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(54) Title: SYSTEM AND METHOD FOR CONTROLLING RUNNING OF VEHICLE

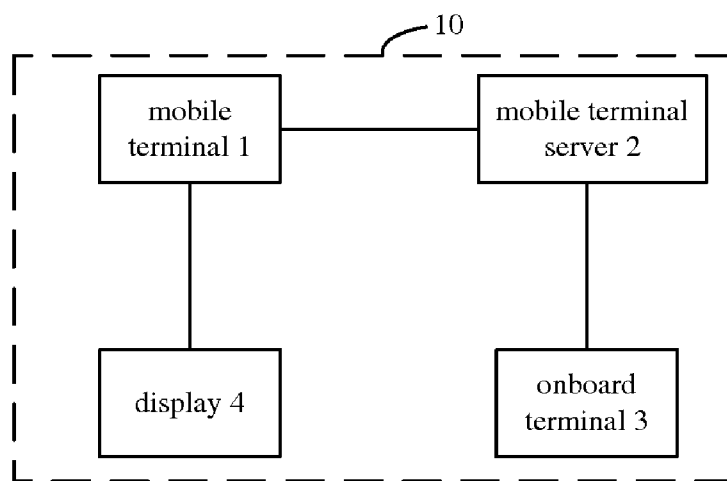


Fig. 1

(57) Abstract: A system and a method for controlling running of a vehicle are provided. The system (10) comprises: a mobile terminal (1) configured to send a control instruction; a mobile terminal server (2) configured to receive and forward the control instruction; an onboard terminal (3) configured to receive the control instruction and to control the vehicle to run according to the control instruction; and a display (4) disposed on the mobile terminal (1), and configured to display an image in front of and/or in rear of the vehicle in real time. With the system, an instruction transmitting process between the mobile terminal and the onboard terminal may be more reliable, and with the method, the system may be prevented from disturbed by the environment, which facilitates the user to operate the vehicle and provides better safety.

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SYSTEM AND METHOD FOR CONTROLLING RUNNING OF VEHICLE

CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority to and benefits of Chinese Patent Application Serial No.
5 201210219198.3, filed with the State Intellectual Property Office of P. R. China on June 29, 2012,
the entire content of which is incorporated herein by reference.

FIELD

The present disclosure relates to vehicles, particularly to a system and a method for
10 controlling running of a vehicle.

BACKGROUND

Nowadays, some systems for controlling a vehicle to accelerate, brake and turn are installed
in a mobile terminal. However, the current systems still need to be improved to meet people's
15 requirements on controllability and reliability.

SUMMARY

Embodiments of the present disclosure seek to solve one of the problems existing in the prior
art.

20 According to a first aspect of the present disclosure, a system for controlling running of a
vehicle is provided. The system comprises: a mobile terminal configured to send a control
instruction; a mobile terminal server configured to receive and forward the control instruction; an
onboard terminal configured to receive the control instruction and to control the vehicle to run
according to the control instruction; and a display disposed on the mobile terminal, and configured
25 to display an image in front of and/or in rear of the vehicle in real time.

In some embodiments, the system further comprises: a camera connected with the onboard
terminal and configured to collect the image, in which the onboard terminal is further configured
to control the camera to collect the image and to send the image to the display.

In some embodiments, the camera comprises a first camera disposed at a front part of the
30 vehicle and configured to collect a front image in front of the vehicle, and a second camera
disposed at a rear part of the vehicle and configured to collect a rear image in rear of the vehicle.

In some embodiments, the display is a display screen.

In some embodiments, the mobile terminal comprises a touch control module configured to send the control instruction to the mobile terminal server, the mobile terminal server is configured to forward the control instruction to the onboard terminal, and the onboard terminal is configured to control the vehicle to run according to the control instruction.

In some embodiments, the camera is configured to collect the image, to encode and compress the image to obtain a compressed image, and to send the compressed image to the mobile terminal via a network, the mobile terminal is configured to decode the compressed image to obtain the image, and the display is configured to display the image in real time.

In some embodiments, the network is a VPDN network.

In some embodiments, the touch control module comprises a steering wheel unit configured to control the vehicle to turn according to a touch instruction from a user.

In some embodiments, the touch control module comprises a gear unit configured to control the display to display a gear indication when the vehicle is in a manual transmission mode, and to hide the gear indication when the vehicle is in an auto transmission mode.

In some embodiments, the touch control module comprises a brake unit configured to perform an urgent brake if a mal-operation occurs.

In some embodiments, the touch control module comprises a throttle unit configured to control a throttle depth change of the vehicle.

In some embodiments, the display is configured to display the front image in a large window and to display the rear image in a small window when the vehicle is moving forward, and the display is further configured to display the rear image in the large window and to display the front image in the small window when the vehicle is moving backward.

According to a second aspect of the present disclosure, a method for controlling running of a vehicle with the system is provided. The system comprises: a mobile terminal comprising a touch control module, a mobile terminal server, an onboard terminal, and a display disposed on the mobile terminal, and the method comprises: receiving a touch instruction by the touch control module; sending by the mobile terminal a control instruction according to the touch instruction to the mobile terminal server; forwarding by the mobile terminal server the control instruction to the onboard terminal; and controlling by the onboard terminal the vehicle to run according to the control instruction.

