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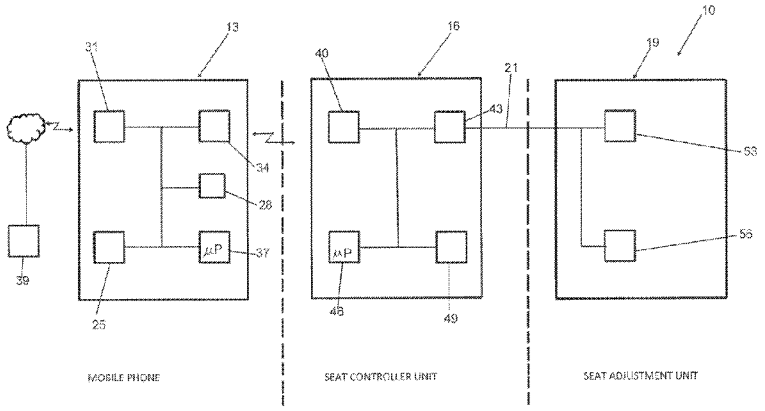

Fig.1

(57) Abstract: The application provides a seat adjustment module for a seat of a vehicle. The seat adjustment module includes a microphone unit, a processor module, and seat adjustment unit. The microphone unit is provided for receiving a user spoken seat adjustment comment and for generating a corresponding signal data. The processor module is adapted for converting the signal data to a corresponding a seat adjustment comment text and for converting the seat adjustment comment text to at least one seat adjustment command. The seat adjustment unit is adapted for adjusting the seat according to the seat adjustment command.

NATURAL LANGUAGE SEAT CONTROL SYSTEM FOR AUTOMOTIVE IMPLEMENTATIONS

The present application relates to an improved vehicle. In particular, the application relates to an improved seat of the vehicle.

US6529608 B2 provides a speech recognition system for an automotive vehicle. The recognition system includes a microphone receiver for receiving a voice audio signal and converting the same into an analogue signal, a microphone aimer for giving the microphone receiver a locational bias for reception, an analogue to digital converter for converting the analogue signal to a digital signal, and a speech recognizer for recognizing a voice from the digital signal, which is received from the analogue to digital converter. The recognition system also includes an occupant restraint system having an occupant informational system to control deployment of the occupant restraint system resultant upon an occupant condition, and an occupant restraint system signal generator for signalling the occupant condition to the microphone aimer to bias according to location the reception of the microphone receiver.

US20130030645 A1 provides an infotainment system for delivering content to multiple occupants of a vehicle. The infotainment system includes an occupant detector, a recommendation engine, and a content delivery engine. The occupant detector is configured to receive characteristic data for occupants of the vehicle and to generate a profile for each occupant of the vehicle. The recommendation engine then analyses the profiles of the vehicle occupants. The content delivery engine later delivers content to one or more of the vehicle occupants in accordance with the analysis of the profiles of the vehicle occupants.

CN201767450U provides a seat, in particular to an intelligent voice control multifunctional lounge chair. The multifunctional lounge chair is based on intelligent voice control. It comprises a voice input module, a voice control module and a function executing mechanism module. The voice input module is connected with the voice control module by the aid of a lead, and the voice control module is connected with the function executing mechanism module. The multifunctional lounge chair can enhance joy and product identity sense of users during use.

FR2740085 provides a method that uses a power module. The power module controls displacements of adjustable elements within a seat and provides power to motors, which effects movement of the seat. A microphone and a vocabulary memory are both connected to a speech recognition unit. The speech recognition unit and the power module are both controlled by a single actuation push-button. The speech recognition unit performs a comparison between a speech detected by the microphone and a speech held in the vocabulary memory. When the comparison detects an appropriate correlation, a signal is applied to a power control circuit of the power module.

It is an object of this application to provide an improved vehicle.

The application provides an improved seat adjustment module for adjusting one or more seats of a vehicle.

The vehicle is used for transporting people and goods. The vehicle often has seats for three to four passengers and a driver. The seats provide a place the passengers and the driver to sit. The position of the seat can be changed according to a

preference of its user, who can be the passenger or the driver. The user can place the seat higher or lower, and forward or backward. The user can also change the temperature of the seat.

The seat adjustment module includes a microphone unit, a processor module, and a seat adjustment unit.

