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(54) **VIDEO SURVEILLANCE SYSTEM EMPLOYING VIDEO PRIMITIVES**

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Related U.S. Application Data

(63) Continuation of application No. 09/987,707, filed on Nov. 15, 2001, now abandoned, which is a continuation-in-part of application No. 09/694,712, filed on Oct. 24, 2000, now Pat. No. 6,954,498.

(51) **Int. Cl.**
H04N 7/18 (2006.01)

(52) **U.S. Cl.**
USPC **348/143**

(58) **Field of Classification Search**
None
See application file for complete search history.

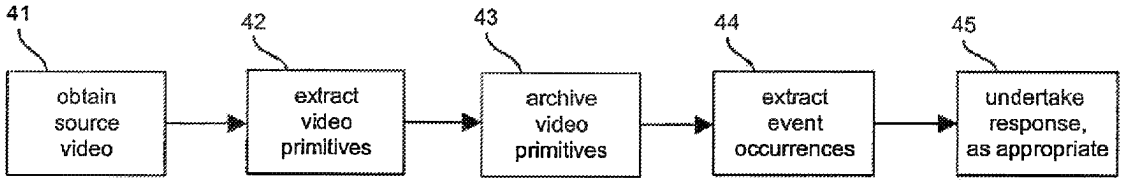
(56) **References Cited**

To view the complete listing of prior art documents cited during the proceeding for Reexamination Control Number 90/012,876, please refer to the USPTO's public Patent Application Information Retrieval (PAIR) system under the Display References tab.

Primary Examiner — Adam L Basehoar

(57) **ABSTRACT**

A video surveillance system is set up, calibrated, tasked, and operated. The system extracts video primitives and extracts event occurrences from the video primitives using event discriminators. The system can undertake a response, such as an alarm, based on extracted event occurrences.



EX PARTE REEXAMINATION CERTIFICATE ISSUED UNDER 35 U.S.C. 307

THE PATENT IS HEREBY AMENDED AS INDICATED BELOW.

Matter enclosed in heavy brackets [ ] appeared in the patent, but has been deleted and is no longer a part of the patent; matter printed in italics indicates additions made to the patent.

ONLY THOSE PARAGRAPHS OF THE SPECIFICATION AFFECTED BY AMENDMENT ARE PRINTED HEREIN.

Column 1, lines 8-12:

This application claims the priority to *and is a continuation of* U.S. patent application Ser. No. 09/987,707, filed Nov. 15, 2001 *now abandoned*, which claims priority to *and is a continuation-in-part of* U.S. patent application Ser. No. 09/694,712, *filed on Oct. 24, 2000,* now U.S. Pat. No. 6,954,498, each of which is incorporated herein by reference in their entirety.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **8**, **9**, **20**, **22**, **29** and **30** are determined to be patentable as amended.

Claims **2-7**, **10-19**, **21**, **23-28** and **31-41**, dependent on an amended claim, are determined to be patentable.

1. A method comprising:

detecting an object in a video from a single camera;

detecting a plurality of attributes of the object by analyzing the video from said single camera, the plurality of attributes including at least one of a physical attribute and a temporal attribute, each attribute representing a characteristic of the detected object;

selecting a new user rule after detecting the plurality of attributes; and

after detecting the plurality of attributes and after selecting the new user rule, identifying an event of the object that is not one of the detected attributes of the object by applying the new user rule to the plurality of detected attributes, *wherein the applying the new user rule to the plurality of detected attributes comprises applying the new user rule to only the plurality of detected attributes*;

wherein the plurality of attributes that are detected are independent of which event is identified,

wherein the step of identifying the event of the object identifies the event without reprocessing the video, and

wherein the event of the object refers to the object engaged in an activity.