In some embodiments, the system further comprises a camera connected with the onboard terminal, and the method comprises: sending by the mobile terminal an image collecting instruction to the mobile terminal server; forwarding the image collecting instruction to the onboard terminal; controlling by the onboard terminal the camera to collect an image in front of
5 and/or in rear of the vehicle by the onboard terminal; encoding and compressing the image to obtain a compressed image and sending the compressed image to the mobile terminal by the onboard terminal; decoding the compressed image to obtain the image by the mobile terminal; and displaying the image by the display.

In some embodiments, the camera comprises a first camera disposed at a front part of the
10 vehicle and a second camera disposed at a rear part of the vehicle, and the method further comprises: when the vehicle is moving forward, displaying a front image in front of the vehicle in a large window and displaying a rear image in rear of the vehicle in a small window; and when the vehicle is moving backward, displaying the rear image in the large window and displaying the front image in the small window.

With the system for controlling running of the vehicle according to embodiments of the
15 present disclosure, an instruction transmitting process between the mobile terminal and the onboard terminal may be more reliable. In addition, with the method for controlling the running of the vehicle according to embodiments of the present disclosure, the system may be prevented from disturbed by the environment, which facilitates the user to operate the vehicle and provides better
20 safety.

Additional aspects and advantages of embodiments of present disclosure will be given in part in the following descriptions, become apparent in part from the following descriptions, or be learned from the practice of the embodiments of the present disclosure.

25 BRIEF DESCRIPTION OF THE DRAWINGS

These and other aspects and advantages of embodiments of the present disclosure will become apparent and more readily appreciated from the following descriptions made with reference to the accompanying drawings, in which:

Fig. 1 is a block diagram showing a system for controlling running of a vehicle according to
30 an embodiment of the present disclosure;

Fig. 2 is a block diagram showing a system for controlling running of a vehicle according to

another embodiment of the present disclosure;

Fig. 3 is a flow chart showing a method for controlling running of a vehicle according to an embodiment of the present disclosure;

Fig. 4 is a flow chart showing an operation process of a steering wheel unit in a system
5 according to an embodiment of the present disclosure;

Fig. 5 is a flow chart showing an operation process of a gear unit in a system according to an embodiment of the present disclosure;

Fig. 6 is a flow chart showing an operation process of a brake unit in a system according to an embodiment of the present disclosure;

10 Fig. 7 is a flow chart showing an operation process of a throttle unit in a system according to an embodiment of the present disclosure; and

Fig. 8 is a flow chart showing a process for collecting an image with a camera in a system according to an embodiment of the present disclosure.

15 DETAILED DESCRIPTION

Reference will be made in detail to embodiments of the present disclosure. The embodiments described herein with reference to drawings are explanatory, illustrative, and used to generally understand the present disclosure. The embodiments shall not be construed to limit the present disclosure. The same or similar elements and the elements having same or similar functions are
20 denoted by like reference numerals throughout the descriptions.

Unless specified or limited otherwise, the term “connected” and variations thereof are used broadly and encompass both direct and indirect connections. Further, “connected” is not restricted to physical or mechanical connections.

In addition, terms such as “first” and “second” are used herein for purposes of description and
25 are not intended to indicate or imply relative importance or significance.

According to a first aspect of the present disclosure, a system for controlling running of a vehicle is provided. As shown in Fig. 1, the system 10 comprises: a mobile terminal 1 configured to send a control instruction; a mobile terminal server 2 configured to receive and forward the control instruction; an onboard terminal 3 configured to receive the control instruction and to
30 control the vehicle to run according to the control instruction; and a display 4 disposed on the mobile terminal 1, and configured to display an image in front of and/or in rear of the vehicle in

real time.

In some embodiments, the onboard terminal 3 may be an onboard multimedia. The onboard multimedia is also referred to as an onboard information entertainment product. In a further embodiment, the onboard terminal 3 is operated in combination of CAN-BUS technology, thus performing a communication between the vehicle and the driver and between the vehicle and the environment, so as to control the vehicle.

In some embodiments, as shown in Fig. 2, the system 10 further comprises a camera 5 connected with the onboard terminal 3. The camera 5 is configured to collect the image in front of and/or in rear of the vehicle. The onboard terminal 3 is further configured to control the camera 5 to collect the image and to send the image to the display 4. The camera 5 facilitates to collect the environmental condition around the vehicle when the vehicle is running.

In some embodiments, the camera 5 comprises a first camera disposed at a front part of the vehicle and configured to collect a front image in front of the vehicle, and a second camera disposed at a rear part of the vehicle and configured to collect a rear image in rear of the vehicle. With the first camera and the second camera, the front image that reflects a road condition in front of the vehicle and the rear image that reflects a road condition in rear of the vehicle may be collected in time, thereby facilitating the driver to control the vehicle.

In some embodiments, the camera 5 is configured to collect the image, and the onboard terminal 3 is configured to encode and compress the image to obtain a compressed image, and to send the compressed image to the mobile terminal 1 via a network, the mobile terminal 1 is configured to decode the compressed image to obtain the image, and the display 4 is configured to display the image in real time.

In some embodiments, the display 4 is configured to display the front image in a large window and to display the rear image in a small window when the vehicle is moving forward, and the display 4 is further configured to display the rear image in the large window and to display the front image in the small window when the vehicle is moving backward.

