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System for displaying advertisements within vehicles

Abstract

Described is a system for displaying targeted advertisements within a vehicle. The system includes targeted advertisements or other information received from a first vehicle to a second vehicle or multiple other vehicles for display within the second vehicle or the other vehicles. The system uses one or more active displays mounted within the second vehicle or the other vehicles to provide individuals within the second vehicle or the other vehicles with information and messages using the displays. The system can show advertising messages, emergency messages, or other information on the active displays that are relevant to the location of the vehicle or relevant to the individuals within the second vehicle or the other vehicles.

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Background/Summary

CROSS REFERENCE TO RELATED APPLICATION[S] (1) This application is a continuation of U.S. Patent Applications entitled “SYSTEM FOR DISPLAYING ADVERTISEMENTS WITHIN VEHICLES,” Ser. No. 16/297,857, filed on Mar. 11, 2019, which claims priority to U.S. Provisional Patent Application entitled “SYSTEM FOR DISPLAYING ADVERTISEMENTS WITHIN VEHICLES,” Ser. No. 62/640,840, filed Mar. 9, 2018, the disclosures of which are hereby incorporated entirely herein by reference.

BACKGROUND OF THE INVENTION

Technical Field

(1) This invention relates to advertisements in a vehicle, and specifically to a system for displaying targeted advertisements within an autonomous vehicle.

State of the Art

(2) Vehicle owners often look for ways to subsidize the cost of their vehicle. Some vehicle owners allow advertising to be placed on their vehicles as a way to generate income with their vehicle.

Vehicle drivers are often looking for specific products or businesses in the area they are in.

Billboards may not be providing the information a driver needs. In addition, vehicle drivers may benefit from receiving traffic or emergency messages that are pertinent to their location.

(3) Additionally, vehicles are becoming smarter with onboard computers that assist the vehicle and driver by tracking direction, providing navigation, operating a connected telephone and the like.

Further still, autonomous vehicles have been developed and are being refined allowing the vehicle to drive to destinations without the need of driver control.

SUMMARY OF THE INVENTION

(4) The disclosed invention relates to a system for displaying targeted advertisements, the system comprising: a display and an onboard computer coupled within a second vehicle, wherein the onboard computer operates the display; a processor within a first vehicle communicatively coupled to the internet and to the onboard computer, wherein the processor receives information corresponding to the second vehicle from the onboard computer; an advertisement signal receiver communicatively coupled to the processor to provide advertisement information; an emergency signal receiver communicatively coupled to the processor to provide emergency information; and a location detector communicatively coupled to the processor to provide location information, wherein the display shows messages, images, videos or combinations thereof in response to the

onboard computer receiving and processing display information sent from the processor, the display information including at least one of the advertisement information, the emergency information, the location information, the second vehicle information or combinations of two or more of the advertisement information, the emergency information, the location information, and the second vehicle information.

(5) Another embodiment includes a system for displaying targeted advertisements within an autonomous vehicle, the system comprising: a display and an onboard computer coupled within an autonomous vehicle, wherein the onboard computer operates the display; a processor within a remote system communicatively coupled to the onboard computer, wherein the processor receives information corresponding to the autonomous vehicle from the onboard computer; an advertisement signal receiver communicatively coupled to the processor to provide advertisement information; an emergency signal receiver communicatively coupled to the processor to provide emergency information; and a location detector communicatively coupled to the processor through the onboard computer to provide location information, wherein the display shows messages, images, videos or combinations thereof in response to the onboard computer receiving and processing display information sent from the processor, the display information including at least one of the advertisement information, the emergency information, the location information, the autonomous vehicle information or combinations of two or more of the advertisement information, the emergency information, the location information, and the autonomous vehicle information.

