segment of interest whose timing matches the time stamp of the particular data annotation.

28. The surveillance method of claim 22 wherein the search criteria comprises an SQL search criteria.

29. The surveillance method of claim 28 further comprising: searching for a particular data annotation using the SQL search criteria; finding the image segment of interest linked to the particular data annotation; and, displaying the image segment of interest.

30. The surveillance method of claim 22 wherein the link comprises a data attribute stamp, and wherein the data attribute serves as an index to retrieve video and data segments of the same characteristic inferred by the data attribute.

31. The surveillance method of claim 30 wherein the data attribute comprises temperature.

32. The surveillance method of claim 30 wherein the data attribute comprises luminosity.

33. The surveillance method of claim 30 wherein the data attribute comprises a biometric signature.

Original

Families

This section contains all family relations of this particular document. For more information about the different families, refer to the User Manual (Glossary/Families).

Extended (21) Priority date/claims	Complete (5) Priority date/claims	Main (5) Priority date/claims	Domestic (2) Priority date/claims	☐	Publication number	Application number	Title	Status

					Publication	Application	Title	Status	
2002-05-20 US10441341 US10736113 US10736133 US10815084 US13135030 US60381948	2011-06-23 US10441341 US10736113 US10815084 US13135030 US60381948	2011-06-23 US10441341 US10736113 US10815084 US13135030 US60381948	2011-06-23	☐	US20120035608A1	US13135030	Electromagnetic treatment of tissues and cells	Filed	PDF
	2004-03-31 US10441341 US10736113 US10815084 US60381948	2004-03-31 US10441341 US10736113 US10815084 US60381948	2004-03-31	☐	EP1732462A4	EP05732502	ELECTROMAGNETIC TREATMENT OF TISSUES AND CELLS	Ceased	PDF
				☐	EP1732462A2	EP05732502	ELECTROMAGNETIC TREATMENT OF TISSUES AND CELLS	Ceased	PDF
			2004-03-31	☐	CA2561186A1	CA2561186	ELECTROMAGNETIC TREATMENT OF TISSUES AND CELLS	Ceased	PDF
			2004-03-31	☐	WO2005096954A3	WOUS05010790	ELECTROMAGNETIC TREATMENT OF TISSUES AND CELLS	Filed	PDF
				☐	WO2005096954A2	WOUS05010790	ELECTROMAGNETIC TREATMENT OF TISSUES AND CELLS	Filed	PDF
			2004-03-31	☐	US7967839B2	US10815084	Electromagnetic treatment of tissues and cells	Ceased	PDF
				☐	US20040210282A1	US10815084	Electromagnetic treatment of tissues and cells	Ceased	PDF
	2003-12-15 US10736113	2003-12-15 US10736113	2003-12-15	☐	EP1695307A1	EP04820747	SYNCHRONOUS VIDEO AND DATA ANNOTATIONS	Ceased	PDF
			2003-12-15	☐	US7446803B2 ⌂	US10736113	Synchronous video and data annotations	Granted	PDF
				☐	US20050128318A1	US10736113	Synchronous video and data annotations	Granted	PDF
			2003-12-15	☐	WO2005062268A1	WOUS04037891	SYNCHRONOUS VIDEO AND DATA ANNOTATIONS	Filed	PDF
			2003-12-15	☐	JP2007515136A	JP2006545645	The synchronous video and data annotated	Filed	PDF
	2003-12-15 US10441341 US10736133 US60381948	2003-12-15 US10441341 US10736133 US60381948	2003-12-15	☐	US20040127895A1	US10736133	Electromagnetic treatment of tissues and cells	Filed	PDF
			2003-12-15	☐	WO2005058143A3	WOUS04042268	ELECTROMAGNETIC TREATMENT OF TISSUES AND CELLS	Filed	PDF
				☐	WO2005058143A2	WOUS04042268	ELECTROMAGNETIC TREATMENT OF TISSUES AND CELLS	Filed	PDF
	2003-05-20 US10441341 US60381948	2003-05-20 US10441341 US60381948	2003-05-20	☐	US20030216729A1	US10441341	Device and method for wound healing and uses therefor	Filed	PDF
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			2002-05-20	☐	WO03099102A3	WOUS03015765	DEVICE AND METHOD FOR WOUND HEALING AND USES THEREFOR	Filed	PDF
				☐	WO03099102A2	WOUS03015765	DEVICE AND METHOD FOR WOUND HEALING AND USES THEREFOR	Filed	PDF

Description

⌂

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to synchronous annotation of data to video, such as surveillance video taken of a secured area.

