

Title (en)

METHOD FOR PRODUCING IMAGES WITH DEPTH INFORMATION AND IMAGE SENSOR

Title (de)

VERFAHREN ZUR HERSTELLUNG VON BILDERN MIT TIEFENINFORMATIONEN UND BILDSENSOR

Title (fr)

PROCEDE DE PRODUCTION D'IMAGES AVEC INFORMATION DE PROFONDEUR ET CAPTEUR D'IMAGE

Publication

EP 2926162 A1 20151007 (FR)

Application

EP 13789585 A 20131114

Priority

- FR 1261270 A 20121127
- EP 2013073844 W 20131114

Abstract (en)

[origin: CA2892659A1] The invention relates to the production of images associating, with each point of the image, a depth, i.e a distance between the observed point and the camera that produces the image. A light source emits N trains of light pulses. For each train of rank $i = 1$ to N, charge is integrated in a short time window of length T_{int} that starts with a time shift t_i relative to the pulse, this time shift representing a journey time for the light pulse between the light source and the sensor after reflection from a point placed a distance d_i from the sensor. The time shift t_i is the same for all the light pulses of the i th pulse train but the time shifts t_i for the N trains are different from one another in order to correspond to different distances relative to the sensor. The charge photogenerated by the pulses of a given train is accumulated; then the accumulated charge is read to produce an image of rank i representing the pixels located at the distance d_i . Observation of a scene comprises producing N different images by virtue of which a distance may be associated with each pixel.

IPC 8 full level

G01S 7/4863 (2020.01); **G01S 7/4865** (2020.01); **G01S 7/487** (2006.01); **G01S 17/18** (2020.01); **G01S 17/894** (2020.01); **G06T 7/00** (2006.01)

CPC (source: CN EP US)

G01S 7/4863 (2013.01 - CN EP US); **G01S 7/4865** (2013.01 - CN EP US); **G01S 7/487** (2013.01 - CN EP US); **G01S 17/18** (2020.01 - CN EP US); **G01S 17/89** (2013.01 - CN); **G01S 17/894** (2020.01 - EP US); **H04N 13/254** (2018.04 - EP US); **H04N 13/271** (2018.04 - EP US); **H04N 13/296** (2018.04 - EP US); **H04N 2013/0081** (2013.01 - US)

Citation (search report)

See references of WO 2014082864A1

Citation (examination)

- PETER CENTEN ET AL: "R22: A Multi-Functional Imager for TOF and High Performance Video Applications Using a Global Shuttered 5 m Cmos Pixel", 9 June 2011 (2011-06-09), XP055377092, Retrieved from the Internet <URL:http://www.imagesensors.org/Past Workshops/2011 Workshop/2011 Papers/R22_Centen_Multifunctional.pdf> [retrieved on 20170530]
- JENS BUSCK ET AL: "Gated viewing and high-accuracy three-dimensional laser radar", APPLIED OPTICS, vol. 43, no. 24, 20 August 2004 (2004-08-20), WASHINGTON, DC; US, pages 4705, XP055377094, ISSN: 0003-6935, DOI: 10.1364/AO.43.004705

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