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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
27 September 2012 (27.09.2012)

WIPO | PCT

(10) International Publication Number
WO 2012/129424 A3

(51) International Patent Classification:
B60W 30/06 (2006.01) *B60W 40/10* (2006.01)

(21) International Application Number:
PCT/US2012/030162

(22) International Filing Date:
22 March 2012 (22.03.2012)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/466,781 23 March 2011 (23.03.2011) US

(71) Applicant *(for all designated States except US)*: **TK HOLDINGS INC.** [US/US]; 2500 Takata Drive, Auburn Hills, Michigan 48326 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **COOPRIDER, Troy Otis** [US/US]; 596 Kent Lane, White Lake, Michigan 48386 (US). **SHEN, Shi** [CN/US]; 30155 Southhampton Lane, Farmington Hills, Michigan 48331 (US). **IBRAHIM, Faroog** [US/US]; 6164 Kinmore Street, Dearborn Heights, Michigan 48127 (US).

(74) Agents: **SHIPLEY, Howard N.** et al.; Foley & Lardner LLP, 3000 K Street, NW, Suite 600, Washington, DC 20007 (US).

(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, 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, 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, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, ML, MR, NE, SN, TD, TG).

Published:

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

(88) Date of publication of the international search report:
28 February 2013

(54) Title: DRIVER ASSISTANCE SYSTEM

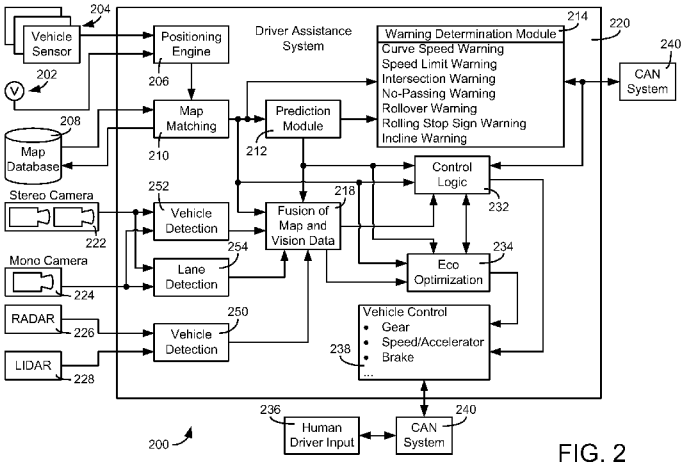


FIG. 2

(57) Abstract: A system and method of assisting a driver of a vehicle by providing driver and vehicle feedback control signals is disclosed herein. The system and method includes receiving location data of the vehicle from a GPS unit, retrieving navigation characteristics stored in a map database based on the location data, generating a path tree comprising a set of forward paths the vehicle can take and a path tree root comprising the current path the vehicle is on and generating vehicle data from at least one vehicle sensor. The system and method also includes determining a most probable future path for the vehicle, determining road curvature of the most probable path at a plurality of nodes, comparing the received vehicle data with a threshold at one of the plurality of nodes on the most probable path, and transmitting a control signal in the case that the threshold has been exceeded.

WO 2012/129424 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/030162

A. CLASSIFICATION OF SUBJECT MATTER

B60W 30/06(2006.01)i, B60W 40/10(2006.01)i

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)

B60W 30/06; G08G 1/16; B60W 10/04; F02D 29/02; B60W 30/10; G08G 1/09; B60K 28/06; B60W 30/08; B60R 16/02

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

Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: driving assistance , curve , curvature, control

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 08-202991 A (MITSUBISHI MOTORS CORP) 09 August 1996 See abstract, paragraphs [049]-[192], figures 1-3.	1-7,10-18,21-25 8-9,19-20
Y A	JP 08-115500 A (SUMITOMO ELECTRIC IND LTD) 07 May 1996 See paragraphs [22]-[28], [48]-[51], figure 6.	1-7,10-18,21-25 8-9,19-20
Y A	JP 2006-111184 A (FUJITSU TEN LTD et al.) 27 April 2006 See paragraphs [1], [52]-[80].	6,17 1-5,7-16,18-25
A	JP 2007-106170 A (FUJIFILM CORP) 26 April 2007 See paragraphs [01], [14]-[25].	1-25
A	JP 2002-260190 A (FUJIKURA LTD) 13 September 2002 See abstract, claims 1-5.	1-25

☐ Further documents are listed in the continuation of Box C.

☒ 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 application or patent 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 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
15 OCTOBER 2012 (15.10.2012)	**18 OCTOBER 2012 (18.10.2012)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Han Dong Ki

Telephone No. 82-42-481-3390

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/030162

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 08-202991 A	09.08.1996	JP 3336793 B2	21.10.2002
JP 08-115500 A	07.05.1996	EP 0735517 A1	02.10.1996
		JP 02-809338 B2	31.07.1998
		US 5,850,193 A	15.12.1998
		US 6,046,671 A	04.04.2000
JP 2006-111184 A	27.04.2006	JP 4494162 B2	30.06.2010
JP 2007-106170 A	26.04.2007	None	
JP 2002-260190 A	13.09.2002	None	