BACKGROUND OF THE INVENTION

[0002] Video surveillance systems are currently used to video record areas requiring protection from intruders, unauthorized use, criminal activities, etc. When an improper activity occurs in the protected area, investigators can view the video recording of the protected area in order to develop evidence useful in detecting and/or successfully prosecuting those who engaged in the improper activity.

[0003] However, finding a segment of the surveillance video that relates to the improper activity is laborious and time consuming. The video recordings acquired by current video surveillance systems contain only images captured by video cameras. Therefore, all or a substantial part of the surveillance video must be viewed in order to find the relevant segment. Current video surveillance systems do not also record or otherwise capture data annotations from other sources of information that would make it easier to find relevant video segments. Hence, when current video recordings are searched during an investigation, current video search methods rely only on temporal data and visual cognition of the viewer, which makes searches laborious, time consuming, and sometimes ineffective.

[0004] The present invention involves annotating video recordings with data from other sources. Such data annotations are synchronized or linked to the video recordings and can enable a user to more easily locate video segments of interest.

[0005] SUMMARY OF THE INVESTIGATION

[0006] In accordance with one aspect of the present invention, a surveillance system comprises a camera, an input device, and a server. The camera is arranged to output images of a protected area. The input device is arranged to provide a data annotation. The server is arranged to synchronously store the images and the data annotation so that the data annotation can be used to search for a segment of the images.

[0007] In accordance with another aspect of the present invention, a method comprises the following: storing surveillance video in a memory; storing data annotations in the memory, wherein the data annotations are useful in searching for a video segment of the surveillance video of interest; and, synchronizing the stored data annotations to the corresponding video segments of the stored video so that the data annotations can be used to search for the video segment of interest.

[0008] In accordance with still another aspect of the present invention, a surveillance method comprises the following: capturing images of a protected area; storing the images in a computer readable memory; storing data annotations in the computer readable memory, wherein the data annotations are searchable using a search criteria; and, storing a link that links the stored data annotations to corresponding image segments of the stored images so that the data annotations can be used to search for an image segment of interest.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The features and advantages of the present invention will become more apparent from a detailed consideration of the invention taken in conjunction with the drawings in which:

[0010] FIG. 1 illustrates a video/data surveillance system according to an embodiment of the present invention;

[0011] FIG. 2 illustrates a flow chart for a data tag recording program executed by the video server of the video/data surveillance system shown in FIG. 1;

[0012] FIG. 3 illustrates a flow chart for an SQL data manipulation program executed by the video server of the video/data surveillance system shown in FIG. 1;

[0013] FIG. 4 illustrates a flow chart for a data searching program executed by the video server of the video/data surveillance system shown in FIG. 1; and,

[0014] FIG. 5 illustrates a flow chart for a playback program executed by the video server of the video/data surveillance system shown in FIG. 1.

DETAILED DESCRIPTION

[0015] FIG. 1 illustrates a video/data surveillance system **10** that includes one or more video cameras such as video cameras **12** and **14** that are positioned so that they can capture video of one or more protected areas. Cameras other than video cameras can be used for the video cameras **12** and **14**. For example, thermal imagers, IR cameras, etc. could be used. Moreover, the video cameras **12** and **14** may comprise any mix of video cameras, thermal imagers, IR cameras, etc. such as a video camera and a thermal imager, an IR camera and a thermal imager, a video camera and an IR camera, etc. The video cameras **12** and **14** feed video to corresponding camera streamers **16** and **18**. The camera streamers **16** and **18** compress and otherwise format the video from the video cameras **12** and **14** for efficient storing and processing by a video server **20** coupled to the camera streamers **16** and **18**. Such compression and formatting saves bandwidth and storage space.

