



(51) International Patent Classification:

G08G 1/052 (2006.01) B60W 50/14 (2020.01)
G08G 1/01 (2006.01) G08G 1/16 (2006.01)
G06K 9/00 (2006.01)

201822114120.0 17 December 2018 (17.12.2018) CN

201822114119.8 17 December 2018 (17.12.2018) CN

(21) International Application Number:

PCT/GB2019/053592

(22) International Filing Date:

17 December 2019 (17.12.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

201822114258.0 17 December 2018 (17.12.2018) CN
201822114257.6 17 December 2018 (17.12.2018) CN
201822114213.3 17 December 2018 (17.12.2018) CN
201822114211.4 17 December 2018 (17.12.2018) CN

(71) Applicant: SWITALSKI, Gillian [GB/GB]; 8 Holly Terrace, York YO10 4DS (GB).

(72) Inventor; and

(71) Applicant: WRIGHT, Andrew William [GB/GB]; 8 Holly Terrace, York YO10 4DS (GB).

(74) Agent: AHMAD, Sheikh et al.; Keltie LLP, No. 1 London Bridge, London SE1 9BA (GB).

(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, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,

(54) Title: METHOD AND SYSTEM FOR DETERMINING DRIVING INFORMATION

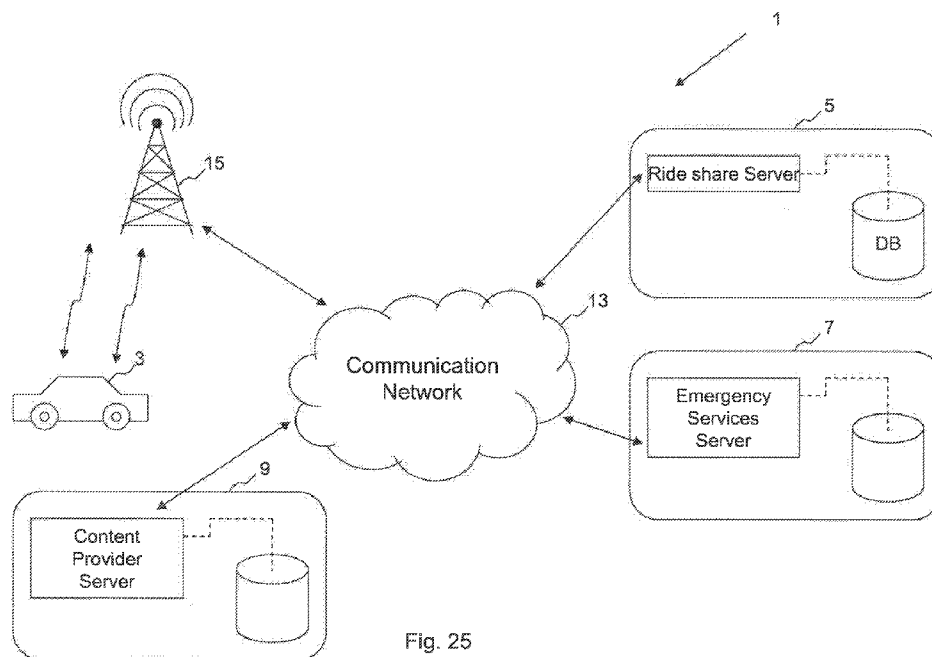


Fig. 25

(57) Abstract: A mobile telecommunications device for providing an in-vehicle driver warning system during a vehicle journey using sensed driving information and local traffic information is described. The mobile telecommunications device comprises: a sensor set comprising at least one of an image sensor, an audio sensor, a geographic positioning sensor and an accelerometer; a user interface for receiving user input; a processor operatively connected to the sensor set and the user interface; a wireless communications module for communicating with a remote server, the wireless communications module being operatively connected to the processor; the processor, through its connection to the user interface, determining, during the vehicle journey, using the inputs received by the user interface, or through its connection to the sensor set, using sensor data received from the sensor set, a start of a driving period during which the mobile device is removably installed to the vehicle and the vehicle is in use; the processor, through its connection to the sensor set,





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))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:

06 August 2020 (06.08.2020)

using the sensor data received from the sensor set during the driving period to derive, in use, the sensed driving information associated with how the vehicle is driven; the processor, through its connection to the wireless communications module, receiving the local traffic information obtained from the wireless communications module, the local traffic information concerning other vehicles in the vicinity of the mobile telecommunications device; the processor using, in use, the local traffic information and the driving information and determining if the current relative position and speed of the vehicle exceeds a threshold profile; and wherein the processor generates, in use, a warning signal if the current relative position and speed of the vehicle exceed the threshold profile, and, through its connection to the user interface, transmits the warning signal to the user interface for warning the driver of the vehicle.