In some embodiments, the display 4 displays the front image when the vehicle is moving forward. When a position in the display 4 is pressed, a small window showing the rear image may also be displayed in a lower right corner of the display 4 in a picture-in-picture form.

In some embodiments, the display 4 displays the rear image when the vehicle is moving backward. When a position in the display 4 is pressed, a small window showing the front image

may also be displayed in the lower right corner of the display 4 in a picture-in-picture form.

As used herein, the term “picture-in-picture form” means that the front image and the rear image can be displayed in the same display 4, and the large window and the small window can be switched. By way of example and without limit, when the vehicle is moving forward, the rear image displayed in the small window may be switched to be displayed in the large window by pressing the small window, while the front image displayed in the large window may be switched to be displayed in the small window. Alternatively, when the vehicle is moving backward, the front image displayed in the small window may be switched to be displayed in the large window by pressing the small window, while the rear image displayed in the large window may be switched to be displayed in the small window.

In some embodiment, the display may be a screen connected to the system 10, or alternatively a display screen disposed on the mobile terminal 1. With the display 4 disposed on the mobile terminal 1, the image showing road conditions around the vehicle (particularly in front of and in rear of the vehicle) may be provided to the driver directly, an occupation space of the system 10 may be smaller, and the system 10 may be easier to operate.

In some embodiment, as shown in Fig. 2, the mobile terminal 1 comprises a touch control module 11 configured to send the control instruction to the mobile terminal server 2, the mobile terminal server 2 is configured to forward the control instruction to the onboard terminal 3, and the onboard terminal 3 is configured to control the vehicle to run according to the control instruction.

In some embodiment, the touch control module 11 comprises a steering wheel unit configured to control the vehicle to turn according to a touch instruction from a user. In an embodiment, the steering wheel unit is an analog steering wheel unit, and configured to simulate a real steering wheel to control wheels of the vehicle to turn. With the analog steering wheel unit, a synchronous control on the wheels of the vehicle may be performed by the driver, and thus a mal-operation caused by a conventional power induction control may be avoided, which provides the vehicle with better safety and security.

In some embodiment, the touch control module 11 comprises a gear unit configured to control the display 4 to display a gear indication when the vehicle is in a manual transmission mode, and to hide the gear indication when the vehicle is in an auto transmission mode. A gear shift may be achieved when a user touches the gear unit.

In some embodiment, the touch control module 11 comprises a brake unit configured to

perform an urgent brake if a mal-operation occurs. The urgent brake may be performed by any known method in the art, such as pressing a key in the display 4, without particular limitations.

In some embodiment, the touch control module 11 comprises a throttle unit configured to control a throttle depth change of the vehicle. By means of the throttle unit, the throttle depth may
5 be increased or decreased according to practical requirements.

In some embodiments, the mobile terminal 1 is an intelligent mobile phone. The intelligent mobile phone may use the following systems: the iPhone system of Apple, the Android system of Google, and the Symbian system of Nokia.

In some embodiments, the network is the VPDN (Virtual Private Dial Network) network. The
10 VPDN network adopts a special network security and communication protocol, which enables enterprises to establish relatively safe virtual private networks on the public network. VPDN users may connect with an inner consumer network through a virtual channel via the public network, and the public network users cannot access inner source of the inner consumer network through the virtual channel.

15 According to a second aspect of the present disclosure, a method for controlling running of a vehicle with a system is provided. The system comprises: a mobile terminal comprising a touch control module, a mobile terminal server, an onboard terminal, and a display disposed on the mobile terminal, and the method comprises: receiving a touch instruction by the touch control module; sending by the mobile terminal a control instruction according to the touch instruction to
20 the mobile terminal server; forwarding by the mobile terminal server the control instruction to the onboard terminal; and controlling by the onboard terminal the vehicle to run according to the control instruction.

As shown in Fig. 3, a method for controlling running of a vehicle is provided. The method comprises the following steps.

25 In the step S101, the mobile terminal is turned on and a user sends a touch instruction to the touch control module.

In the step S102, the touch control module receives the touch instruction.

In the step S103, the mobile terminal sends a control instruction according to the touch instruction to the mobile terminal server.

30 In the step S104, the mobile terminal server forwards the control instruction to the onboard terminal.

In the step S105, the onboard terminal controls the vehicle to run according to the control instruction.

In some embodiments, the control instruction may be sent or received by the mobile terminal via a network, for example, a VPDN network. With the VPDN network (also referred to as a kind of special network or exclusive network), disturbs from the outside may be avoided, and thereby a transmitting process of the control instruction may be reliable.

Referring to Fig. 4, an operation process for controlling turning of wheels of the vehicle with the steering wheel unit is provided. The process comprises the following steps.

In the step 201, the VPDN network is accessed via the mobile terminal, and the user sends a first touch instruction to the touch control module.

In the step S202, the touch control module receives the first touch instruction.

In the step S203, the mobile terminal sends a first control instruction according to the first touch instruction to the mobile terminal server.

In the step S204, the mobile terminal server forwards the first control instruction to the onboard terminal.

In the step S205, the onboard terminal controls wheels of the vehicle to turn left, to turn right, or to move forward straightly according to the first control instruction.