[0016] The video server **20** stores the video streams on a suitable storage medium, and permits the stored video recordings to be viewed (as shown in FIG. 1) and searched by an investigator or other user during an investigation or otherwise. The camera streamers **16** and **18** and the video server **20** may be camera streamers provided by Axis Communications, and the video server **20** may be a standard desktop server provided by Dell. However, it should be understood that other camera streamers and/or video servers can be used instead. Also, the functions of the camera streamers **16** and **18** and of the video server **20** can be combined into a single device or divided between multiple devices.

[0017] The video/data surveillance system **10** also includes an input device **22** such as a barcode scanner, a keyboard having one or more keys, an audio device that may or may not convert voice to text, etc. If a keyboard is used as the input device **22**, a QWERTY keyboard typically used with typewriters or computers may be used. One or more such devices can be used as the input device **22**. The input device **22** can be hardwired to the video server **20**, or the input device **22** may include a transmitter to transmit data annotations to the video server **20** by way of RF, infrared, sonic, or other signals. The input device **22** can additionally or alternatively by a device that provides biometrics signatures such as from fingerprinting, facial recognition, retina scans, etc.

[0018] The input device **22** may be used by a person such as a security guard or a foot patrol to annotate the video being recorded and stored in the video server **20**. For example, such a person may enter data indicating that conditions are normal, or the person may enter data indicating an abnormality such as an explosion, a robbery, a broken window or door, an intruder, a suspicious activity, etc. The video server **20** includes software components that cause the data input by the input device **20** to be synchronously annotated to the video being recorded from the cameras **12** and **14**. The annotated data is useful in facilitating a search for a video segment of interest. For example, the annotated data can help an investigator to locate video segments that recorded abnormalities.

[0019] The video server **20** is programmed with software components so that data annotations, which may be referred to alternatively as data tags and which are entered by use of the input device **22**, can be stored in the memory of the video server **22** in a format that permits the data tags to be searched. For example, the data tags may be stored in SQL readable form. Thus the software components permit the data tags to be searched so that the annotated video segments can be more easily located and played back to a user. The memory of the video server **22** can be disk storage, RAM, EPROM, etc.

[0020] These software components includes a data tag recording program **30** shown by way of a flow chart in FIG. 2. A block **32** of the data tag recording program **30** receives the data tag input from the input device **22**. A block **34** of the data tag recording program **30** then time stamps the received data tag with the time that the video server **20** receives the data from the input device **22** and saves both the data tag and its time stamp in memory of the video server **20**. This time stamp synchronizes the data tag with the corresponding (i.e., annotated) video segment of the video also saved in the memory of the video server **20**. Preferably, but not necessarily, the time stamp of the data tag and the video count associated with the video recording are in the same format.

[0021] When the data tag is stored in memory of the video server **20**, an SQL program **40** is executed as shown by the flow chart of FIG. 3 so as to convert the data tag into SQL readable form. Accordingly, a block **42** of the SQL program **40** receives the data tag to be stored, and a block **44** displays the data tag in an input text box. This input text box may be a standard text input box that is used by Internet search engines to input text to be searched. However, the input text box may take other forms. A block **46** also embeds the data tag into an SQL insert statement. To then save the data tag into a database searchable in SQL, a block **48** executes the SQL insert statement by opening a session, executing the insert statement, and closing the session.

[0022] When a user wishes to find and view a particular segment of video, a data searching program **50** shown by way of a flow chart in FIG. 4 is executed by the video server **20**. A block **52** receives an input data tag search string drafted by the user. This search string contains keywords or other search criteria useful in finding a relevant data tag. A block **54** automatically composes an SQL query based on the data tag search string. The search using this SQL query returns all rows of the SQL database containing the search string. These rows include the data annotations found as a result of the search. A block **56** formats the returned row(s) so as to display on the monitor of the video server **20** the formatted returned row(s) alongside the corresponding video. This display thus includes the formatted returned row(s) and the video count that corresponds to the data tag and that designates the annotated video segment. Alternatively or additionally, it is also possible to view the video directly from the time given in the time-stamp of the tagged data. A block **58** permits the user to select the video sequences for playback that match all or some of the tagged string by use of the graphical user interface.