(6) The foregoing and other features and advantages of the invention will be apparent to those of ordinary skill in the art from the following more particular description of the invention and the accompanying drawings.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) A more complete understanding of the present invention may be derived by referring to the detailed description and claims when considered in connection with the Figures, wherein like reference numbers refer to similar items throughout the Figures, and:

(2) FIG. 1 shows a block diagram of a display system for a vehicle according to an embodiment;

(3) FIG. 2 shows a block diagram of a display system for an autonomous vehicle according to an embodiment; and

(4) FIG. 3 is a perspective view of an autonomous vehicle with a display system according to an embodiment.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

(5) As discussed above, embodiments of the present invention relate to targeted advertisements and other messages received from a first vehicle to a second vehicle for display within the second vehicle and targeted advertisements received within a geo-fence for display within a vehicle.

(6) Vehicle owners sometimes allow advertisers to put ads on the exterior of their vehicle. The owner of the vehicle receives payment from the advertiser for showing the ads, which helps subsidize the cost of the vehicle. These advertisements have taken the form of static images that are painted or attached to the exterior of the vehicle. Disclosed is a system for displaying targeted advertisements that includes targeted advertisements and other messages received from a first vehicle to at least a second vehicle for display within the second vehicle. These targeted advertisements may also be pushed to multiple other vehicles that are located within a predetermined range of the first vehicle. The system can show advertisements and other messages that are visible to individuals within the second vehicle or other vehicles. The first vehicle owner can be paid to operate the system to initiate the advertisements to the display system within the second vehicle or other vehicles. This will generate revenue for the first vehicle owner or reduce

the cost of ownership of the vehicle. Alternatively, vehicles may receive targeted advertisements from within a specific geo-fence, and not rely on a nearby vehicle to initiate advertisements. Viewers of the advertisements may benefit from learning about local vendors from the display system within the vehicle. In addition, individuals may choose to opt-in to an advertising group or service so that those individuals may receive more targeted ads for products and services that they are specifically interested in.

(7) The system for displaying targeted advertisements can display messages other than advertising messages. Vehicle drivers and/or passengers can sometimes benefit from receiving informational messages while they are driving. Display information could pertain to traffic, an emergency situation, news, sports, or weather information, for example. Static or active billboards are often used to convey messages to drivers, but these are only useful to drivers driving by the billboard. The disclosed system uses displays mounted within a vehicle to display the display information to all passengers within the second vehicle. The system can show emergency messages visible to individuals within the second vehicle. Viewers of the emergency messages and other display information can benefit from learning about traffic or other emergency situations that may affect them as they drive.

(8) The disclosed system for displaying targeted advertisements includes an onboard computer and at least one display mounted within the second vehicle, and a processor within in the first vehicle coupled to the onboard computer of the second vehicle that drives the display, the processor operating to push and provide messages to the second vehicle for display on the at least one display. The processor is coupled to an advertisement signal receiver, an emergency signal receiver, vehicle computer receiver, and a location detector. The advertisement signal receiver, the emergency signal receiver, vehicle computer receiver, and the location detector collect information used to generate messages to be shown on the display. The processor gathers information from the advertisement signal receiver, the emergency signal receiver, vehicle computer receiver, and the location detector, uses this information to compose messages, and sends the messages to the one or more displays coupled within the second vehicle. For example, an individual may receive an advertisement for a specific fast food restaurant while driving behind a vehicle that is pushing advertisements for that specific restaurant, or may receive an advertisement for a specific restaurant when the vehicle enters a specific geo-fence. Individuals around the vehicle, including other motorists or pedestrians, can obtain advertising or emergency situation information by reading the displays. The information shown in the displays can be coordinated with the location of the vehicle so the advertising or emergency messaging is geographically relevant by use of geo-sensing or geo-fencing technology.

(9) FIG. 1 shows an embodiment of a system **110** for targeted advertisements for use with vehicles such as first vehicle **100** and second vehicle **102**. System **110** includes one or more displays located in second vehicle **102**. In the embodiment shown, system **110** may include four displays, display **114**, display **116**, display **118**, and display **120**, as shown in FIG. 1. Each one of displays **114**, **116**, **118**, and **120** may be mounted within the second vehicle **102**, and can be seen by observers within the second vehicle **102**. Displays **114**, **116**, **118**, and **120** may be LED display, OLED display, or any type of display or screen type display in this embodiment, but this is not meant to be limiting. Displays **114**, **116**, **118**, and **120** can be any type of active display. An active display is a display with active pixels that allows the image or message on the display to change over time. Displays **114**, **116**, **118**, and **120** can be any active light-emissive display, light-reflective display, or other type of active display known now or in the future for displaying an active image. Displays **114**, **116**, **118**, and **120** display words or images that are viewed by drivers, passengers, or other individuals within the second vehicle **102**. Displays **114**, **116**, **118**, and **120** display advertising messages, emergency messages, or any other type of message. A message can be a written word or words, an image, a video and combinations of the same.