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2019/053592

A. CLASSIFICATION OF SUBJECT MATTER
INV. G08G1/052 G08G1/01 G06K9/00 B60W50/14 G08G1/16
ADD.

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)
G08G G06K B60W

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 practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 2 652 718 A1 (WRIGHT ANDREW WILLIAM [GB]) 23 October 2013 (2013-10-23) paragraphs [0009], [0010], [0014], [0015], [0017] - [0020], [0022], [0023], [0032], [0034], [0035], [0045] - [0052], [0055], [0062] paragraphs [0063], [0077], [0078], [0080], [0084], [0086], [0107], [0112], [0126] figures 1-3,4a ----- -/-	1-11



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 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

30 April 2020

Date of mailing of the international search report

07/07/2020

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Roxer, Adam

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2019/053592

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-11

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11

A mobile telecommunication device for providing an in-vehicle driver warning system during a vehicle journey, wherein a processor determines a start of a driving period using sensor data, derives a driving information using threshold profiles and generates a warning signal specifying a corrective action to be taken by a driver. Said device is mounted in a vehicle holder. Forward facing camera uses a pattern recognition technique to establish a distance to a front vehicle. Rearward facing camera is used for recognition of a driver distraction. The driving information can be received and transmitted to/from a remote server. The device is a smartphone and during a driving period, certain functionalities of the smartphone are disabled. Moreover a method for providing an in-vehicle driver warning corresponding to the device according to claim 1 is disclosed.

2. claims: 12-22

A first mobile telecommunication device for logging driving information with a communication module for downloading an application, a processor determining a start and an end of a driving period and deriving a driving information, communication module transmitting driving information to a central server or to a second mobile communication device. The processor is controlled by a downloaded application. The communication module comprises a local communication and wide area network communication module, wherein the module communicates with the second mobile communication device and the central server. The processor analyses driving information and determines the occurrence of specific events from the driving data and sends a message to the second communication device, that includes a reduction in the fare for the journey or request for sending a driver rating to the first communication device or the central server. The sensor set of first communication device includes an audio sensor for sending a recorded signal to the central server. The recording can start when an amplitude of audio signal is above a threshold level. The first communication device is a smartphone. Moreover a method of logging driving information corresponding to the device according to claim 12 is disclosed.

3. claims: 23-33

A mobile telecommunication device for use in a ride sharing journey, wherein the processor receives the request message for sharing journey and provides the request to a remote

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

server, the user interface displays the recent visual image of the driver of the assigned vehicle for driver identification. The visual image is a real-time image of the driver. The sensor set comprises a biometric sensor- image sensor for facial recognition, microphone for vocal recognition, fingerprint sensor for fingerprint recognition. Further communication device for transmitting of driver response to the remote sensor and adds a timestamp to the captured image of the driver, wherein the the further processor requests a capture of driver biometric information within a time period defined by a timer. Moreover a method for use in a ride sharing journey corresponding to the device according to claim 23 is disclosed.

4. claims: 34-44

A mobile telecommunication device for monitoring user activity during a vehicle journey, wherein the processor actuates timer function since the start of the driving and when the time period has lapsed, an alarm function is actuated in form of sending an emergency alarm to a remote server. A virtual panic button is presented on the user interface for sending an emergency alarm by an user. First and second timer function is used for sending an emergency alarm message to a remote server. One timer can be set to an expected journey time and journey start and end locations can be used for actuating an alarm when the device does not reach the expected journey end within a time period given by the timer. The alarm can be cancelled by a verification identifier using the user interface. The mobile communication device can be a smartphone. Moreover a method of monitoring user activity during a vehicle journey corresponding to the device according to claim 34 is disclosed.

5. claims: 45-55

A driver mobile telecommunication device for use during a rideshare journey in a rideshare vehicle, wherein the communication module receives a warning message from a remote server regarding a hazard at a geographic destination associated with the rideshare journey, the processor executes an action within the rideshare vehicle. The device comprises a speaker for instructing and warning the driver, or an user interface for visual warning. The processor is connected to a vehicle management system for automatically control the vehicle to avoid the hazard like automatically change lines or reduce vehicle speed. The device comprises a Bluetooth module for communication of the processor and the vehicle management system. Wide area network for receiving the warning messages from the remote server and local network for receiving the warning messages from a roadside device are provided. The device includes an image sensor

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

facing forward to determine a distance to a vehicle in front for generating the vehicle control instruction. The wide area network module can receive the warning messages from a mobile communication device of another vehicle. Moreover a method for use in a ride sharing journey corresponding to the device according to claim 45 is disclosed.