[0023] A playback program **60** shown by way of a flow chart in FIG. 5 is executed by the video server **20** so as to play back the selected video. A block **62** begins the playback of the selected video for display on the monitor of the video server **20**. A block **64** determines whether the current playback time counter has data tags. The playback time counter may be simply one or more times. A playback time counter having data tags means that there is at least a row of data linking time and data tags. The decision made by the block **64** is to check if, at the current playback time, there is/are corresponding data tag(s) stored in memory. That is, the block **64** determines whether the time indicated by the current playback time counter associated with the video matches the time stamps of the data tags. If the current playback time counter has data tags, then a block **66** causes the data tags to be also displayed on the monitor of the video server **20**. If the current playback time counter does not have data tags, a block **68** determines whether the user has terminated the playback. If the block **68** determines that the user has not terminated the playback, playback of the video segments continues. On the other hand, if the block **68** determines that the user has terminated the playback, playback is stopped.

[0024] A digital video management system providing an exemplary environment for the present invention is disclosed in WO 01/13637 A1.

[0025] Certain modifications of the present invention have been discussed above. Other modifications will occur to those practicing in the art of the present invention. For example, video and data tags are displayed on the monitor of the video server **20**. However, video and/or data tags can be displayed by use of devices other than the monitor of the video server **20**. For example, the video server **20** can send the video and/or data tags to other monitors, to projection screens, etc.

[0026] Also, as disclosed above, a time stamp is used to link a data tag with the video that the data tag annotates. Accordingly, the data tags can be searched for a specific data tag to more easily find a video segment of interest that is linked to that specific data tag, and the time stamps of data tags found from the search can be compared to the video count of the video to identify the video segment of interest. However, links other than data tags can be used to associate data tags with their corresponding segments of video. For example, flags or pointers can be used to link data tags to their corresponding video segments. Also, links such as temperature stamps or luminosity stamps could be used. For temperature stamps, for example, thermal video of an equipment that has exceeded certain temperatures could be retrieved. For luminosity stamps, for example, video images of a certain lighting conditions could be retrieved.

[0027] Accordingly, the description of the present invention is to be construed as illustrative only and is for the purpose of teaching those skilled in the art the best mode of carrying out the invention. The details may be varied substantially without departing from the spirit of the invention, and the exclusive use of all modifications which are within the scope of the appended claims is reserved.

Original

Classifications ∧

IPC	CPC	US Class	ECLA	ICO
H04N5/76	G08B13/19641	348/231.5	G06F17/30V2	T04N5:77
G06F17/30	G08B13/19673	348/143	G06F17/30V3	T04N5:92N
G08B13/196	H04N5/76	348/231.3	G08B13/196L1	T04N9:09
G08B15/00	H04N5/77	348/231.99	G08B13/196S3T	
H04N5/77	H04N5/9201	348/E07.086	H04N5/76	
H04N5/92	H04N7/181	348/E09.006	H04N7/18C	
H04N7/18	H04N21/2187	386/E05.001	H04N21/2187	
H04N9/47	H04N21/231	707/E17.028	H04N21/231	
H04N23/13	H04N21/4828		H04N21/482S	
	H04N21/8133		H04N21/81D1	
	H04N21/8456		H04N21/81D2	
	H04N21/858		H04N21/845T	
	G06F16/78		H04N21/858	
	G06F16/73			
	H04N23/13			

Persons ∧

Ultimate Owner

Original

Dominion Harbor Enterprises☐ (/api/control?client=&query=uo:("Dominion%20Harbor%20Enterprises")&autosearch=true)

Original Assignees

Original	Standardized	Normalized
Woei Ling Leow☐ (/api/control?client=&query=pa:("Woei%20Ling%20Leow")&autosearch=true) Singapore, Republic of Singapore, SG		
Hai Seng Michael Liew☐ (/api/control?client=&query=pa:("Hai%20Seng%20Michael%20Liew")&autosearch=true) Singapore, Republic of Singapore, SG		
Minope Tham☐ (/api/control?client=&query=pa:("Minope%20Tham")&autosearch=true) Singapore, Republic of Singapore, SG		