Referring to Fig. 5, an operation process for controlling a gear shift with the gear unit is provided. The process comprises the following steps.

In the step 301, the VPDN network is accessed via the mobile terminal, and the user sends a second touch instruction to the touch control module.

In the step S302, the touch control module receives the second touch instruction.

In the step S303, the mobile terminal sends a second control instruction according to the second touch instruction to the mobile terminal server.

In the step S304, the mobile terminal server forwards the second control instruction to the onboard terminal.

In the step S305, the onboard terminal controls the gear of the vehicle to shift according to the second control instruction.

Referring to Fig. 6, an operation process for performing an urgent brake with the brake unit is provided. The process comprises the following steps.

In the step 401, the VPDN network is accessed via the mobile terminal, and the user sends a

third touch instruction to the touch control module.

In the step S402, the touch control module receives the third touch instruction.

In the step S403, the mobile terminal sends a third control instruction according to the third touch instruction to the mobile terminal server.

5 In the step S404, the mobile terminal server forwards the third control instruction to the onboard terminal.

In the step S405, the onboard terminal controls the vehicle to perform a brake according to the third control instruction.

10 Referring to Fig. 7, an operation process for controlling a throttle depth change of the vehicle with the throttle unit is provided. The process comprises the following steps.

In the step 501, the VPDN network is accessed via the mobile terminal, and the user sends a fourth touch instruction to the touch control module.

In the step S502, the touch control module receives the fourth touch instruction.

15 In the step S503, the mobile terminal sends a fourth control instruction according to the fourth touch instruction to the mobile terminal server.

In the step S504, the mobile terminal server forwards the fourth control instruction to the onboard terminal.

In the step S505, the onboard terminal controls the vehicle to increase or decrease the throttle depth according to the fourth control instruction.

20 In some embodiments, the system further comprises a camera connected with the onboard terminal, and the method comprises: sending by the mobile terminal an image collecting instruction to the mobile terminal server; forwarding the image collecting instruction to the onboard terminal; controlling the camera to collect an image in front of and/or in rear of the vehicle by the onboard terminal; encoding and compressing the image to obtain a compressed
25 image and sending the compressed image to the mobile terminal by the onboard terminal; decoding the compressed image to obtain the image by the mobile terminal; and displaying the image by the display.

As shown in Fig. 8, the method for collecting the image with the camera comprises the following steps.

30 In the step S601, the VPDN network is accessed via the mobile terminal.

In the step S602, the mobile terminal sends an image collecting instruction to the mobile

terminal server.

In the step S603, the mobile terminal server forwards the image collecting instruction to the onboard terminal.

5 In the step S604, the onboard terminal controls the camera to collect an image in front of and/or in rear of the vehicle.

In the step S605, the onboard terminal encodes and compresses the image to obtain a compressed image and sends the compressed image to the mobile terminal via the VPDN network.

In the step S606, the mobile terminal decodes the compressed image to obtain the image.

In the step S607, the display displays the image.

10 In some embodiments, the camera comprises a first camera disposed at a front part of the vehicle and a second camera disposed at a rear part of the vehicle, and the method further comprises: when the vehicle is moving forward, the display displays a front image in front of the vehicle in a large window and displays a rear image in rear of the vehicle in a small window; and
15 when the vehicle is moving backward, the display displays the rear image in the large window and displays the front image in the small window.

With the system for controlling running of the vehicle according to embodiments of the present disclosure, an instruction transmitting process between the mobile terminal and the onboard terminal may be more reliable. In addition, with the method for controlling the running of the vehicle according to embodiments of the present disclosure, the system may be prevented from
20 disturbed by the environment, and the vehicle may be easily moved forward or backward and slowed down, which facilitates the user to operate the vehicle and provides better safety.

Although explanatory embodiments have been shown and described, the above embodiments can not be construed to limit the present disclosure, and changes, alternatives, and modifications can be made in the embodiments without departing from spirit, principles and scope of the present
25 disclosure.

WHAT IS CLAIMED IS:

1. A system for controlling running of a vehicle, comprising:
a mobile terminal configured to send a control instruction;
a mobile terminal server configured to receive and forward the control instruction;
5 an onboard terminal configured to receive the control instruction and to control the vehicle to run according to the control instruction; and
a display disposed on the mobile terminal, and configured to display an image in front of and/or in rear of the vehicle in real time.
2. The system according to claim 1, further comprising:
10 a camera connected with the onboard terminal and configured to collect the image, wherein the onboard terminal is further configured to control the camera to collect the image and to send the image to the display.
3. The system according to claim 2, wherein the camera comprises a first camera disposed at a front part of the vehicle and configured to collect a front image in front of the vehicle, and a
15 second camera disposed at a rear part of the vehicle and configured to collect a rear image in rear of the vehicle.
4. The system according to claim 3, wherein the display is a display screen.
5. The system according to claim 4, wherein the mobile terminal comprises a touch control module configured to send the control instruction to the mobile terminal server, the mobile
20 terminal server is configured to forward the control instruction to the onboard terminal, and the onboard terminal is configured to control the vehicle to run according to the control instruction.
6. The system according to claim 5, wherein the camera is configured to collect the image, to encode and compress the image to obtain a compressed image, and to send the compressed image to the mobile terminal via a network, the mobile terminal is configured to decode the compressed
25 image to obtain the image, and the display is configured to display the image in real time.
7. The system according to claim 6, wherein the network is a VPDN network.
8. The system according to claim 5, wherein the touch control module comprises a steering wheel unit configured to control the vehicle to turn according to a touch instruction from a user.
9. The system according to claim 5, wherein the touch control module comprises a gear unit
30 configured to control the display to display a gear indication when the vehicle is in a manual transmission mode, and to hide the gear indication when the vehicle is in an auto transmission

mode.

