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**Talmon et al.**

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(54) **METHOD AND SYSTEM FOR EFFECTIVELY PERFORMING EVENT DETECTION USING FEATURE STREAMS OF IMAGE SEQUENCES**

6,188,381 B1 2/2001 van der Wal et al.  
6,266,369 B1 \* 7/2001 Wang et al. .... 375/240  
6,349,114 B1 2/2002 Mory

(Continued)

(75) Inventors: **Gad Talmon**, Givat Shmuel (IL); **Zvi Ashani**, Ganevi Tikva (IL)

**FOREIGN PATENT DOCUMENTS**

DE 38 42 356 A1 6/1990  
EP 1 107 609 A1 6/2001  
EP 1 173 020 A2 1/2002

(Continued)

(73) Assignee: **Agent Vi**, Rosh-Haayin (IL)

**OTHER PUBLICATIONS**

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 846 days.

XP-010199874: Meyer, M., et al., "A New System for Video-Based Detection of Moving Objects and its Integration into Digital Networks", *IEEE*, pp. 105-110, (1996).

(21) Appl. No.: **10/501,949**

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*Assistant Examiner* — Richard Torrente

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(74) *Attorney, Agent, or Firm* — Spilman Thomas & Battle, PLLC

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(51) **Int. Cl.**

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**H04N 7/12** (2006.01)

(52) **U.S. Cl.** ..... **348/155; 375/240.08**

(58) **Field of Classification Search** ..... 348/154,  
348/155; 375/240.08

See application file for complete search history.

(57) **ABSTRACT**

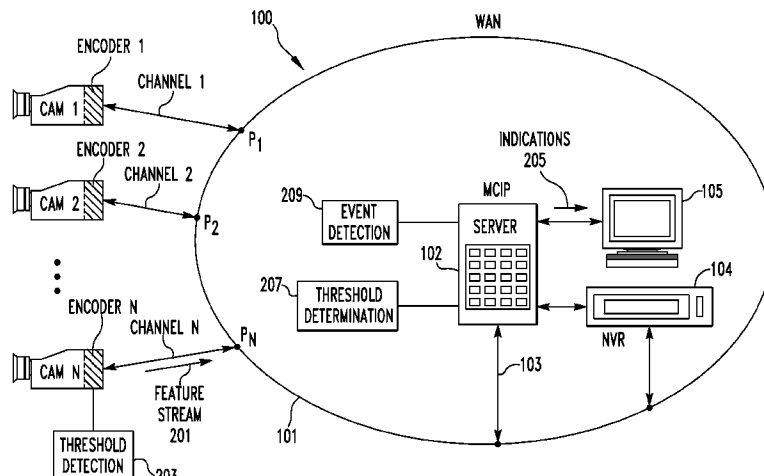
Method and system for performing event detection and object tracking in image streams by installing in field, a set of image acquisition devices, where each device includes a local programmable processor for converting the acquired image stream that consist of one or more images, to a digital format, and a local encoder for generating features from the image stream. These features are parameters that are related to attributes of objects in the image stream. The encoder also transmits a feature stream, whenever the motion features exceed a corresponding threshold. Each image acquisition device is connected to a data network through a corresponding data communication channel. An image processing server that determines the threshold and processes the feature stream is also connected to the data network. Whenever the server receives features from a local encoder through its corresponding data communication channel and the data network, the server provides indications regarding events in the image streams by processing the feature stream and transmitting these indications to an operator.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

6,069,655 A \* 5/2000 Seeley et al. .... 348/154  
6,130,707 A 10/2000 Koller et al.