The microphone unit is used for receiving a user spoken seat adjustment comment from a user, such as "move seat higher". The microphone unit then generates a corresponding electrical signal data.

The processor module is adapted for converting the corresponding electrical signal data to a corresponding a seat adjustment comment text. In other words, the processor module performs a speech to text conversion.

After this, the processor module converts the generated seat adjustment comment text to at least one seat adjustment command or instruction for sending to the seat adjustment unit. The seat adjustment command is intended for performing by a physical machine or device, such as an electric motor.

The seat adjustment unit later receives the seat adjustment command and then adjusts the seat according to the received seat adjustment command.

This seat adjustment module provides several benefits.

The seat adjustment module enables a user to adjust a seat without a seat control switch or button, which is placed in line of sight of the user. In other words, the attention of the user is not diverted for adjusting the seat. The user can

continue driving and focusing his attention on the road, such as pedestrian crossing, which are ahead of the user, as well as focusing his attention on other vehicles.

This is important, especially in challenging situations, like low light or night conditions. Even when the inside of the vehicle is dark, the driver can focus on the road and also adjusts the seat without fumbling with seat controls in the dark.

In effect, the safety of the driver is thus enhanced. The operation of the seat is also enhanced, since the seat can be adjusted easily using voice commands.

The seat adjustment module often includes an external computer wireless data port for sending the signal data, which originates from the microphone unit, to an external computer.

The processor module can be adapted for converting the signal data from the microphone unit to the corresponding seat adjustment comment text by performing the following steps.

Firstly, the processor module sends the signal data, which originates from the microphone unit, to the external computer wireless data port, which then sends the signal data to an external computer. The external computer then converts the signal data to the corresponding seat adjustment comment text. After this, the external computer sends the corresponding seat adjustment comment text to the external computer wireless data port. The processor module later receives the corresponding seat adjustment comment text from the external computer wireless data port.

This arrangement provides an advantage in that it allows the external computer, which often has a large computing resource, for performing the voice to text conversion. In other words, the external computer can perform the voice to text conversion quickly.

The processor module can also be adapted to convert a spoken seat adjustment comment text, which is provided in a natural human language, to at least one seat adjustment command. In detail, the processor module discerns a spoken seat adjustment comment, which is provided in a spoken specific human language of a user. The adjustment comment can even be spoken with an accent of the user. The process module then converts this spoken seat command to a corresponding a seat adjustment comment text. After this, the process module converts this corresponding a seat adjustment comment text to one or more seat adjustment commands.

This adaption provides a benefit in that the user does need to learn specific machine seat commands. The user can just speak in his natural human language for adjusting the seat, with much ease.

In one implementation, the processor module is further adapted to convert the seat adjustment comment text to at least one seat adjustment command according to regional data. Put differently, the processor module takes into account data about pre-determined seat preferences of users of a specific region when adjusting the seat.

Similarly, the processor module can be further adapted to convert the seat adjustment comment text to at least one seat adjustment command according to local culture data.

The processor module can also be adapted to convert the seat adjustment comment text to at least one seat adjustment command according to gender data.

For convenience, the microphone unit can also be adapted for fixedly attaching to an inside part of the vehicle. The inside part can refer to a steering wheel of the vehicle or to a part of a dashboard of the vehicle, although other vehicle parts are also possible.

The processor module can also be connected to the seat adjustment unit via a Controller Area Network (CAN) data bus. The CAN data bus is used in many vehicles. In a general, other types of data bus can also be used.

The seat adjustment unit can also include one or more seat adjustment electric motors for adjusting a position of the seat according to the seat adjustment command.

The seat adjustment unit can also include one or more heating elements for adjusting a temperature of the seat according to the seat adjustment command.

The application provides an improved vehicle that comprises one or more seats and the above seat adjustment module for adjusting the seat.

The application also provides an improved seat adjustment arrangement for adjusting one or more seats of a vehicle.

The seat adjustment arrangement includes a mobile phone and a seat controller module.

The mobile phone includes microphone unit of a seat adjustment module, a processor module of the seat adjustment module, and a phone wireless communication port.

In detail, the microphone unit is used for receiving a user spoken seat adjustment comment from a user and for generating a signal data that corresponds to the user spoken seat adjustment comment. The processor module is adapted for converting the signal data to a corresponding a seat adjustment comment text and for converting the seat adjustment comment text to one or more seat adjustment commands. The phone wireless communication port then sends out the seat adjustment commands.