Kevin Ng [↗] (/api/control?client=&query=pa:("Kevin%20 Ng")&autosearch=true)
Singapore, Republic of Singapore, SG

Current Assignees

Original	Standardized	Normalized
HONEYWELL INTERNATIONAL INC. [↗] (/api/control?client=&query=pacu:("HONEYWELL%20INTERNATIONAL%20INC.")&autosearch=true) 101 COLUMBIA ROADP.O. BOX 2245, 07962-2245, MORRISTOWN, NEW JERSEY, UNITED STATES OF AMERICA	HONEYWELL INTERNATIONAL [↗] (/api/control?client=&query=pacus:("HONEYWELL%20INTERNATIONAL")&autosearch=true)	HONEYWELL [↗] (/api/control?client=&query=pacun:("HONEYWELL")&autosearch=true)

Inventor(s)

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Minope Tham [↗] (/api/control?client=&query=in:("Minope%20Tham")&autosearch=true)
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Kevin Ng [↗] (/api/control?client=&query=in:("Kevin%20Ng")&autosearch=true)
Singapore, Republic of Singapore, SG

Legal representative(s)

Original	Standardized	Normalized
Kris T. Fredrick [↗] (/api/control?client=&query=ag:("Kris%20T.%20Fredrick")&autosearch=true)		

Legal information ⌃

Standardized   Post issuance   INPADOC

Legal status

Event	Date	Description
Granted	2008-11-04	GRANTED
Filed	2003-12-15	FILED

Designated states

Date	Event code	Description

Ownership

	2003-12-15	2003	
LEOW, WOEI LING			2003-12-15
LIEW, HAI SENG MICHAEL			2003-12-15
THAM, MINGPO			2003-12-15
NG, KEVIN			2003-12-15
HONEYWELL INTERNATIONAL INC.			

Payment status

Date	Status	Event code	Description
2020-04-29	Fee paid	M1553	PAYMENT OF MAINTENANCE FEE, 12TH YEAR, LARGE ENTITY.
2016-04-25	Fee paid	M1552	PAYMENT OF MAINTENANCE FEE, 8TH YEAR, LARGE ENTITY.
2012-04-24	Fee paid	M1551	PAYMENT OF MAINTENANCE FEE, 4TH YEAR, LARGE ENTITY.

Litigation/Opposition ⌃

Docket number	Docket description	Court	Date Filed

No CourtLink®

Pharmaceuticals ⌃

Product	Type	Active Ingredient	Applicant	Application No.	Application Type	Approval Date	Patent Expiry Date	Patent usage code	Exclusivity Code	Exclusivity Date	Dosage	Strength	Product Number	Route	RLD	Patent Delist Requested	Exclu Text