(10) Displays **114**, **116**, **118**, and **120** can be installed in second vehicle **102** at the factory, or,

displays **114**, **116**, **118**, and **120** can be aftermarket products installed after second vehicle **102** is manufactured.

(11) Displays **114**, **116**, **118**, and **120** can display many different types of messages, images, and/or videos. The owner of first vehicle **100** may be compensated for pushing advertisements on one or more of displays **114**, **116**, **118**, and **120**. This can help offset the cost of first vehicle **102**. The advertisements can change over time and location. System **110** can use geo-sensing to show location-relevant advertisements. The advertisements can be coordinated with the location of first vehicle **100** and second vehicle **102** so second vehicle **102** can get information relevant to their location, such as “Take exit **225** to get Bob's Burgers”, for example.

(12) Displays **114**, **116**, **118**, and **120** can show emergency messages telling of traffic events or other important information that individuals within second vehicle **102** may be interested to know. The emergency messages can be coordinated with the location of second vehicle **102** so that individuals within second vehicle **102** are getting location specific information, or to provide such information as “call police” or “need help”, for example. Displays **114**, **116**, **118**, and **120** can show messages sent from nearby police or emergency vehicles.

(13) Vehicles **100** and **102** can be any type of wheeled vehicle, flying vehicle, floating vehicle, or any other type of vehicle. In some embodiments, vehicles **100** and **102** are an unmanned or autonomous vehicle.

(14) System **110** includes displays **114**, **116**, **118**, and **120**, which are coupled to second vehicle **112**. Displays **114**, **116**, **118**, and **120** are each communicatively coupled to an onboard computer **150**. The onboard computer **150** may be coupled to a processor **122** located in first vehicle **100** using communication link **124**, such as a wireless link. Onboard computer **150** includes the display drivers for each of displays **114**, **116**, **118**, and **120**. Processor **122** generates the messages, images and/or videos for each of displays **114**, **116**, **118**, and **120**.

(15) System **110** includes an advertisement signal receiver **126** communicatively coupled to processor **122** using communication link **128**. Advertisement signal receiver **126** receives advertisement information to be shown on any of displays **114**, **116**, **118**, and **120**. Advertisement signal receiver **126** can include an for receiving updated or local advertisements, for communications with an advertisement company, or for any other communications relevant to system **110**. Advertisement signal receiver **126** sends information to processor **122** regarding advertisements to be shown on displays **114**, **116**, **118**, and **120**.

(16) System **110** includes an emergency signal receiver **130** communicatively coupled to processor **122** via communication link **132**. Emergency signal receiver **130** receives emergency, traffic, or other public service type information to be displayed on any of displays **114**, **116**, **118**, or **120**. Emergency signal receiver **130** can include an antenna such as antenna **144** (FIG. 1) for receiving updated or local emergency information, for communications from nearby emergency vehicles, or for any other communications relevant to system **110**. Emergency signal receiver **130** sends information to processor **122** regarding emergency or other public service messages to be shown on displays **114**, **116**, **118**, and **120**.

(17) System **110** includes a location detector **134** communicatively coupled to processor **122** via a communication link **136**. Location detector **134** receives location information such as geo-sensing or geo-fencing information, or information needed to determine the location of location detector **134**. In some embodiments, location detector **134** is or includes a global positioning sensor. Location detector **134** sends location information relevant to displays **114**, **116**, **118**, or **120** to processor **122** so that processor **122** can display location-based advertisements, emergency messages, or other location dependent content. Location detector **134** can use an antenna for sending or receiving location-related information, for communicating with location satellites, or for any other location communications relevant to system **110**. Location detector **134** sends location information to processor **122** so that processor **122** can push location-relevant information to onboard computer **150** to display location-relevant information on displays **114**, **116**, **118**, and **120**.