**58 Claims, 5 Drawing Sheets**



US 8,004,563 B2

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U.S. PATENT DOCUMENTS

6,384,862 B1 5/2002 Brusewitz et al.  
6,996,275 B2\* 2/2006 Edanami ..... 382/218  
2002/0041626 A1 4/2002 Yoshioka et al.  
2002/0054210 A1 5/2002 Glier et al.  
2002/0062482 A1\* 5/2002 Bolle et al. .... 725/105  
2005/0146605 A1\* 7/2005 Lipton et al. .... 348/143

FOREIGN PATENT DOCUMENTS

WO 00/01140 A1 1/2000  
WO 01/63937 A2 8/2001  
WO 01/91353 A2 11/2001  
WO 01/91353 A3 11/2001  
WO 02/37429 A1 5/2002

\* cited by examiner

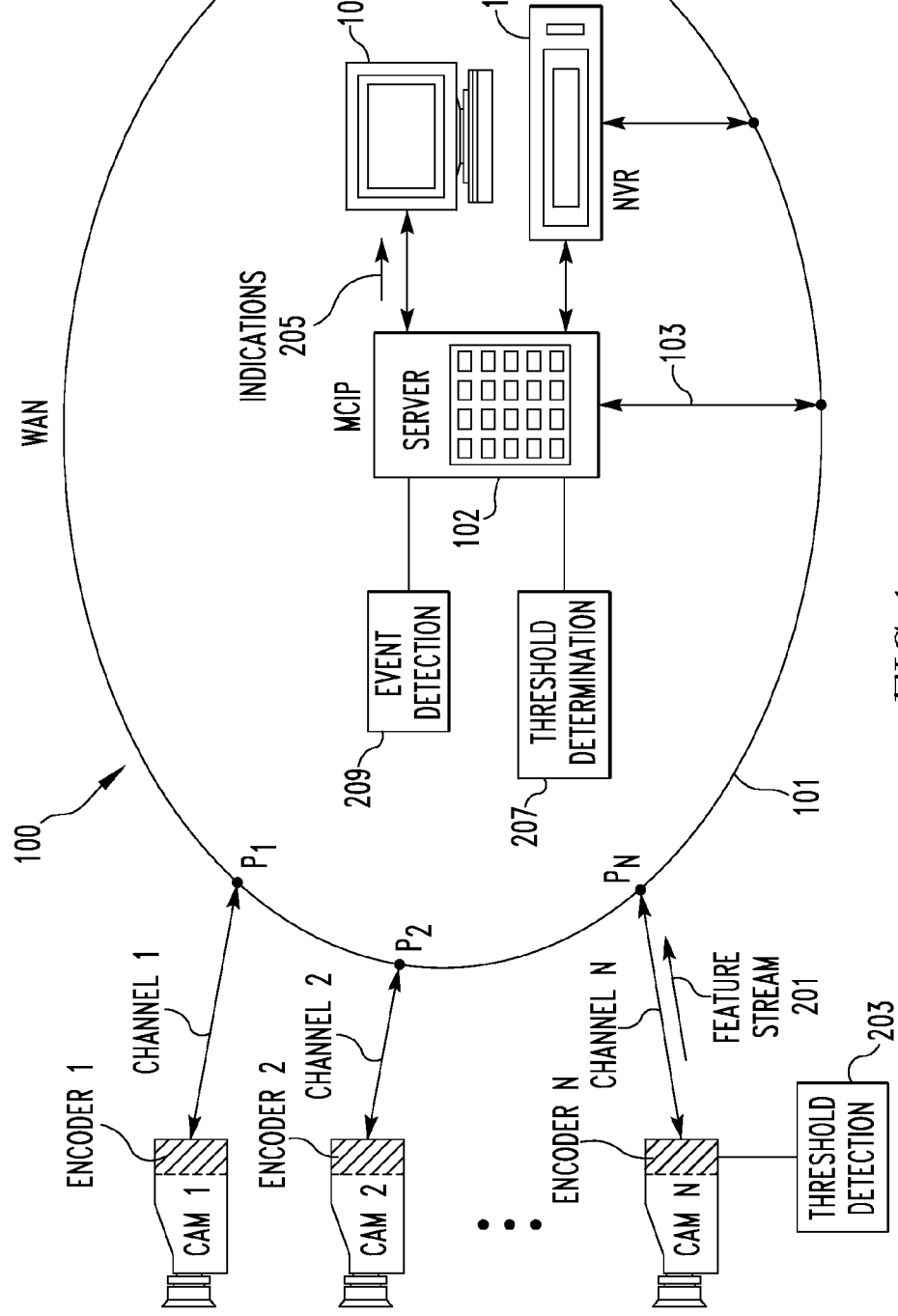


FIG. 1

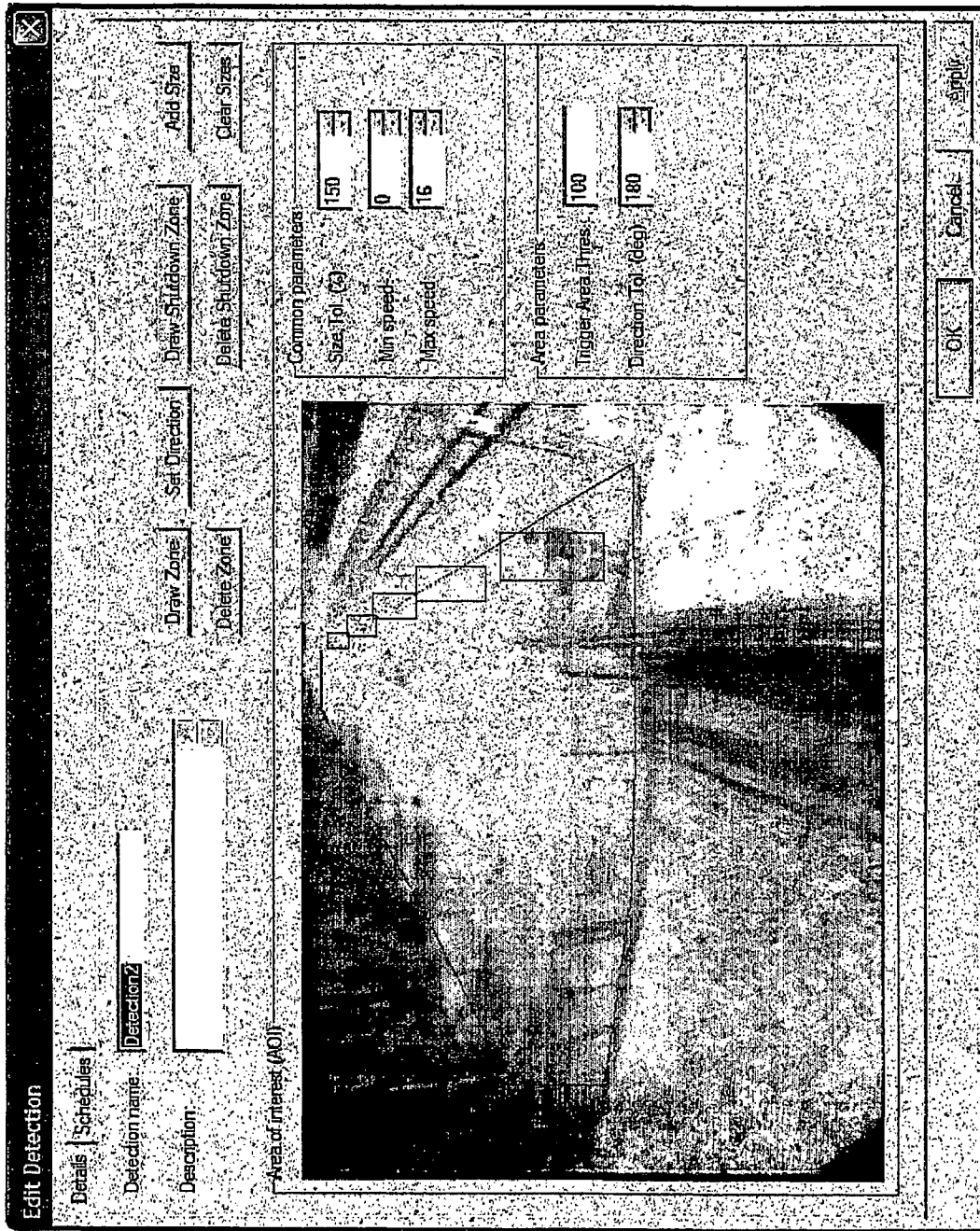


Fig. 2

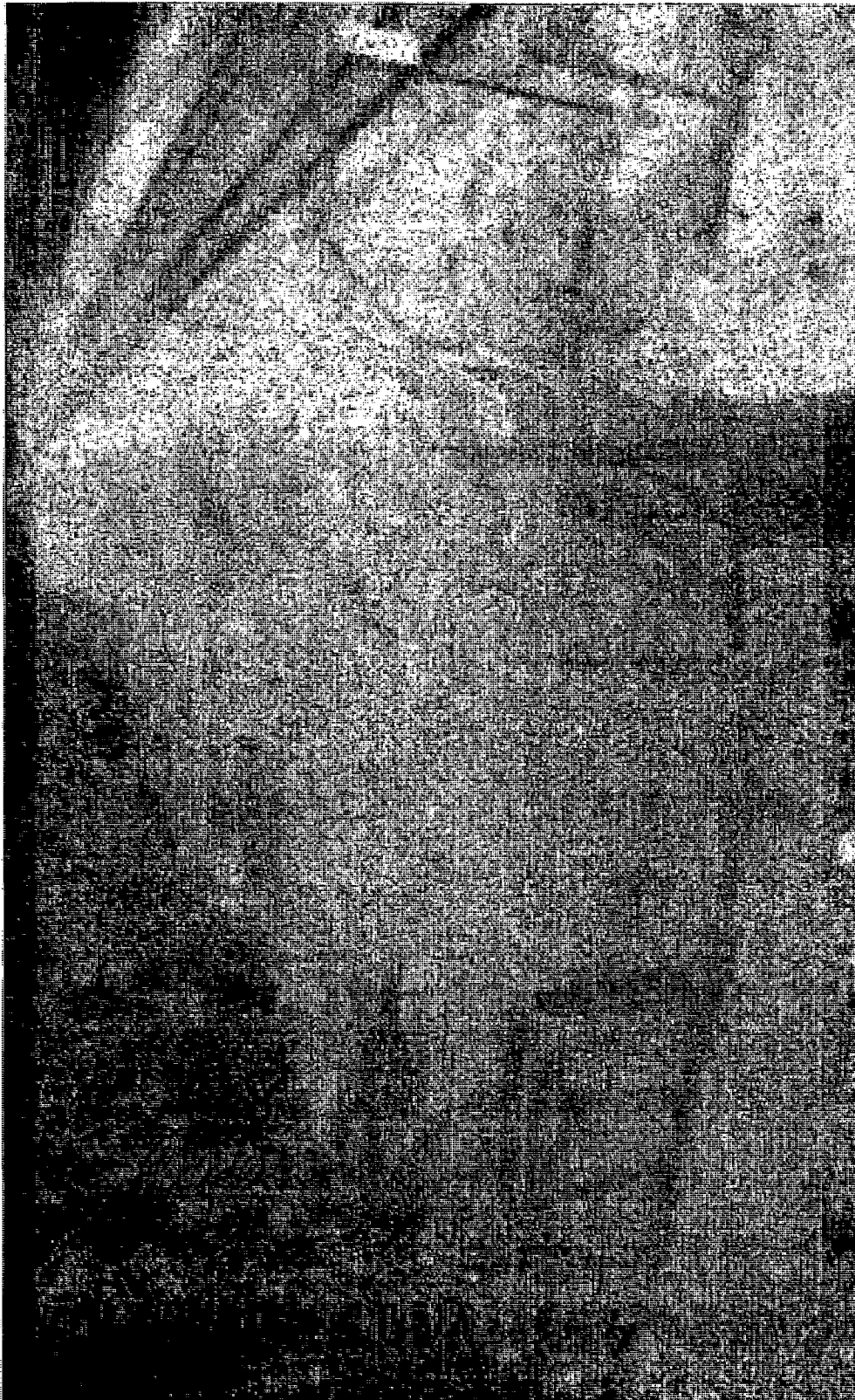


Fig. 3A

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