No pharmaceuticals data

Citations ⌃

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☐	backward	US5526133A	Cited by the examiner	1996-06-11	System and method for logging and retrieving information on video cassettes in a computer controlled surveillance system	SENSORMATIC ELECTRONICS	📄
☐	backward	US5857044A	Cited by the examiner	1999-01-05	Method and apparatus for processing time code	SONY SONY ELECTRONICS	📄
☐	backward	US5969755A	Cited by the examiner	1999-10-19	Motion based event detection system and method	TEXAS INSTRUMENTS	📄
☐	backward	US6330025B1	Cited by the examiner	2001-12-11	Digital video logging system	NICE SYSTEMS	📄
☐	backward	US6628323B1	Cited by the examiner	2003-09-30	Method and apparatus for surveying a predetermined surveillance area	ASCOM SYSTEC	📄
☐	backward	US6987451B2	Cited by the examiner	2006-01-17	Surveillance system with identification correlation		📄
☐	backward	US20020126758A1	Cited by the examiner	2002-09-12	Video signal analysis and storage	PHILIPS	📄
☐	backward	US20030025599A1	Cited by the examiner	2003-02-06	Method and apparatus for collecting, sending, archiving and retrieving motion video and still images and notification of detected events	MONROE DAVID	📄
☐	backward	US20030228128A1	Cited by the examiner	2003-12-11	High-speed search of recorded video information to detect motion	TAYLOR ERIC L SEAGO ROBERT ALAN	📄
☐	backward	WO01013637A1	Cited by the examiner				📄
☐	backward	WO02082275A1	By other than the examiner	2002-10-17	DATA RECORDING AND PLAYBACK SYSTEM AND METHOD	MONITORING TECHNOLOGY	📄
☐	backward	WO02082275A1	Cited by the examiner	2002-10-17	DATA RECORDING AND PLAYBACK SYSTEM AND METHOD	MONITORING TECHNOLOGY	📄
☐	forward	US8701005B2		2014-04-15	Methods, systems, and computer program products for managing video information		📄
☐	forward	US9105298B2		2015-08-11	Digital life recorder with selective playback of digital video		📄
☐	forward	US9123223B1		2015-09-01	Video monitoring system using an alarm sensor for an exit facilitating access to captured video		📄
☐	forward	US9164995B2		2015-10-20	Establishing usage policies for recorded events in digital life recording		📄
☐	forward	US20090175599A1		2009-07-09	Digital Life Recorder with Selective Playback of Digital Video		📄
☐	forward	US9270950B2		2016-02-23	Identifying a locale for controlling capture of data by a digital life recorder based on location		📄
☐	forward	US9459761B2		2016-10-04	Methods, systems, and computer program products for managing video information	AT&T INTELLECTUAL PROPERTY I	📄
☐	forward	US9866799B1		2018-01-09	Video monitoring system for an exit	TARGET BRANDS	📄

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☐ SEARCHABLE ANNOTATIONS-AUGMENTED ON-LINE COURSE CONTENT

Publication number	US20170004139A1
Publication date	2017-01-05
Application date	2015-06-30

A method for augmenting or enhancing on-line course content includes displaying an on-line education course video to one or more viewers on network-connected viewing devices, receiving viewer annotations data including viewer annotations of video fragments, segments or frames of the displayed course video, and accumulating the viewer annotations data as annotation data records in in a searchable database. Each annotation data record includes annotation text for a respective video fragment, segment or frame of the displayed course video to which the annotation text applies. When a user query or search term has a match in the annotation text in an accumulated annotation data record, the method returns a search result based on information in the accumulated annotation data record including a link to the specific video fragment of course video to which the annotation text applies.

☐ Surveillance video positioning search method and system

Publication number	CN104750698A
Publication date	2015-07-01
Application date	2013-12-27

The invention discloses a surveillance video positioning search method and a surveillance video positioning search system. The surveillance video positioning search system comprises a picture library used to save pictures dynamically collected from surveillance video, build a mapping relation between each picture and a video segment in a video library, and add links to corresponding video segments for all the pictures, the video library used to store the video segments of the surveillance video and build the mapping relation between each video segment and each picture in the picture library, a retrieval system used to perform retrieval in the picture library according to a picture provided by a user and show a retrieval result to the user and a broadcast downloading control unit used to link to the video segment corresponding to the image selected by the user so as to broadcast the corresponding video segment or provide a downloading source for the user according to the picture selected by the user, wherein the retrieval result comprises the one or more than one picture matched with the picture provided by the user at a degree exceeding a matching threshold. The surveillance video positioning search method and the surveillance video positioning search system can accurately position the certain video segment, improve search efficiency of massive video, and solve the problem that time and labor are consumed when the video segment is searched for a playback.