6. claims: 56-66

A mobile telecommunication device for use in a vehicle during a vehicle journey, wherein the processor receives an alert signal for an unsafe driving feature in the environment, records a position and characteristics of the unsafe driving feature and transmits both to the remote server. The processor receives an alert signal from the user interface, which provides user actuation, and activates the recording to the memory regarding the unsafe driving feature on actuation. The sensor set includes an audio sensor and the processor activates the audio sensor to capture audio information about the unsafe driving feature on actuation. The sensor set includes an image sensor facing towards a road, wherein the processor activates the image sensor to capture images regarding the unsafe driving feature on actuation. The processor saves a video of the image sensor of an immediately preceding time period. The user interface displays video recording for driver confirmation of unsafe driving feature. The processor receives further characteristics of the unsafe driving feature from the user interaction in response to viewing the video recording. The sensor set comprises an accelerometer and the processor receives an alert signal comprising an accelerometer event profile. The processor compares the received accelerometer profile with a predetermined threshold profile and in case of its matching or exceeding, the current location is recorded to the memory. Moreover a method of using a mobile telecommunication device in a vehicle during a vehicle journey corresponding to the device according to claim 56 is disclosed.

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2019/053592

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 9 679 487 B1 (HAYWARD GREGORY [US]) 13 June 2017 (2017-06-13) column 2, line 41 - column 3, line 33 column 5, lines 31-51 column 6, line 57 - column 7, line 7 column 7, lines 41-51 column 14, line 58 - column 15, line 19 column 21, lines 4-15 figures 2,5 -----	1-11
Y	EP 2 743 118 A1 (STATE FARM MUTUAL AUTOMOBILE INSURANCE CO [US]) 18 June 2014 (2014-06-18)	8
A	paragraphs [0002], [0010], [0012], [0025], [0029], [0042] -----	1-7,9-11
A	US 2010/157061 A1 (KATSMAN IGOR [IL] ET AL) 24 June 2010 (2010-06-24) paragraphs [0010], [0013], [0035], [0036], [0048], [0052], [0056], [0061], [0070], [0076], [0086] -----	1-11
A	US 2013/049987 A1 (VELUSAMY UMASHANKAR [US]) 28 February 2013 (2013-02-28) paragraphs [0020] - [0022], [0029], [0037], [0058] - [0061], [0064], [0066], [0076], [0100], [0103] figures 1,2,4,6-8 -----	1-11
A	US 2018/077538 A1 (MATUS JONATHAN [US] ET AL) 15 March 2018 (2018-03-15) paragraphs [0009], [0011], [0012], [0016], [0020], [0027], [0039], [0044], [0051], [0057] figures 1,2,6 -----	1-11

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2019/053592

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2652718	A1	23-10-2013	EP 2652718 A1 23-10-2013
			EP 3255613 A1 13-12-2017
			GB 2488954 A 12-09-2012
			GB 2488956 A 12-09-2012
			US 2013302758 A1 14-11-2013
			US 2016189442 A1 30-06-2016
			US 2017178422 A1 22-06-2017
			US 2017178423 A1 22-06-2017
			US 2017178424 A1 22-06-2017
			US 2019122453 A1 25-04-2019
			US 2020058174 A1 20-02-2020
			WO 2012080741 A1 21-06-2012

US 9679487	B1	13-06-2017	US 9679487 B1 13-06-2017
			US 9832241 B1 28-11-2017
			US 9836062 B1 05-12-2017
			US 9836962 B1 05-12-2017
			US 9836963 B1 05-12-2017
			US 9841286 B1 12-12-2017
			US 9841287 B1 12-12-2017
			US 9841767 B1 12-12-2017
			US 9842496 B1 12-12-2017
			US 9904289 B1 27-02-2018
			US 9972209 B1 15-05-2018
			US 10042363 B1 07-08-2018
			US 10042364 B1 07-08-2018
			US 10054453 B1 21-08-2018
			US 10055982 B1 21-08-2018
			US 10055985 B1 21-08-2018
			US 10057312 B1 21-08-2018
			US 10089868 B1 02-10-2018
			US 10215573 B1 26-02-2019
			US 10216194 B1 26-02-2019
			US 10317223 B1 11-06-2019
			US 10354333 B1 16-07-2019
			US 10354461 B1 16-07-2019
			US 10359782 B1 23-07-2019
			US 10360794 B1 23-07-2019
			US 10365662 B1 30-07-2019
			US 10366605 B1 30-07-2019
			US 10373497 B1 06-08-2019
			US 10380904 B1 13-08-2019
			US 10451427 B1 22-10-2019
			US 10453338 B1 22-10-2019
			US 10453352 B1 22-10-2019
			US 10509414 B1 17-12-2019
			US 10546491 B1 28-01-2020

EP 2743118	A1	18-06-2014	CA 2832670 A1 17-06-2014
			EP 2743118 A1 18-06-2014
			US 9165326 B1 20-10-2015
			US 10163163 B1 25-12-2018
			US 2014172467 A1 19-06-2014

US 2010157061	A1	24-06-2010	NONE

US 2013049987	A1	28-02-2013	NONE

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2019/053592

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2018077538 A1	15-03-2018	US 2018077538 A1	15-03-2018
		US 2018206090 A1	19-07-2018
		WO 2018049416 A1	15-03-2018