8. A method comprising:

detecting first and second objects in a video from a single camera;

detecting a plurality of attributes of each of the detected first and second objects by analyzing the video from said single camera, each attribute representing a characteristic of the respective detected object;

selecting a new user rule; and

after detecting the plurality of attributes, identifying an event that is not one of the detected attributes of the first

new user rule to the plurality of detected attributes comprises applying the new user rule to only the plurality of detected attributes;

wherein the plurality of attributes that are detected are independent of which event is identified,

wherein the step of identifying an event of the object comprises identifying a first event of the first object interacting with the second object by analyzing the detected attributes of the first and second objects, the first event not being one of the detected attributes, and

wherein the event of the object refers to the object engaged in an activity.

9. A video device comprising:

means for detecting an object in a video from a single camera;

means for detecting a plurality of attributes of the object by analyzing the video from said single camera, the plurality of attributes including at least a physical attribute and a temporal attribute, each attribute representing a characteristic of the detected object;

a memory storing the plurality of detected attributes;

means for selecting a new user rule after the plurality of detected attributes are stored in memory; and

means for identifying an event of the object that is not one of the detected attributes of the object by applying a selected new user rule to the plurality of attributes stored in memory, for identifying the event independent of when the attributes are stored in memory and for identifying the event without reprocessing the video, *wherein the applying the new user rule to the plurality of detected attributes comprises applying the new user rule to only the plurality of detected attributes,* and

wherein the event of the object refers to the object engaged in an activity.

20. A method comprising:

providing a video device which detects an object upon analyzing a video from a single camera and which detects plural attributes of the detected object upon analyzing the video from said single camera, the plurality of attributes including at least a physical attribute and a temporal attribute; and

then, selecting a rule, which is not a rule used to detect any individual attribute, as a new user rule, the new user rule providing an analysis of a combination of the attributes to detect an event that is not one of the detected attributes, *wherein the analysis of the combination of the attributes to detect the event comprises analyzing only the combination of the attributes,*

wherein the attributes to be detected are independent of the event to be detected, and

wherein the event of the object refers to the object engaged in an activity.

22. A non-transitory computer-readable storage medium containing instructions that when executed by a computer system cause said computer system to implement the following method comprising:

detecting an object in a video from a single camera;

detecting a plurality of attributes of the object by analyzing the video from said single camera, the plurality of attributes including at least one of a physical attribute and a temporal attribute, each attribute representing a characteristic of the detected object;

selecting a new user rule after detecting the plurality of attributes; and

after detecting the plurality of attributes and after selecting

applying the new user rule to the plurality of detected attributes, the event of the object being identified without reprocessing the video, *wherein the applying the new user rule to the plurality of detected attributes comprises applying the new user rule to only the plurality of detected attributes*;

wherein the plurality of attributes that are detected are independent of which event is identified, and

wherein the event of the object refers to the object engaged in an activity.

29. A non-transitory computer-readable storage medium containing instructions that when executed by a computer system cause said computer system to implement the following method comprising:

detecting first and second objects in a video from a single camera;

detecting a plurality of attributes of each of the detected first and second objects by analyzing the video from said single camera, each attribute representing a characteristic of the respective detected object;

selecting a new user rule; and

after detecting the plurality of attributes, identifying an event that is not one of the detected attributes of the first and second objects by applying the new user rule to the plurality of detected attributes, *wherein the applying the new user rule to the plurality of detected attributes comprises applying the new user rule to only the plurality of detected attributes*;

wherein the plurality of attributes that are detected are independent of which event is identified,

wherein the step of identifying an event comprises identifying a first event of the first object interacting with the second object by analyzing the detected attributes of the first and second objects, the first event not being one of the detected attributes, and

wherein the event of the object refers to the object engaged in an activity.

30. A video device comprising:

means for detecting first and second objects in a video from a single camera;

means for detecting a plurality of attributes of the object by analyzing the video from said single camera, each attribute representing a characteristic of the respective detected object;

a memory storing the plurality of detected attributes; and

means for identifying an event of the first object interacting with the second object by applying a selected new user rule to the plurality of attributes stored in memory, and for identifying the event independent of when the attributes are stored in memory, the event not being one of the detected attributes,

wherein the applying the selected new user rule to the plurality of attributes stored in memory comprises applying the selected new user rule to only the plurality of attributes stored in memory,

wherein the event of the object refers to the object engaged in an activity.

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