Referring to the seat controller module, it includes a module wireless communication port and a seat adjustment unit of the seat adjustment module.

In detail, the module wireless communication port is communicatively connected to the phone wireless communication port via electromagnetic waves for receiving the seat adjustment commands. The seat adjustment unit is adapted for adjusting the seat according to the seat adjustment command.

The seat adjustment arrangement has an advantage of easy implementation, as it uses the mobile phone, which is commonly available.

The mobile phone often includes an external computer wireless data port for communicatively connecting to an external computer. Because of this, the processor module can then be adapted for converting the signal data from the microphone unit to the corresponding seat adjustment comment text by performing the following steps.

The processor module initially sends out the signal data to the external computer wireless data port. The wireless data port later sends the signal data to an external computer, wherein the external computer converts the signal data to a corresponding seat adjustment comment text. The external computer later sends back the corresponding seat adjustment comment text to the wireless data port. The processor module then receives the corresponding seat adjustment comment text from the external computer wireless data port.

The phone wireless communication port and the module wireless communication port can be adapted for using Bluetooth protocol, which is used by many devices. The Bluetooth protocol is widely used.

The application provides a further a seat adjustment arrangement for at least one seat of a vehicle. The seat adjustment arrangement includes a seat controller module. The seat controller module comprises a module wireless communication port and a seat adjustment unit. In detail, the module wireless communication port is provided for communicatively connecting to a mobile phone wireless communication port via electromagnetic waves for receiving at least one seat adjustment command. The seat adjustment unit is adapted for adjusting the seat according to the seat adjustment command.

The application also provides another improved seat adjustment arrangement for adjusting one or more seats of a vehicle.

The seat adjustment arrangement includes a mobile phone and a seat controller module.

The mobile phone includes a microphone unit of a seat adjustment module and a phone wireless communication port. The mi-

crophone unit is used for receiving a user spoken seat adjustment comment from a user and for generating a corresponding signal data that is associated with the user spoken seat adjustment comment. The phone wireless communication port then sends out the corresponding signal data.

The seat controller module includes a module wireless communication port, a processor module of the seat adjustment module, and a seat adjustment unit of the seat adjustment module.

The module wireless communication port is communicatively connected to the phone wireless communication port via electromagnetic waves for receiving the corresponding signal data from the phone wireless communication port.

The processor module is adapted for converting the signal data to a corresponding a seat adjustment comment text. The processor module also converts the seat adjustment comment text to at least one seat adjustment command.

The seat adjustment unit is adapted for adjusting the seat according to the seat adjustment command.

This arrangement provides another means for adjusting the vehicle seats.

The above processor module is often connected to the above corresponding seat adjustment unit via a Controller Area Network (CAN) data bus, although other types of data bus can also be used.

The phone wireless communication port and the module wireless communication port can be adapted for using Bluetooth proto-

col, which is used by many devices. The Bluetooth protocol is widely used.

The application provides a further seat adjustment arrangement for at least one seat of a vehicle. The seat adjustment arrangement includes a seat controller module, a processor module, and a seat adjustment unit.

In detail, the seat controller module includes a module wireless communication port being provided for communicatively connecting to a mobile phone wireless communication port via electromagnetic waves for receiving a user spoken seat adjustment comment signal data.

The processor module is adapted for converting the user spoken seat adjustment comment signal data to a corresponding a seat adjustment comment text and for converting the seat adjustment comment text to at least one seat adjustment command.

The seat adjustment unit is adapted for adjusting the seat according to the seat adjustment command.

The application also provides an improved vehicle that comprises at least one seat and one of the above seat adjustment modules for adjusting the seat.

Fig. 1 illustrates a seat adjustment module for controlling or adjusting a seat of a vehicle.

In the following description, details are provided to describe embodiments of the application. It shall be apparent to one skilled in the art, however, that the embodiments may be practiced without such details.

Some parts of the embodiment have similar parts. The similar parts may have the same names or similar part numbers. The description of one similar part also applies by reference to another similar parts, where appropriate, thereby reducing repetition of text without limiting the disclosure.

Fig. 1 shows a seat adjustment module 10 for controlling or adjusting a seat of a vehicle using voice commands or comments from a user of the vehicle.

