(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
25 September 2008 (25.09.2008)

PCT

(10) International Publication Number
WO 2008/113861 A3

(51) International Patent Classification:
G01C 21/00 (2006.01) *G05D 1/02* (2006.01)

(21) International Application Number:
PCT/EP2008/053415

(22) International Filing Date: 20 March 2008 (20.03.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
07005759.1 21 March 2007 (21.03.2007) EP

(71) Applicant *(for all designated States except US)*: **UNIVERSITEIT GENT** [—/BE]; Universiteit Gent, Sint-Pietersnieuwstraat 25, B-9000 Gent (BE).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **GAUTAMA, Sidharta** [BE/BE]; Arthur Verhaegenstraat 38, B-9000 Gent (BE).

(74) Agent: **BIRD, William E.**; Bird Goën & co, Klein Dalenstraat 42A, B-3020 Winksele, (BE).

(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, BR, BW, BY, BZ, CA, CH, 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, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:
— *of inventorship (Rule 4.17(iv))*

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
6 November 2008

(54) Title: SYSTEM AND METHOD FOR POSITION DETERMINATION

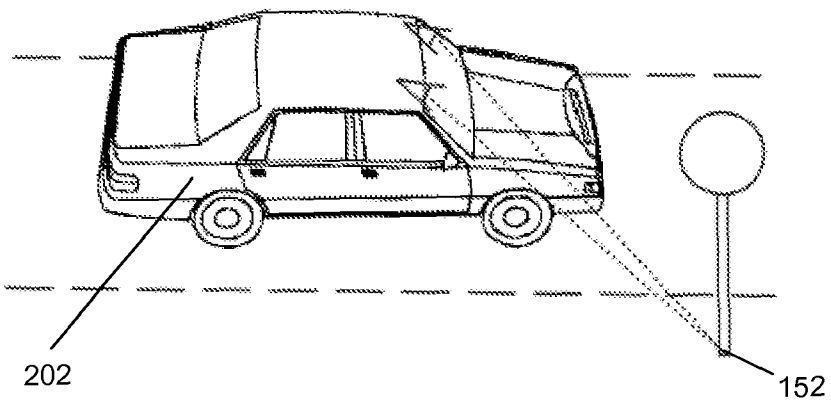


Fig. 2

(57) Abstract: The present invention relates to generating position determination information. A corresponding system comprises an image receiving means (102) for obtaining at least one image of the environment, and a control point information obtaining means (104) for obtaining control point position information about a position of at least one control point (152) in the environment. The system also comprises an image processing means (108) for associating said control point position information about a position of the at least one control point (152) in the environment to an image of the at least one control point (152) in the at least one image of the environment and for deriving, from the at least one image of the environment, position information of at least one object (202) in the environment taking into account the associated position information of the image of the at least one control point (152). An accuracy control means allows controlling the obtained accuracy by controlling the control points used.

WO 2008/113861 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2008/053415

A. CLASSIFICATION OF SUBJECT MATTER
INV. G01C21/00 G05D1/02

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)
G01C G05D G08G

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 practical, search terms used)
EPO-Internal, WPI Data, IBM-TDB, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/059900 A (EVOLUTION ROBOTICS INC [US]; GONCALVES LUIS FILIPE DOMINGUE [US]; KARL) 15 July 2004 (2004-07-15) page 13, line 25 - page 14, line 2; figure 6 page 26, lines 29-32 page 27, lines 4,5,15-17 page 29, lines 3-14 page 30, lines 9-27 page 31, lines 9-33; figure 2 page 32, lines 7-32; figures 3A-3C page 34, lines 13-33; figures 5A,5B page 41, lines 26-28; figure 8 page 49, line 9 - page 50, line 18; claims 190,192,211,214; figure 9 page 52, lines 11-13 page 53, lines 16-19 page 73, line 16 - page 74, line 3	1,3-18, 20-26, 28-32

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"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.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 September 2008	19/09/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Jakob, Clemens

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2008/053415

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/049530 A1 (POROPAT GEORGE [AU]) 25 April 2002 (2002-04-25) paragraphs [0017] - [0030] paragraphs [0054], [0055]; figures 1-5 paragraphs [0077], [0078], [0081] -----	1,7-11, 14,17, 18,24, 28-32
X	EP 1 677 076 A (BOEING CO [US]) 5 July 2006 (2006-07-05) paragraphs [0014] - [0018]; figure 1 paragraphs [0010], [0021] - [0031]; figure 2 -----	1,6,10, 11,14, 17,18, 24,28-32
X	US 5 999 866 A (KELLY ALONZO JAMES [US] ET AL) 7 December 1999 (1999-12-07) column 4, line 30 - column 5, line 6; figure 1 column 5, line 7 - column 6, line 3; figure 2 -----	1,6,10, 11,13, 14,17, 18,24, 28-32

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2008/053415

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004059900 A	15-07-2004	AU 2003300959 A1	22-07-2004
US 2002049530 A1	25-04-2002	WO 9953335 A1	21-10-1999
		CA 2328227 A1	21-10-1999
		EP 1086383 A1	28-03-2001
		JP 3561473 B2	02-09-2004
		JP 2002511614 T	16-04-2002
		ZA 200005640 A	14-01-2002
EP 1677076 A	05-07-2006	US 2006149458 A1	06-07-2006
US 5999866 A	07-12-1999	AT 218221 T	15-06-2002
		AU 5162498 A	29-05-1998
		DE 69712906 D1	04-07-2002
		DE 69712906 T2	24-04-2003
		EP 0937284 A2	25-08-1999
		WO 9820399 A2	14-05-1998
		US 6453223 B1	17-09-2002