

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
20 July 2006 (20.07.2006)

PCT

(10) International Publication Number  
WO 2006/076108 A3

- (51) International Patent Classification:  
G08G 5/04 (2006.01)
- (21) International Application Number:  
PCT/US2005/044991
- (22) International Filing Date:  
13 December 2005 (13.12.2005)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
11/019,781 21 December 2004 (21.12.2004) US
- (71) Applicant (for all designated States except US): **HONEYWELL INTERNATIONAL INC.** [US/US]; 101 Columbia Road, P.O. Box 2245, Morristown, New Jersey 07960 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, 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, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

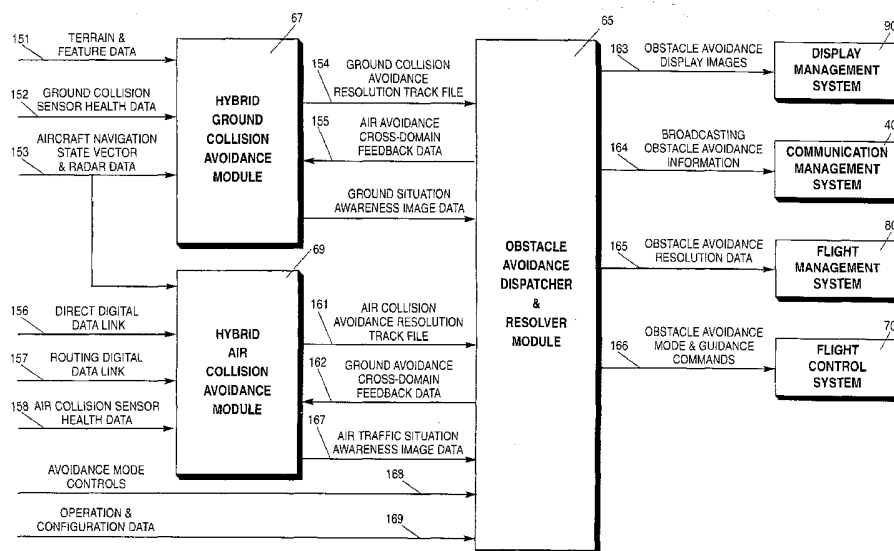
Published:  
— with international search report

(88) Date of publication of the international search report:  
12 October 2006

- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **TRAN, My** [US/US]; 5404 Chelwood Park Blvd., NE, Albuquerque, New Mexico 87111 (US).
- (74) Agents: **HOIRIIS, David** et al.; Honeywell International INC., 101 Columbia Road, P.O. Box 2245, Morristown, New Jersey 07960 (US).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HYBRID GROUND COLLISION AVOIDANCE SYSTEM



(57) Abstract: A hybrid ground collision avoidance system (HGCA) (67) is a ground collision avoidance system with extended existing ground avoidance capabilities and incorporated with new hybrid capabilities to perform hybrid ground collision prediction (424) and hybrid ground collision avoidance (434). This system works in collaboration with two other systems, hybrid air collision avoidance system (69) and obstacle avoidance dispatcher and resolver module (65) to form a bi-directional feedback network for processing and exchanging of verification and validation collision avoiding data. With the embedded hybrid prediction and avoidance processing capabilities, the system not only can refine ground collision avoidance solution (558) to eliminate any induced air collision situation (548), but also provide verification for air collision avoidance resolution in the ground domain; and subsequent validate the final avoidance solution.

WO 2006/076108 A3

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2005/044991

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. G08G5/04		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) 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		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/239529 A1 (TRAN MY) 2 December 2004 (2004-12-02) chapters [0029]-[0030]	1-16
X	US 2001/013836 A1 (COWIE MARK) 16 August 2001 (2001-08-16) column 3, line 3 - column 5, line 13	1,9
<input type="checkbox"/> Further documents are listed in the continuation of Box C.		
<input checked="" type="checkbox"/> 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  <h2 style="text-align: center;">14 July 2006</h2>	Date of mailing of the international search report  <h2 style="text-align: center;">24/07/2006</h2>	
Name and mailing address of the ISA/ 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	Authorized officer  <h2 style="text-align: center;">Bourdier, R</h2>	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2005/044991

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004239529 A1	02-12-2004	EP 1627371 A1 WO 2004107291 A1	22-02-2006 09-12-2004
US 2001013836 A1	16-08-2001	AT 219272 T AU 732320 B2 AU 6304998 A CA 2282534 A1 DE 69805971 D1 DE 69805971 T2 EP 0965118 A1 GB 2322611 A WO 9838619 A1 JP 2001513240 T NO 994092 A	15-06-2002 12-04-2001 18-09-1998 03-09-1998 18-07-2002 26-09-2002 22-12-1999 02-09-1998 03-09-1998 28-08-2001 26-10-1999