10. The system according to claim 5, wherein the touch control module comprises a brake unit configured to perform an urgent brake if a mal-operation occurs.

11. The system according to claim 5, wherein the touch control module comprises a throttle
5 unit configured to control a throttle depth change of the vehicle.

12. The system according to claim 5, wherein the display is configured to display the front image in a large window and to display the rear image in a small window when the vehicle is moving forward, and

wherein the display is further configured to display the rear image in the large window and to
10 display the front image in the small window when the vehicle is moving backward.

13. A method for controlling running of a vehicle with a system, wherein the system comprises: a mobile terminal comprising a touch control module, a mobile terminal server, an onboard terminal, and a display disposed on the mobile terminal, and the method comprises:

receiving a touch instruction by the touch control module;

15 sending by the mobile terminal a control instruction according to the touch instruction to the mobile terminal server;

forwarding by the mobile terminal server the control instruction to the onboard terminal; and
controlling by the onboard terminal the vehicle to run according to the control instruction.

14. The method according to claim 13, wherein the system further comprises a camera
20 connected with the onboard terminal, and the method comprises:

sending by the mobile terminal an image collecting instruction to the mobile terminal server;

forwarding the image collecting instruction to the onboard terminal;

controlling by the onboard terminal the camera to collect an image in front of and/or in rear of
the vehicle by the onboard terminal;

25 encoding and compressing the image to obtain a compressed image and sending the compressed image to the mobile terminal by the onboard terminal;

decoding the compressed image to obtain the image by the mobile terminal; and

displaying the image by the display.

15. The method according to claim 14, wherein the camera comprises a first camera disposed
30 at a front part of the vehicle and a second camera disposed at a rear part of the vehicle, and the method further comprises:

when the vehicle is moving forward, displaying a front image in front of the vehicle in a large window and displaying a rear image in rear of the vehicle in a small window; and

when the vehicle is moving backward, displaying the rear image in the large window and displaying the front image in the small window.

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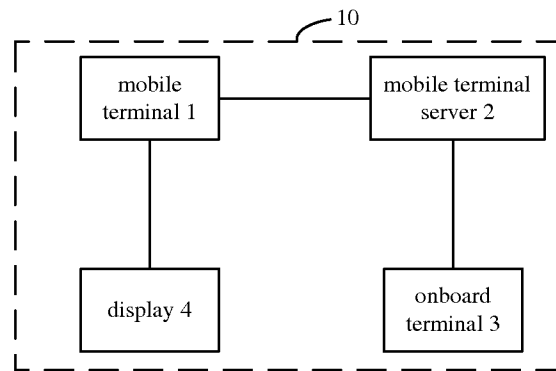