(18) Processor **122** is coupled to a vehicle electronics **138**, in this embodiment, via a communication link **140**. Vehicle electronics **138** includes the electronic processor and systems used to control first vehicle **100**. Processor **122** can obtain information from vehicle electronics **138** or provide information to vehicle electronics **138**. In some situations, an occupant of first vehicle **100** may wish to display a message on one of displays **114**, **116**, **118**, or **120**. This messaging can be transferred via vehicle electronics **138** to processor **122** so that processor **122** can push the messaging to onboard computer **150** for display on one of displays **114**, **116**, **118**, or **120**.

(19) Processor **122** is coupled to the internet **146** via a communication link **142**, in this embodiment. Processor **122** can send information to, or receive information from, internet **146** for many different reasons. Processor **122** can download advertisements for display, for example, or other information relevant to system **110** from internet **146**. In some embodiments, the owner of system **110** controls displays **114**, **116**, **118** and **120** via internet **146**.

(20) Onboard computer **150** may communicate with processor **122** through communication link **124** information regarding second vehicle **102**, such as, but not limited to locations travelled to, typical stops, and the like. Additionally, onboard computer **150** may identify the driver, passenger and/or passengers within second vehicle **102** and this information may be communicated to processor **122** through communication link **124** information regarding the passenger or passengers within second vehicle **102**. This allows processor **122** to provide even more specific targeted information and advertisement to each driver, passenger and/or passengers within second vehicle **102**.

(21) In some embodiments, the onboard computer **150** may have preloaded data for display on displays **114**, **116**, **118** and **120**. This allows system **110** to display certain advertisements on displays **114**, **116**, **118** and **120** even when not in range of first vehicle **100** or other similar type of vehicle part of system **110**.

(22) Communication links **124**, **128**, **132**, **142**, **136**, and **140** can be wired or wireless communication links and can use any communication protocol known now or in the future for communications.

(23) In some embodiments, system **110** includes more than one vehicle wherein some of the vehicles operate as first vehicle **100** and the other vehicles operate as second vehicle **102**.

(24) Autonomous Vehicles

(25) FIG. 2 shows an embodiment of a system **210** for targeted advertisements for use with vehicles such as autonomous vehicle **202**. System **210** includes one or more displays located in autonomous vehicle **102**. In the embodiment shown, system **210** may include four displays, display **214**, display **216**, display **218**, and display **220**, as shown in FIG. 2. Each one of displays **214**, **216**, **218**, and **220** may be mounted within the autonomous vehicle **202**, and can be seen by observers within the autonomous vehicle **202**. Displays **214**, **216**, **218**, and **220** may be LED display, OLED display, or any type of display or screen type display in this embodiment, but this is not meant to be limiting. Displays **214**, **216**, **218**, and **220** can be any type of active display. An active display is a display with active pixels that allows the image or message on the display to change over time. Displays **214**, **216**, **218**, and **220** can be any active light-emissive display, light-reflective display, or other type of active display known now or in the future for displaying an active image. Displays **214**, **216**, **218**, and **220** display words or images that are viewed by drivers, passengers, or other individuals within the autonomous vehicle **202**. Displays **214**, **216**, **218**, and **220** display advertising messages, emergency messages, or any other type of message. A message can be a written word or words, an image, a video and combinations of the same. This is particularly relevant to autonomous vehicles because none of the passengers need to drive and can safely focus on other things, such as work, news and the like in the vehicle. Therefore, targeted advertisements viewed within the autonomous vehicle **202** does not present additional danger or distraction to the driver.

(26) Displays **214**, **216**, **218**, and **220** can be installed in autonomous vehicle **202** at the factory, or,

displays **214**, **216**, **218**, and **220** can be aftermarket products installed after autonomous vehicle **202** is manufactured.