☐ Production of a video stream with synchronized annotations over a computer network

Publication number	US6006241A
Publication date	1999-12-21
Application date	1997-03-14

The production of synchronization scripts and associated annotated multimedia streams for servers and client computers coupled to each other by a diverse computer network which includes local area networks (LANs) and/or wide area networks (WANs) such as the internet. Annotated multimedia streams can include a compressed video stream for display in a video window, an accompanying compressed audio stream and annotations. Synchronization scripts include annotation streams for synchronizing the display of video streams with annotations, e.g., displayable events, such textual/graphical data in the form of HTML pages with Java applets to be displayed in one or more event windows. The producer includes a capture module and an author module for capturing video streams and generating annotation streams, respectively. The capture module compresses the video stream using a suitable compression format. Annotation streams include annotation frames which provide either pointer(s) to the event(s) of interest or include displayable data embedded within the annotation stream. Accordingly, each annotation frame includes either an event locator or an event data. In addition, each annotation frame includes an event time marker which corresponds to the time stamp(s) of associated video frame(s) within the video stream. Embedded displayable data include ticker tape data embedded within the annotation stream. Examples of event locators to displayable events include URL addresses pointing to HTML web pages. The video/audio streams and annotation streams are stored in stream server(s) for subsequent retrieval by client computer(s) in a coordinated manner, so that the client computer(s) is able to synchronously display the video frames and displayable event(s) in a video window and event window(s), respectively. In one implementation, annotation streams include a flipper stream for locating HTML pages and a ticker stream which include ticker (tape) data.

☐ Production of a video stream with synchronized annotations over a computer network

Publication number	US6230172B1
Publication date	2001-05-08
Application date	1999-09-03

The production of synchronization scripts and associated annotated multimedia streams for servers and client computers coupled to each other by a diverse computer network which includes local area networks (LANs) and/or wide area networks (WANs) such as the intermet. Annotated multimedia streams can include a compressed video stream for display in a video window, an accompanying compressed audio stream and annotations. Synchronization scripts include annotation streams for synchronizing the display of video streams with annotations, e.g., displayable events, such textual/graphical data in the form of HTML pages with Java applets to be displayed in one or more event windows. The producer includes a capture module and an author module for capturing video streams and generating annotation streams, respectively. The capture module compresses the video stream using a suitable compression format. Annotation streams include annotation frames which provide either pointer(s) to the event(s) of interest or include displayable data embedded within the annotation stream. Accordingly, each annotation frame includes either an event locator or an event data. In addition, each annotation frame includes an event time marker which corresponds to the time stamp(s) of associated video frame(s) within the video stream. Embedded displayable data include ticker tape data embedded within the annotation stream. Examples of event locators to displayable events include URL addresses pointing to HTML web pages. The video/audio streams and annotation streams are stored in stream server(s) for subsequent retrieval by client computer(s) in a coordinated manner, so that the client computer(s) is able to synchronously display the video frames and displayable event(s) in a video window and event

window(s), respectively. In one implementation, annotation streams include a flipper stream for locating HTML pages and a ticker stream which include ticker (tape) data.

☐ Streaming and displaying a video stream with synchronized annotations over a computer network

Publication number	US6173317B1
Publication date	2001-01-09
Application date	1997-03-14

Client computer(s) retrieve and display synchronized annotated multimedia streams from servers dispersed over a diverse computer network which includes local area networks (LANs) and/or wide area networks (WANs) such as the internet. Multimedia streams provided to the client computer(s) can include a compressed video stream for display in a video window and an accompanying compressed audio stream. Annotations, i.e., displayable events, include textual/graphical data in the form of HTML pages with Java applets to be displayed in one or more event windows. The video/audio and annotation streams are produced and then stored in stream server(s). Annotation streams include annotation frames which provide either pointer(s) to the event(s) of interest or include displayable data embedded within the annotation stream. Accordingly, each annotation frame includes either an event locator or an event data. In addition, each annotation frame includes an event time marker which corresponds to the time stamp(s) of associated video frame(s) within the video stream. Examples of embedded displayable data include ticker tape data embedded within the annotation stream. Examples of event locators to displayable events include URL addresses pointing to HTML web pages. Video/audio streams and annotation streams are provided by the stream server(s) to the client computer(s) in a coordinated manner, so that the client computer(s) is able to synchronously display the video frames and displayable event(s) in a video window and event window(s), respectively.