The seat adjustment module 10 includes a mobile phone 13 and a seat controller unit 16 with a seat adjustment unit 19. The mobile phone 13 is communicatively connected to the seat controller unit 16 in a wireless manner via electromagnetic waves while the seat controller unit 16 is electrically connected to the seat adjustment unit 19 via a data bus 21. The data bus 21 comprises a set of electrically conductive wires.

The mobile phone 13 comprises a microphone device 25, a phone memory device 28, an Internet phone wireless data port 31, a Bluetooth phone wireless communication port 34, and a phone processor 37. The microphone device 25, the phone memory device 28, the Internet phone wireless data port 31, and the Bluetooth phone wireless communication port 34 are electrically connected to the phone processor 37.

The Internet phone wireless data port 31 is communicatively connected to an external computer 39 in a wireless manner.

The phone memory device 28 stores a natural human language user interface (NLUI) application software program and a seat application software program. For short or as an abbreviation, the application software program is also called an application program.

The NLUI application program is also called a virtual assistant software program. Examples of the NLUI application program are Microsoft Cortana, Google Now, and Apple Siri. Other examples of the NLUI application program include IBM Watson.

The seat controller unit 16 includes a Bluetooth controller wireless communication port 40, a Controller Area Network (CAN) communication port 43, and a controller processor 46 with a controller memory device 49. The Bluetooth controller wireless communication port 40, the CAN communication port 43, and the controller memory device 49 are electrically connected to the controller processor 46.

The seat adjustment unit 19 comprises a set of electric motors 53 and a heating device 56. The electric motors 53 and the heating device 56 are connected to the CAN communication port 43 of the seat controller unit 16 via the data bus 21.

In application, the seat controller unit 16 and the seat adjustment unit 19 are installed in a vehicle. A user of the vehicle, who is often a driver of the vehicle, carries the mobile phone 13.

The seat adjustment module 10 can act as a part of an autonomous system, which relies on more voice activation and voice controlled systems.

Referring to the mobile phone 13, in use, the user speaks or vocalises a seat adjustment comment, in a natural human language of the user, such as Chinese or Spanish, for adjusting the seat.

The natural human language is developed naturally through use and repetition. It is a human language, such as English, Russian, German, or Japanese and is different from a programming language, which is used by a computer.

The user often gives the seat adjustment comment when the vehicle is stationary, although it can also be given when the vehicle is moving.

The seat adjustment comment can be provided in the form of a seat adjustment command or instruction, and a seat statement. Examples of the seat adjustment instruction include temperature instructions, such as "make the seat warmer" or "make the seat cooler", and seat positions, such as "adjust seat to upright position" and "adjust seat to relaxed position". Example of the seat statement include "the seat is too cold" and "seat is uncomfortable in lower back area"

The microphone device 25 afterward receives the spoken seat adjustment comment and generates a signal data that correspond to the spoken seat adjustment comment.

The NLUI application program then instructs the phone processor 37 to receive the signal data from the microphone device 25 and to send the signal data to the Internet phone wireless data port 31.

The Internet phone wireless data port 31 afterward transmits wirelessly the signal data of the seat adjustment comment, which is spoken in the natural human language of the user, to the external computer 39 for processing.

The external computer 30 provides cloud computing, wherein storage and accessing of data and software programs are done

over the Internet. In detail, the external computer 39 is equipped for understanding one or more spoken human languages with their different accents. The external computer 39 then does a voice to text translation of the spoken seat adjustment comment. The external computer 39 converts the signal data that correspond to the spoken seat adjustment comment into a corresponding text of the spoken seat adjustment comment.

If needed, the external computer 39 can translate the seat adjustment comment text to another preferred language, such as English. A designer of the seat adjustment module 10 often selects the preferred language.

The external computer 39 later sends the seat adjustment comment text to the Internet phone wireless data port 31.

The seat application program afterward receives the seat adjustment comment text from the Internet phone wireless data port 31 and it generates one or more seat adjustment instructions according to the seat adjustment comment text. After this, the seat application program provides commands or instructions to the phone processor 37 for sending the generated seat adjustment instructions to the Bluetooth phone wireless communication port 34.

The Bluetooth phone wireless communication port 34 afterward sends out these seat adjustment instructions in a wireless manner using electromagnetic waves with the Bluetooth communication protocol.

Referring to the seat controller unit 16, the Bluetooth controller wireless communication port 40 is intended for receiving the seat adjustment instructions from the Bluetooth phone

wireless communication port 34 using electromagnetic waves with the Bluetooth communication protocol.

