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(54) Title: METHOD TO GENERATE VIRTUAL DISPLAY SURFACES FROM VIDEO IMAGERY OF ROAD BASED SCENERY

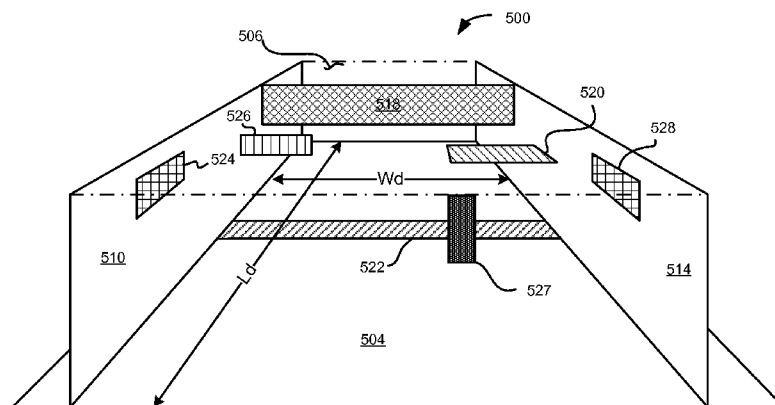


FIG. 5

(57) Abstract: Generating a virtual model of environment in front of a vehicle based on images captured using an image capturing. The Images captured on an image capturing device of a vehicle are processed to extract features of interest. Based on the extracted features, a virtual model of the environment is constructed. The virtual model includes one or more surfaces. Each of the surfaces may be used as a reference surface to attach and move graphical elements generated to implement augmented reality (AR). As the vehicle moves, the graphical elements move as if the graphical elements are affixed to the one of the surfaces. By presenting the graphical elements to move together with real objects in front of the vehicle, a driver perceives the graphical elements as being part of the actual environment and reduces distraction or confusion associated with the graphical elements.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US13/39557

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G06K 9/36 (2013.01)

USPC - 382/104

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8): G09G 5/00, G06K 9/00, B60Q 1/00 (2013.01)

USPC: 345/7, 382/104, 340/436

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A, FR-A); IEEE; Google/Google Scholar;

KEYWORDS: car, camera, heads up, display, pedestrian, shadow, lane, ceiling, wall.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/0289632 A1 (Seder et al.) 18 November 2010; paragraphs [0050], [0125], [0155].	1, 2, 4, 5, 7, 8, 10-12, 14, 15, 17, 19, 20
Y		3, 9, 13, 6, 16, 18
Y	Aly, "Real time detection of lane markers in urban streets." IEEE Intelligent Vehicles Symposium 2008, page 1, Figures 2.2, 8.4, 8.5.	6, 16
Y	Fan "3D Indoor Virtual Environment Modeling via Vehicle Navigation and Multi-Camera Image Data Fusion", Tung University, Taiwan, 2000.	3, 13
Y	US 2010/0329513 A1 (Klefenz) 30 December 2010; paragraphs [0316], [0366].	9, 18

☐ Further documents are listed in the continuation of Box C.

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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