(27) Displays **114**, **116**, **118**, and **120** can show emergency messages telling of traffic events or other important information that individuals within second vehicle **102** may be interested to know. The emergency messages can be coordinated with the location of second vehicle **102** so that individuals within second vehicle **102** are getting location specific information, or to provide such information as “call police” or “need help”, for example. Displays **114**, **116**, **118**, and **120** can show messages sent from nearby police or emergency vehicles.

(28) Vehicles **100** and **102** can be any type of wheeled vehicle, flying vehicle, floating vehicle, or any other type of vehicle. In some embodiments, vehicles **100** and **102** are an unmanned or autonomous vehicle.

(29) System **210** includes displays **214**, **216**, **218**, and **220**, which are coupled to autonomous vehicle **202**. Displays **214**, **216**, **218**, and **220** are each communicatively coupled to an onboard computer **250**. The onboard computer **250** may be coupled to a processor **222** located on remote system **200** that is remote from the autonomous vehicle **202** using communication link **224**, such as a wireless link. Onboard computer **250** includes the display drivers for each of displays **214**, **216**, **218**, and **220**. Processor **222** generates the messages, images and/or videos for each of displays **214**, **216**, **218**, and **220** and communicates the same to the onboard computer **250** for processing and display.

(30) System **210** includes an advertisement signal receiver **226** communicatively coupled to processor **222** using communication link **228**. Advertisement signal receiver **226** receives advertisement information to be shown on any of displays **214**, **216**, **218**, and **220**. Advertisement signal receiver **226** can receive updated or local advertisements, for communications with an advertisement company, or for any other communications relevant to system **210**. Advertisement signal receiver **226** sends information to processor **222** regarding advertisements to be shown on displays **214**, **216**, **218**, and **220**.

(31) System **210** includes an emergency signal receiver **230** communicatively coupled to processor **222** via communication link **232**. Emergency signal receiver **230** receives emergency, traffic, or other public service type information to be displayed on any of displays **214**, **216**, **218**, and **220**. Emergency signal receiver **230** sends information to processor **222** regarding emergency or other public service messages to be shown on displays **214**, **216**, **218**, and **220**.

(32) System **210** includes a location detector **234** on the autonomous vehicle **202** communicatively coupled to processor **222** via a communication link **224**. Location detector **234** determines location information such as global positioning sensor (GPS) information and communicates the GPS location of the autonomous vehicle **202** to the processor **222**, so that processor **222** can generate and send, for display, location-based advertisements, emergency messages, or other location-dependent content. Location detector **234** can use an antenna for sending or receiving location-related information, for communicating with location satellites, or for any other location communications relevant to system **210**. Location detector **234** sends location information to processor **222** so that processor **222** can generate and send location-relevant information to onboard computer **250** to display location-relevant information on displays **214**, **216**, **218**, and **220**.

(33) Processor **222** is coupled to the internet **246** via a communication link **242**, in this embodiment. Processor **222** can send information to, or receive information from, internet **246** for many different reasons. Processor **222** can download advertisements for display, for example, or other information relevant to system **210** from internet **246**. In some embodiments, the owner of system **210** controls displays **214**, **216**, **218**, and **220** via internet **246**.

(34) Onboard computer **250** may communicate with processor **222** through communication link **224** information regarding autonomous vehicle **202**, such as, but not limited to locations travelled to, typical stops, and the like. Additionally, onboard computer **250** may identify the driver, passenger and/or passengers within autonomous vehicle **202** and this information may be

communicated to processor 222 through communication link 224. This allows processor 222 to generate and provide even more specific targeted information and advertisement to each driver, passenger and/or passengers within autonomous vehicle 202.

(35) In some embodiments, the onboard computer 250 may have preloaded data for display on displays 214, 216, 218, and 220. This allows system 210 to display certain advertisements on displays 214, 216, 218, and 220.

(36) Communication links 224, 228, 232, and 242 can be wired or wireless communication links and can use any communication protocol known now or in the future for communications.

(37) Additionally, some embodiments of the system 210 may incorporate autonomous car to autonomous car communication abilities. Further still, some embodiments of the system 210 may include a vehicle social network that groups autonomous vehicles by location, by heavily travelled to locations, or any other means of establishing groups of autonomous vehicles.