Fig. 1

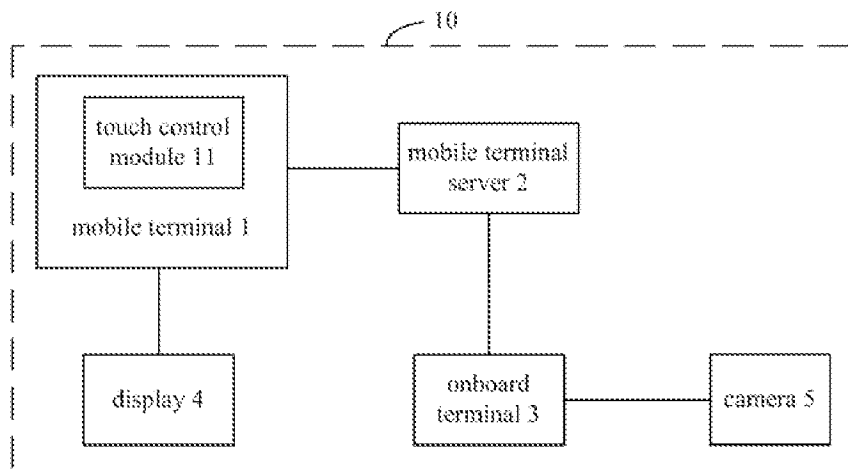


Fig. 2

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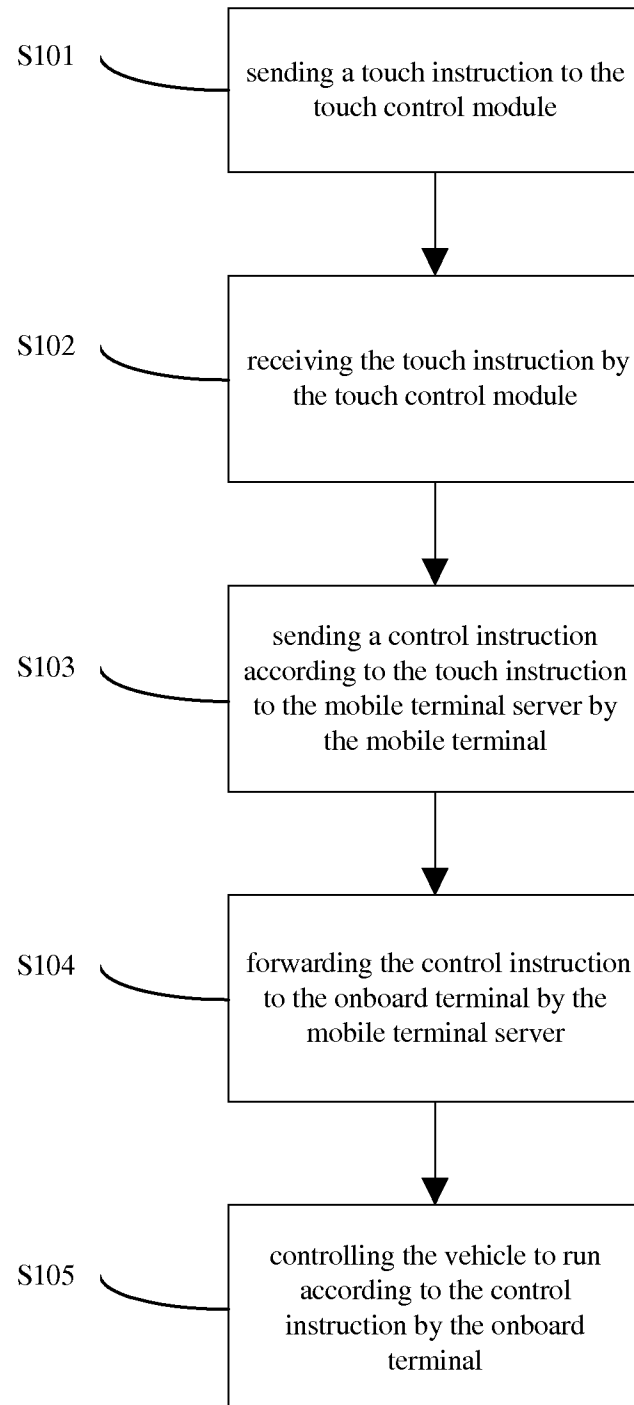


