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(54) Title: MULTIPLE-FIELD-OF-VIEW SCANNERLESS OPTICAL RANGEFINDER IN HIGH AMBIENT BACKGROUND LIGHT

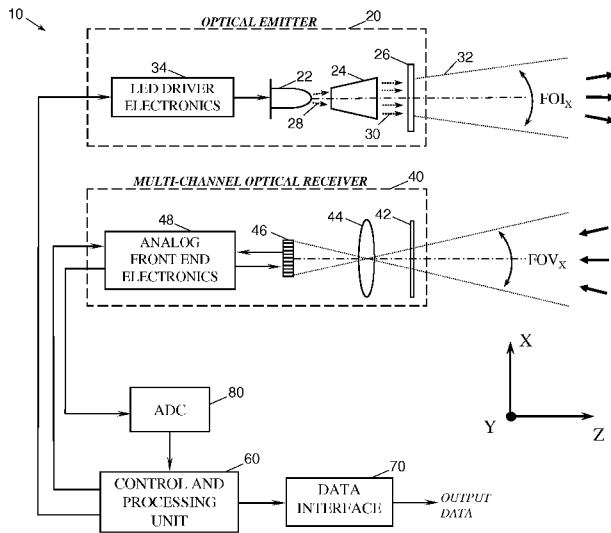


Figure 1

(57) Abstract: A multiple-field-of-view scannerless optical rangefinder operating in pulsed Time-Of-Flight operation for use in high ambient background light is described. The rangefinder comprises an optical emitter having a LED light source and driver electronics, emitting a train of light pulses having a broad field-of-illumination (FOI); a multi-channel optical receiver (MCOR) for detecting optical return signals, an overall field-of-view (FOV) encompassing each channel instantaneous FOV, the FOI encompassing the overall FOV, the multi-channel optical receiver having analog front-end electronics; an Analog-to-Digital Converter (ADC) for receiving and converting the waveforms into digital format; a control and processing unit (CPU) for generating a pulse trigger signal, sending a synchronization trigger signal to the MCOR for starting the detection of the optical return signals, and for processing the waveforms in digital format; a data interface; wherein a peak present in any of waveforms is a signature of an object detected within the instantaneous FOV.

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**INTERNATIONAL SEARCH REPORT**

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A. CLASSIFICATION OF SUBJECT MATTER  
 IPC: **G01S 17/02** (2006.01) , **G01S 17/08** (2006.01) , **G01S 7/481** (2006.01) , **G01S 7/484** (2006.01) ,  
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B. FIELDS SEARCHED  
 Minimum documentation searched (classification system followed by classification symbols)  
 IPC: **G01S 17/02** (2006.01) , **G01S 17/08** (2006.01) , **G01S 7/481** (2006.01) , **G01S 7/484** (2006.01) , **G01S 7/486** (2006.01)

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

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)  
**Databases:** EPOQUE (Epodoc, English Full Text); IEEEExplore, Google Scholar/ patent  
**Keywords:** Optical rangefinder, scannerless, (wide) field of view / FOV, field of illumination / FOI, instantaneous field of view / IFOV / multiple\_FOV, multichannel optical receiver / MCOR/ array of detectors, time\_of\_flight / pulse, LED, diffuser, filter/ coating

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|-----------|--|-----------------------|
| X         | WO2008/154736A1 (MIMEAULT et al.) 24 December 2008 (24-12-2008)<br>* abstract; p. 8, line 9 - p. 19, line 6; p. 22, line 35 - p. 23, line 35; claims 1, 3-6, 9, 18; figs. 1, 4 * | 1-17                  |
| A         | US2011/0025843A1 (OGGIER et al.) 3 February 2011 (03-02-2011)<br>* whole document *  | 1-17                  |
| A         | US4634272 (ENDO) 6 January 1987 (06-01-1987)<br>* whole document *   | 1-17                  |
| A         | STOPPA et al., "Scannerless 3D Imaging Sensors", IEEE IST 2005, International workshop on Imaging Systems and Techniques, Niagara Falls, 13-14 May 2005, p. 58-61                | 1-17                  |

Further documents are listed in the continuation of Box C.       See patent family annex.

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| Name and mailing address of the ISA/CA<br>Canadian Intellectual Property Office<br>Place du Portage I, C114 - 1st Floor, Box PCT<br>50 Victoria Street<br>Gatineau, Quebec K1A 0C9<br>Facsimile No.: 001-819-953-2476 | Authorized officer<br><br><b>Michal Bordovsky (819) 994-7533</b> |
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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
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| Patent Document Cited in Search Report | Publication Date              | Patent Family Member(s)  | Publication Date  |
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