(38) The embodiments and examples set forth herein were presented in order to best explain the present invention and its practical application and to thereby enable those of ordinary skill in the art to make and use the invention. However, those of ordinary skill in the art will recognize that the foregoing description and examples have been presented for the purposes of illustration and example only. The description as set forth is not intended to be exhaustive or to limit the invention to the precise form disclosed. Many modifications and variations are possible in light of the teachings above.

Claims

1. A system for displaying targeted advertisements, the system comprising: a first vehicle; a display coupled within a second vehicle; an onboard computer coupled to the display within the second vehicle and viewable by occupants within the second vehicle, wherein the onboard computer operates the display and identifies a driver, at least one passenger, or the driver and the at least one passenger within second vehicle; a processor within the first vehicle communicatively coupled to the onboard computer within the second vehicle when the second vehicle is within a predetermined distance from the first vehicle, wherein the processor receives second vehicle information corresponding to the second vehicle from the onboard computer, including the identity of the driver, the identity of the at least one passenger, or the identities of the driver and the at least one passenger; an advertisement signal receiver within the first vehicle communicatively coupled to the processor to provide advertisement information, wherein the advertisement signal receiver receives location-relevant advertisement information from another source; an emergency signal receiver within the first vehicle communicatively coupled to the processor to provide emergency information, wherein the emergency signal receiver receives location-relevant emergency information from another source; and a location detector within the first vehicle communicatively coupled to the processor to provide location information corresponding to a location within a geo-fence, wherein the location-relevant advertisement information and the location-relevant emergency information correspond to the geo-fence, wherein the display within the second vehicle shows messages, images, videos or combinations thereof in response to the onboard computer receiving and processing display information sent from the processor, wherein the display information includes the location-relevant advertisement information and the location-relevant emergency information displayed in an order based on a priority assigned to the advertisement information and specifically targeting the driver, the at least one passenger or the driver and the at least one passenger.

2. The system for displaying targeted advertisements of claim 1 wherein display information sent from the processor includes the location information.

3. The system for displaying targeted advertisements of claim 1 wherein display information sent from the processor includes the second vehicle information.

4. The system for displaying targeted advertisements of claim 1 wherein display information sent from the processor includes combinations of two or more of the advertisement information, the location information, and the second vehicle information.

5. The system for displaying targeted advertisements of claim 1, wherein the second vehicle is an autonomous vehicle.

6. The system for displaying targeted advertisements of claim 1, wherein the first vehicle is an autonomous vehicle.

7. A system for displaying targeted advertisements in an autonomous vehicle, the system comprising: a remote system comprising a processor, an advertisement signal receiver coupled to the processor, and an emergency signal receiver coupled to the processor, wherein: the advertisement signal receiver receives location-relevant advertisement information from another source and provides it to the processor; and the emergency signal receiver receives location-relevant emergency information from another source and provides it to the processor; and an autonomous vehicle comprising an onboard computer, a display coupled to the onboard computer, and a location detector coupled to the onboard computer, wherein: the onboard computer identifies a driver, at least one passenger, or the driver and the at least one passenger within second vehicle; the processor of the remote system is coupled to the onboard computer of the autonomous vehicle; and the location detector determines location information of the autonomous vehicle and provides it to the onboard computer, the location information corresponding to a location within a geo-fence, wherein the location-relevant advertisement information and the location-relevant emergency information correspond to the geo-fence, and wherein the location information of the autonomous vehicle, the identity of the driver, the identity of the at least one passenger, or the identities of the driver and the at least one passenger are sent to the processor of the remote system from the onboard computer; wherein: in response to receiving the location information of the autonomous vehicle, the processor of the remote system generates and sends display information to the onboard computer, the display information comprising the location-relevant advertisement information, the location-relevant emergency information and a priority assigned to the location-relevant advertisement information and the location-relevant emergency information indicating a display order; and in response to receiving the display information, the on board computer displays the location-relevant advertisement information and the location-relevant emergency information in the display order determined by the priority and specifically targeting the driver, the at least one passenger or the driver and the at least one passenger.