Fig. 3

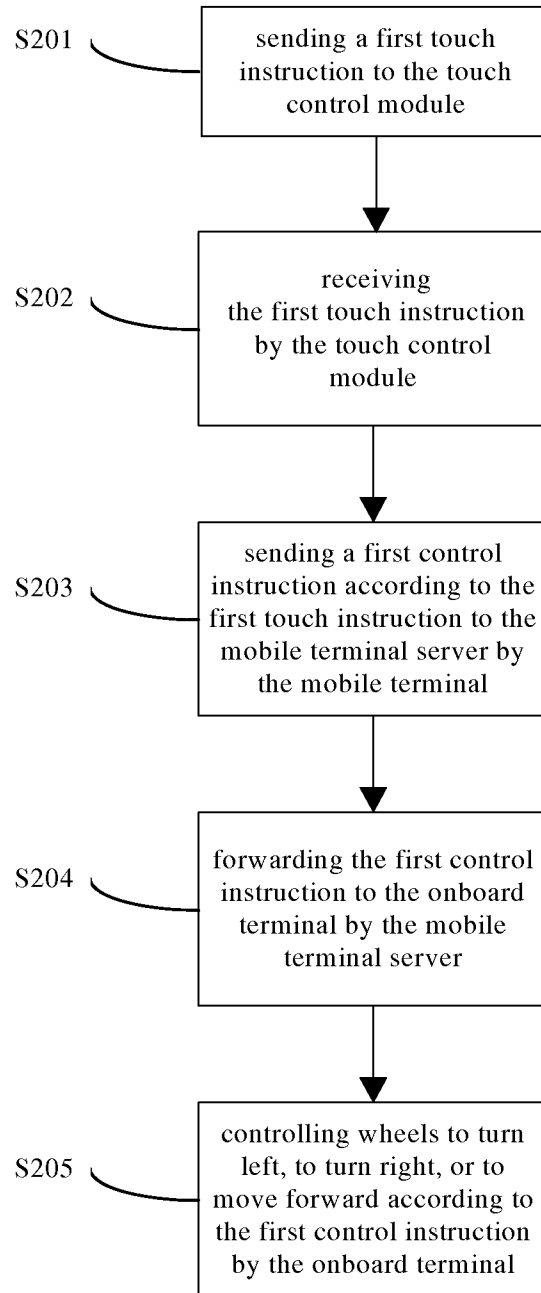


Fig. 4

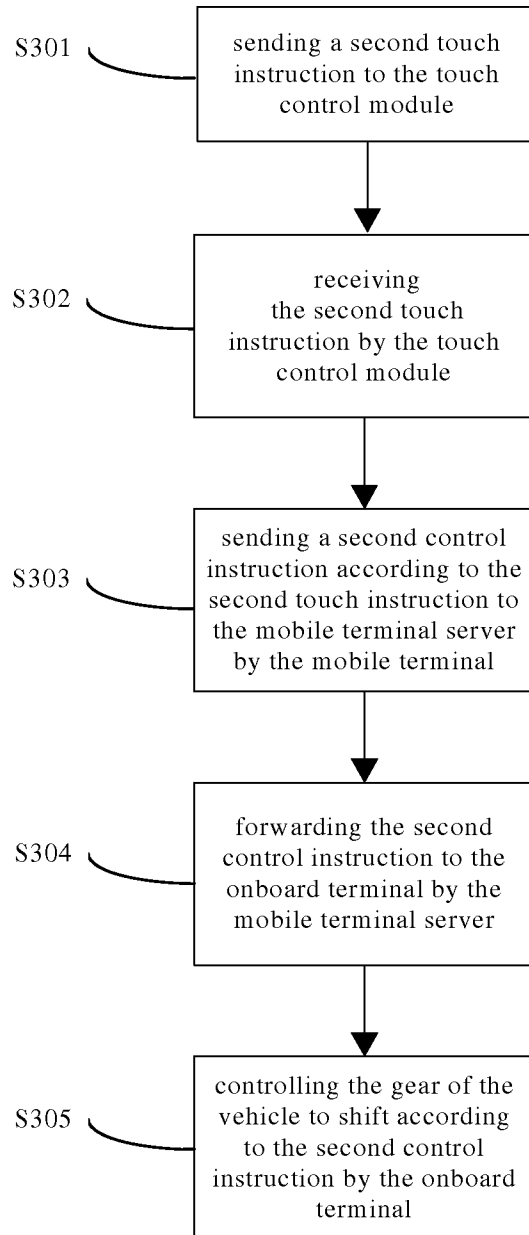


Fig. 5

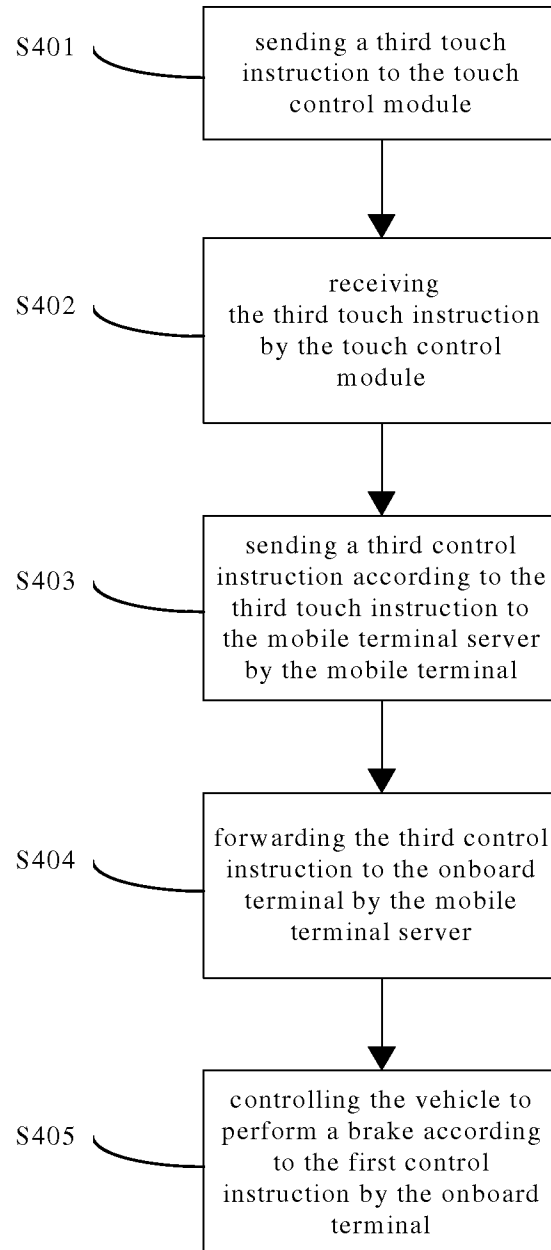


Fig. 6

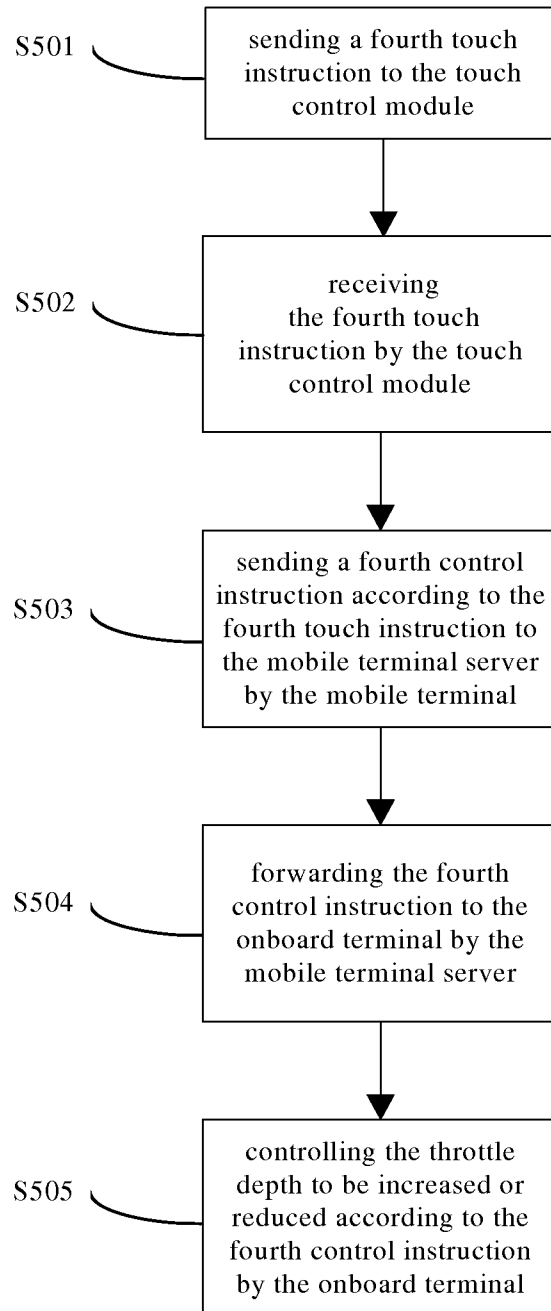


Fig. 7

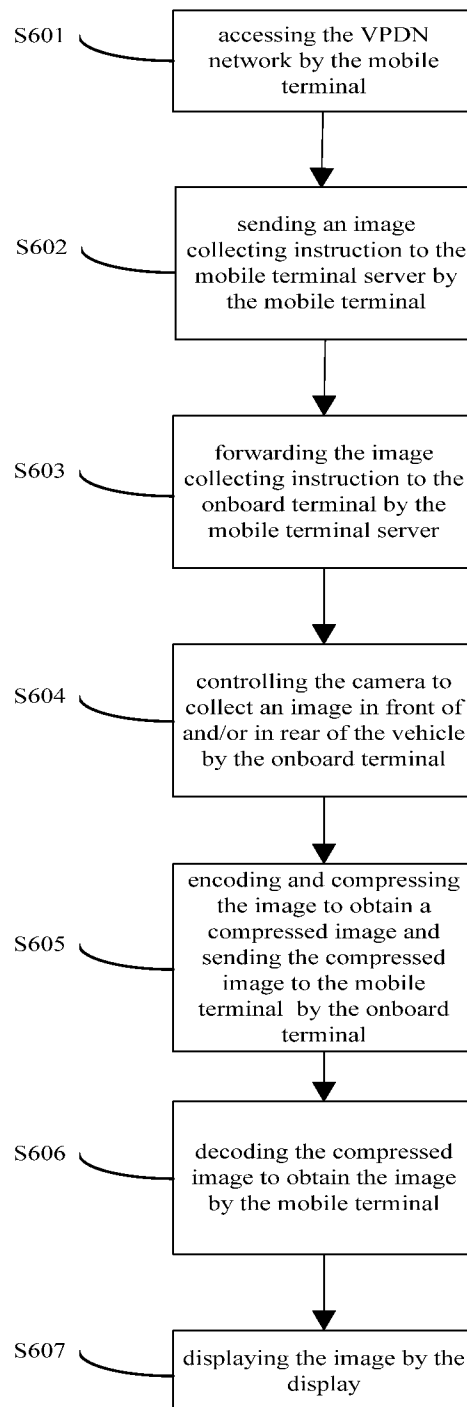


Fig. 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2013/078375

A. CLASSIFICATION OF SUBJECT MATTER

See the extra sheet

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)

IPC: B60W, H04N 7/-, H04M 11/-, H04M 3/-, B60R 25/-, H04L 29/-, G06F 1/-, B60R 11/-, G06F 17/-, B60K 35/-, G06F 9/-

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)

WPI; EPODOC; CNKI; CNPAT, BYD, mobile, portable, phone, PDA, personal digital assistant, real 3d time, VPDN, display, cameral, touch, onboard, remote

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2009/127522 A1 (CONTINENTAL AUTOMOTIVE GMBH.) 22 October 2009 (22.10.2009) description, page 1 line 5 to page 4 line 15	13
Y		1-12, 14-15
Y	US 2006/0161315 A1 (LEWIS, Ron et al.) 20 July 2006 (20.07.2006) description, paragraphs [0028]-[0038]	1-12, 14-15
A	WO 2005/105509 A1 (VOLKSWAGEN AKTIENGESELLSCHAFT) 10 November 2005 (10.11.2005) the whole document	1-15
A	CN 1807159 A (LIN, Wenxian) 26 July 2006 (26.07.2006) the whole document	1-15
A	CN 1555181 A (QUAN, Guanyou) 15 December 2004 (15.12.2004) the whole document	1-15

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

☒ See patent family annex.

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Date of the actual completion of the international search 05 September 2013 (05.09.2013)	Date of mailing of the international search report 17 Oct. 2013 (17.10.2013)
Name and mailing address of the ISA/CN The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451	Authorized officer XIANG, Qixiong Telephone No. (86-10)62413117

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2013/078375

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 101867596 A (FORD GLOBAL TECHNOLOGIES LLC.) 20 October 2010 (20.10.2010) the whole document	1-15
A	CN 102221847 A (SHENZHEN SOLING IND CO., LTD.) 19 October 2011 (19.10.2011) the whole document	1-15

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2013/078375

A. CLASSIFICATION OF SUBJECT MATTER

B60W 50/08 (2012.01) i

B60W 30/18 (2012.01) i

H04N 7/18 (2006.01) n

H04M 11/00 (2006.01) n