The controller processor 46 then obtains the seat adjustment instructions from the Bluetooth phone wireless communication port 34. The controller processor 46 later generates seat activation signals, which corresponds to the received seat adjustment instructions.

If needed, the controller processor 46 can further adapt the seat activation signals according to desired characteristic in relation to region, to culture, and/or to gender. In other words, the seat activation signals can be adapted according to a preference of a specific region, to a preference of a certain culture, and/or to a preference of a specific gender.

After this, the controller processor 46 sends the corresponding seat activation signals to the CAN communication port 43.

Referring to the seat adjustment unit 19, the electric motors 53 are intended for receiving the seat activation signals from the CAN communication port 43, wherein the electric motors 53 are activated for moving the seat according to the seat activation signals. In effect, the seat is moved in desired different directions.

Similarly, the heating device 56 is used for receiving the seat activation signals from the CAN communication port 43, wherein the heating device 56 is activated for changing the temperature of the seat according to the seat activation signals.

In one embodiment, the mobile phone 13 is provided as a stationary device that is attached to the inside of the vehicle, such as a dashboard or a steering wheel of the vehicle.

The stationary device can be communicatively connected to the seat controller unit 16 via conductive wires or via a wireless means.

In a general sense, instead of adjusting a seat of a vehicle using voice commands or comments, the seat adjustment module 10 can be further adapted for operating other parts of the vehicle, such as an in-vehicle infotainment system, using voice.

With respect to ease of implementation, many parts of the seat adjustment module 10 are already existing.

A mobile phone of a user can be easily and seamless integrated with a digital virtual assistant software program, which is supported or is empowered by a backend server computer from a vehicle manufacturer.

With respect to an owner of the vehicle, the use of the seat adjustment module 10 removes the need to provide buttons or switches for controlling the vehicle seat, thereby reducing cost of the vehicle.

For sake of redundancy, the vehicle can include a further user touch sensitive interface device for adjusting the seat.

With respect to a manufacturer of the vehicle, the seat adjustment module 10 can be integrated into an existing voice control module of the vehicle. The seat adjustment module 10 can also be integrated into an augmented reality device for the vehicle.

In a general sense, different implementations of the seat adjustment module 10 are possible.

The phone processor 37 can convert the spoken seat adjustment comment to the corresponding seat adjustment comment text without the support of the external computer.

One of the phone processor 37 and the controller processor 46 can convert the spoken seat adjustment comment to the corresponding seat adjustment comment text, can convert the seat adjustment comment text to the corresponding seat adjustment instructions, and can convert the seat adjustment instructions to corresponding seat activation signals.

In one implementation, the phone processor 37 converts the spoken seat adjustment comment to the corresponding seat adjustment comment text while the controller processor 46 converts the seat adjustment comment text to the corresponding seat adjustment instructions and then converts the seat adjustment instructions to corresponding seat activation signals.

Herein, the mobile phone 13 and the seat controller unit 16 perform the intelligence or the conversion of the spoken seat adjustment comment to corresponding seat activation signals.

In another implementation, the phone processor 37 converts the spoken seat adjustment comment to the corresponding seat adjustment comment text and converts the seat adjustment comment text to the corresponding seat adjustment instructions. The controller processor 46 then converts the seat adjustment instructions to corresponding seat activation signals.

In short, the mobile phone 13 and the seat controller unit 16 perform the intelligence or the conversion of the spoken seat adjustment comment to corresponding seat activation signals.

In a further implementation, the phone processor 37 converts the spoken seat adjustment comment to the corresponding seat adjustment comment text, converts the seat adjustment comment text to the corresponding seat adjustment instructions, and then converts the seat adjustment instructions to corresponding seat activation signals.

In short, the mobile phone 13 performs the intelligence or the conversion of the spoken seat adjustment comment to corresponding seat activation signals.

In another implementation, the controller processor 46 converts the spoken seat adjustment comment to the corresponding seat adjustment comment text, converts the seat adjustment comment text to the corresponding seat adjustment instructions, and then converts the seat adjustment instructions to corresponding seat activation signals.

In short, the seat controller unit 16 performs the intelligence or the conversion of the spoken seat adjustment comment to corresponding seat activation signals.

The seat adjustment module 10 provides several benefits.

