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United States Patent [19]

Gear

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[54] **FEATURE GROUPING IN MOVING BODIES IN AN IMAGE**

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Related U.S. Application Data

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[51] **Int. Cl.**[6] **G06K 9/00**

[52] **U.S. Cl.** **382/100**; 382/205; 382/206; 382/236; 348/416; 348/669

[58] **Field of Search** 382/100, 190, 382/197, 205, 276, 302, 254, 177, 286; 348/669, 416

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,796,087	1/1989	Guichard et al.	358/136
5,067,014	11/1991	Bergen et al.	382/54
5,168,457	12/1992	Karen et al.	364/467
5,173,945	12/1992	Pieters et al.	382/1
5,325,449	6/1994	Burt et al.	382/41
5,351,184	9/1994	Lu et al.	364/165

OTHER PUBLICATIONS

Carlo Tomasi et al, "Shape and Motion from Image Streams: a Factorization Method Full Report on the Orthographic Case", Cornell TR 91–1270 and Carnegie Mellion CMU–CS–92–104, Mar. 1992 pp. 1–36.

Terrance E. Boult et al, "Factorization–based Segmentation of Motions", Proceedings of the IEEE Workshop on Visual Motoion Oct. 1991, pp. 179–186.

Carlo Tomasi et al, "Detection and Tracking of Point Features", Apr. 1991, CMU–CS–91–132 School of Computer Science, Carnegie Mellon Univeristy, Pittsburgh, PA, 15213, pp. 1–32.

Terrance E. Boult et al., "Factorization–based Segmentation of Motions" Proceedings of the IEEE Workshop on Visual Motion. Oct. 1991, pp. 179–186.

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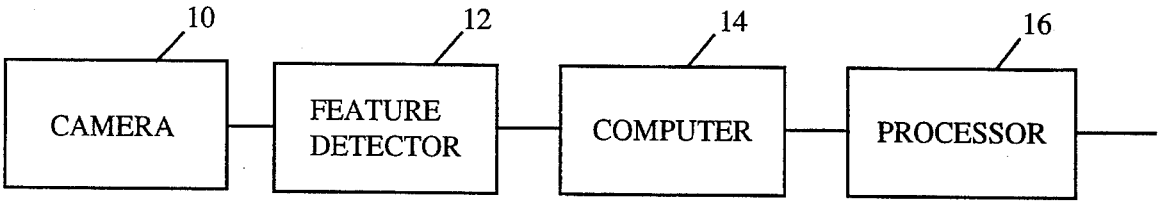
[57] **ABSTRACT**

Feature grouping of moving rigid bodies in an image is accomplished by processing a sequence of two-dimensional orthogonal projection of a three-dimensional scene containing a plurality of such independently-moving rigid bodies.

26 Claims, 1 Drawing Sheet