☐ Capture and display of annotations in paper and electronic documents

Publication number	CN101765840A
Publication date	2010-06-30
Application date	2007-09-17

The patent refers to the field of 'electric digital data processing'. A software and/or hardware facility that enables users to associate annotations with text segments contained in digital content. A capture client allows users to create annotations associated with text segments on content being viewed by the user. The annotations are stored in association with the text segments by an annotation server. When a user subsequently views content, text fragments in the viewed content are compared with the stored text segments by the facility. Text segments that are found to match the text fragments are identified by the facility, and the associated annotations displayed to the user on the viewed content by a display client. Because stored annotations are associated with a text segment, rather than the original content or an identifier associated with the original content from which the text segment was identified, annotations are able to be applied to any content that utilizes the text segment in the future.

☐ SEARCH ENGINE FOR VIDEO AND GRAPHICS

Publication number	US20160292184A1
Publication date	2016-10-06
Application date	2016-03-02

A method of selecting graphic or video files having corresponding locators used to locate such graphic or video files using a computer. Identifiers are created by searching an area within a web page near a graphic or video file for searchable identification terms and searching an area within a web page near links to a graphic or video for searchable identification terms. The identifiers are stored in a database. User requests for graphic or video file content are received and the database of identifiers is searched to find graphic and video files corresponding criteria of the user. Graphic or video file content is then provided to the user.

☐ SEARCH ENGINE FOR VIDEO AND GRAPHICS

Publication number	US20130097145A1
Publication date	2013-04-18
Application date	2012-09-12

A method of selecting graphic or video files having corresponding locators used to locate such graphic or video files using a computer. Identifiers are created by searching an area within a web page near a graphic or video file for searchable identification terms and searching an area within a web page near links to a graphic or video for searchable identification terms. The identifiers are stored in a database. User requests for graphic or video file content are received and the database of identifiers is searched to find graphic and video files corresponding criteria of the user. Graphic or video file content is then provided to the user.

☐ SEARCH ENGINE FOR VIDEO AND GRAPHICS

Publication number	US20100313131A1
Publication date	2010-12-09
Application date	2010-06-21

A method of selecting graphic or video files having corresponding locators used to locate such graphic or video files using a computer. Identifiers are created by searching an area within a web page near a graphic or video file for searchable identification terms and searching an area within a web page near links to a graphic or video for searchable identification terms. The identifiers are stored in a database. User requests for graphic or video file content are received and the database of identifiers is searched to find graphic and video files corresponding criteria of the user. Graphic or video file content is then provided to the user.

☐ SEARCH ENGINE FOR VIDEO AND GRAPHICS

Publication number	US20100313130A1
Publication date	2010-12-09
Application date	2010-06-21

A method of selecting graphic or video files having corresponding locators used to locate such graphic or video files using a computer. Identifiers are created by searching an area within a web page near a graphic or video file for searchable identification terms and searching an area within a web page near links to a graphic or video for searchable identification terms. The identifiers are stored in a database. User requests for graphic or video file content are received and the database of identifiers is searched to find graphic and video files corresponding criteria of the user. Graphic or video file content is then provided to the user.

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1. *Singapore Inventors Develop Data Annotation System*

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US Fed News

November 8, 2008 Saturday 7:32 AM EST

Length: 233 words

Byline: US Fed News

Dateline: Alexandria, Va.

Body

ALEXANDRIA, Va., Nov. 8 -- Woei Ling Leow, Hai Seng Michael Liew, Minope Tham and Kevin Ng, all from Singapore, have developed a surveillance system.

According to the abstract released by the U.S. *Patent* & Trademark Office: "A video surveillance system captures video of a protected area, stores the video in a computer readable memory, stores data annotations in the computer readable memory where the data annotations are searchable using a search criteria, and stores links that link the stored data annotations to corresponding video segments of the stored video so that the data annotations can be used to search for a video segment of interest. The data annotations are searched using the search criteria, and the video segment of interest linked to the data annotation found as a result of the search is displayed."

The inventors were issued U.S. *Patent* No. *7,446,803* on Nov. 4.

The *patent* has been assigned to Honeywell International Inc., Morristown, N.J.

The original application was filed on Dec. 15, 2003, and is available at: *http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnetahtml%2FPTO%2Fsrchnum.htm&r=1&f=G&l=50&s1=7,446,803.PN.&OS=PN/7,446,803&RS=PN/7,446,803*.

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