The seat adjustment module 10 allows a user to adjust a seat without requiring a control switch or button of the seat to be in line of sight of the user. In other words, the attention of the user is not diverted for adjusting the seat. The driver can continue driving and focus his attention on the road, such

as pedestrian crossing, which are ahead of the user, and on other vehicles

This is important, especially in challenging situations, like low light or night conditions. When though the inside of the vehicle can be dark, the driver can continue to focus on the road and adjusts the seat without fumbling with seat controls in the dark.

The safety of the driver is thus enhanced, as the driver is not distracted for adjusting the seat.

The operation of the seat is also enhanced, since the seat can be adjusted easily using voice commands.

In effect, this increases efficiency of the driver.

The embodiments can also be described with the following lists of features or elements being organized into an item list. The respective combinations of features, which are disclosed in the item list, are regarded as independent subject matter, respectively, that can also be combined with other features of the application.

ITEM LIST

1. A seat adjustment module for at least one seat of a vehicle, the seat adjustment module comprising
   a microphone unit for receiving a user spoken seat adjustment comment and for generating a corresponding signal data,
   a processor module being adapted for
   - converting the signal data to a corresponding a seat adjustment comment text and

- converting the seat adjustment comment text to at least one seat adjustment command, and

a seat adjustment unit being adapted for adjusting the seat according to the seat adjustment command.

2. The seat adjustment module according to item 1 further comprising
an external computer wireless data port,
wherein the processor module is further adapted for converting the signal data from the microphone unit to the corresponding seat adjustment comment text by
- sending out the signal data to the external computer wireless data port and
- receiving the corresponding seat adjustment comment text from the external computer wireless data port.

3. The seat adjustment module according to item 1 or 2, wherein
the processor module is further adapted to convert a spoken seat adjustment comment text, which is provided in a natural human language, to at least one seat adjustment command.

4. The seat adjustment module according to one of the above-mentioned items, wherein
the processor module is further adapted to convert the seat adjustment comment text to at least one seat adjustment command according to regional data.

5. The seat adjustment module according to one of the above-mentioned items, wherein
the processor module is further adapted to convert the seat adjustment comment text to at least one seat adjustment command according to culture data.

6. The seat adjustment module according to one of the above-mentioned items, wherein
the processor module is further adapted to convert the seat adjustment comment text to at least one seat adjustment command according to gender data.

7. The seat adjustment module according to one of the above-mentioned items, wherein
the microphone unit is adapted for fixedly attaching to an inside part of the vehicle.

8. The seat adjustment module according to item 7, wherein
the inside part refers to a steering wheel of the vehicle.

9. The seat adjustment module according to item 7, wherein
the inside part refers to a dashboard of the vehicle.

10. The seat adjustment module according to one of the above-mentioned items, wherein
the processor module is connected to the seat adjustment unit via a Controller Area Network (CAN) data bus.

11. The seat adjustment module according to one of the above-mentioned items, wherein
the seat adjustment unit comprises at least one seat adjustment electric motor for adjusting a position of the seat according to the seat adjustment command.

12. The seat adjustment module according to one of the above-mentioned items, wherein

the seat adjustment unit comprises at least one heating element for adjusting a temperature of the seat according to the seat adjustment command.

13. A vehicle comprising
at least one seat and
a seat adjustment module according to one of the above-mentioned items for adjusting the seat.

14. A seat adjustment arrangement for at least one seat of a vehicle, the seat adjustment arrangement comprising
a mobile phone and
a seat controller module,
wherein the mobile phone comprises
- a microphone unit for receiving a user spoken seat adjustment comment and for generating a corresponding signal data,
- a processor module being adapted for
  - converting the signal data to a corresponding a seat adjustment comment text and
  - converting the seat adjustment comment text to at least one seat adjustment command, and
- a phone wireless communication port for sending out the at least one seat adjustment command, and

wherein the seat controller module comprises
- a module wireless communication port being communicatively connected to the phone wireless communication port via electromagnetic waves for receiving the at least one seat adjustment command, and
- a seat adjustment unit being adapted for adjusting the seat according to the seat adjustment command.

15. The seat adjustment arrangement according to item 14, wherein

the mobile phone further comprises an external computer wireless data port, wherein
the processor module is further adapted for converting the signal data from the microphone unit to the corresponding seat adjustment comment text by
- sending out the signal data to the external computer wireless data port and
- receiving the corresponding seat adjustment comment text from the external computer wireless data port.

