



- (51) **International Patent Classification:**
G06T 9/00 (2006.01) *H04N 19/00* (2014.01)
- (21) **International Application Number:**
PCT/IB2014/066032
- (22) **International Filing Date:**
14 November 2014 (14.11.2014)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
PCT/IB2013/061406
30 December 2013 (30.12.2013) IB
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- (81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) **Title:** REFLECTIVE WAVE DEVICE FOR SIMULTANEOUS EVENT DETECTION AND SIGNAL RECONSTRUCTION USING COMPRESSIVE MEASUREMENTS

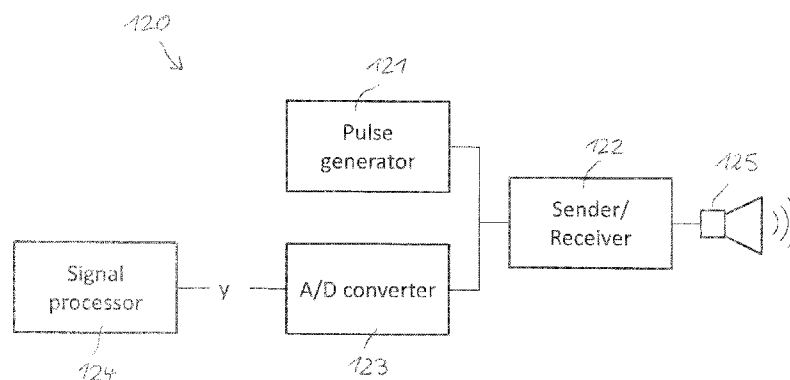


Fig. 16

(57) **Abstract:** The present specification discloses a method for event detection and reconstruction of image raw data from a reflective wave device and the corresponding device. Image raw data is acquired with a sensor and a compressed representation of the image raw data is derived with compressive sensing. The compressed representation is processed frame-by-frame and, during the frame-by-frame processing of the compressed representation, a detection of events is performed based on the current frame of the compressed representation, wherein the frame-by-frame processing comprises a frame-by-frame image reconstruction. If an event is detected in the current frame, a pre-determined number of frames that precede the current frame is received. An event is reconstructed based on a detection subset, wherein the detection subset is derived from the current frame and the pre-determined number of retrieved frames.