16. The seat adjustment arrangement according to item 14 or 15, wherein
the phone wireless communication port and the module wireless communication port are adapted for using Bluetooth protocol.

17. A seat adjustment arrangement for at least one seat of a vehicle, the seat adjustment arrangement comprising
a seat controller module,
wherein the seat controller module comprises
- a module wireless communication port being provided for communicatively connecting to a mobile phone wireless communication port via electromagnetic waves for receiving at least one seat adjustment command, and
- a seat adjustment unit being adapted for adjusting the seat according to the seat adjustment command.

18. The seat adjustment arrangement according to item 17, wherein
the module wireless communication port is adapted for using Bluetooth protocol.

19. A seat adjustment arrangement for at least one seat of a vehicle, the seat adjustment arrangement comprising
a mobile phone and
a seat controller module,
wherein the mobile phone comprises
- a microphone unit for receiving a user spoken seat adjustment comment and for generating a corresponding signal data, and
- a phone wireless communication port for sending out the corresponding signal data,
wherein the seat controller module comprises
- a module wireless communication port being communicatively connected to the phone wireless communication port via electromagnetic waves for receiving the corresponding signal data,
- a processor module being adapted for
  - converting the signal data to a corresponding a seat adjustment comment text and
  - converting the seat adjustment comment text to at least one seat adjustment command, and
- a seat adjustment unit being adapted for adjusting the seat according to the seat adjustment command.

20. The seat adjustment arrangement according to item 19, wherein
the processor module is connected to the seat adjustment unit via a Controller Area Network (CAN) data bus.

21. The seat adjustment arrangement according to item 19 or 20, wherein
the phone wireless communication port and the module wireless communication port are adapted for using Bluetooth protocol.

22. A seat adjustment arrangement for at least one seat of a vehicle, the seat adjustment arrangement comprising
a seat controller module,
wherein the seat controller module comprises
- a module wireless communication port being provided for communicatively connecting to a mobile phone wireless communication port via electromagnetic waves for receiving a user spoken seat adjustment comment signal data,
- a processor module being adapted for
  - converting the user spoken seat adjustment comment signal data to a corresponding a seat adjustment comment text and
  - converting the seat adjustment comment text to at least one seat adjustment command, and
- a seat adjustment unit being adapted for adjusting the seat according to the seat adjustment command.

23. A vehicle comprising
at least one seat and
a seat adjustment arrangement according to one of the items 14 to 22 for adjusting the seat.

Although the above description contains much specificity, this should not be construed as limiting the scope of the embodiments but merely providing illustration of the foreseeable embodiments. The above stated advantages of the embodiments should not be construed especially as limiting the scope of the embodiments but merely to explain possible achievements if the described embodiments are put into practice. Thus, the scope of the embodiments should be determined by the claims and their equivalents, rather than by the examples given.

REFERENCE NUMBERS

10	seat adjustment module
13	mobile phone
16	seat controller unit
19	seat adjustment unit
21	data bus
25	microphone device
28	phone memory device
31	Internet phone wireless data port
34	Bluetooth phone wireless communication port
37	phone processor
39	external computer
40	Bluetooth controller wireless communication port
43	CAN communication port
46	controller processor
49	controller memory device
53	electric motor
56	heating device

CLAIMS

1. A seat adjustment module for at least one seat of a vehicle, the seat adjustment module comprising

a microphone unit for receiving a user spoken seat adjustment comment and for generating a corresponding signal data,

a processor module being adapted for

- converting the signal data to a corresponding a seat adjustment comment text and
- converting the seat adjustment comment text to at least one seat adjustment command, and

a seat adjustment unit being adapted for adjusting the seat according to the seat adjustment command.

2. The seat adjustment module according to claim 1 further comprising

an external computer wireless data port,

wherein the processor module is further adapted for converting the signal data from the microphone unit to the corresponding seat adjustment comment text by

- sending out the signal data to the external computer wireless data port and
- receiving the corresponding seat adjustment comment text from the external computer wireless data port.

3. The seat adjustment module according to claim 1, wherein the processor module is further adapted to convert a spoken seat adjustment comment text, which is provided in a natural human language, to at least one seat adjustment command.

4. The seat adjustment module according to claim 1, wherein

the processor module is further adapted to convert the seat adjustment comment text to at least one seat adjustment command according to regional data.

5. The seat adjustment module according to claim 1, wherein the processor module is further adapted to convert the seat adjustment comment text to at least one seat adjustment command according to culture data.

6. The seat adjustment module according to claim 1, wherein the processor module is further adapted to convert the seat adjustment comment text to at least one seat adjustment command according to gender data.

7. The seat adjustment module according to claim 1, wherein the microphone unit is adapted for fixedly attaching to an inside part of the vehicle.

8. The seat adjustment module according to claim 7, wherein the inside part refers to a steering wheel of the vehicle.

9. The seat adjustment module according to claim 7, wherein the inside part refers to a dashboard of the vehicle.

10. The seat adjustment module according to claim 1, wherein the processor module is connected to the seat adjustment unit via a Controller Area Network (CAN) data bus.

11. The seat adjustment module according to claim 1, wherein the seat adjustment unit comprises at least one seat adjustment electric motor for adjusting a position of the seat according to the seat adjustment command.

12. The seat adjustment module according to claim 1, wherein the seat adjustment unit comprises at least one heating element for adjusting a temperature of the seat according to the seat adjustment command.

13. A vehicle comprising
at least one seat and
a seat adjustment module according to claim 1 for adjusting the seat.

14. A seat adjustment arrangement for at least one seat of a vehicle, the seat adjustment arrangement comprising
a mobile phone and
a seat controller module,
wherein the mobile phone comprises
- a microphone unit for receiving a user spoken seat adjustment comment and for generating a corresponding signal data,
- a processor module being adapted for
  - converting the signal data to a corresponding a seat adjustment comment text and
  - converting the seat adjustment comment text to at least one seat adjustment command, and
- a phone wireless communication port for sending out the at least one seat adjustment command, and
wherein the seat controller module comprises
- a module wireless communication port being communicatively connected to the phone wireless communication port via electromagnetic waves for receiving the at least one seat adjustment command, and
- a seat adjustment unit being adapted for adjusting the seat according to the seat adjustment command.

15. The seat adjustment arrangement according to claim 14, wherein
the mobile phone further comprises an external computer wireless data port, wherein
the processor module is further adapted for converting the signal data from the microphone unit to the corresponding seat adjustment comment text by
- sending out the signal data to the external computer wireless data port and
- receiving the corresponding seat adjustment comment text from the external computer wireless data port.

16. The seat adjustment arrangement according to claim 14, wherein
the phone wireless communication port and the module wireless communication port are adapted for using Bluetooth protocol.

17. A vehicle comprising
at least one seat and
a seat adjustment arrangement according to claim 14 for adjusting the seat.

18. A seat adjustment arrangement for at least one seat of a vehicle, the seat adjustment arrangement comprising
a seat controller module,
wherein the seat controller module comprises
- a module wireless communication port being provided for communicatively connecting to a mobile phone wireless communication port via electromagnetic waves for receiving at least one seat adjustment command, and
- a seat adjustment unit being adapted for adjusting the seat according to the seat adjustment command.

19. The seat adjustment arrangement according to claim 18, wherein
the module wireless communication port is adapted for using Bluetooth protocol.

20. A vehicle comprising
at least one seat and
a seat adjustment arrangement according to claim 18 for adjusting the seat.

21. A seat adjustment arrangement for at least one seat of a vehicle, the seat adjustment arrangement comprising
a mobile phone and
a seat controller module,
wherein the mobile phone comprises
- a microphone unit for receiving a user spoken seat adjustment comment and for generating a corresponding signal data, and
- a phone wireless communication port for sending out the corresponding signal data,
wherein the seat controller module comprises
- a module wireless communication port being communicatively connected to the phone wireless communication port via electromagnetic waves for receiving the corresponding signal data,
- a processor module being adapted for
  - converting the signal data to a corresponding a seat adjustment comment text and
  - converting the seat adjustment comment text to at least one seat adjustment command, and
- a seat adjustment unit being adapted for adjusting the seat according to the seat adjustment command.

22. The seat adjustment arrangement according to claim 21, wherein
the processor module is connected to the seat adjustment unit via a Controller Area Network (CAN) data bus.

23. The seat adjustment arrangement according to claim 21, wherein
the phone wireless communication port and the module wireless communication port are adapted for using Bluetooth protocol.

24. A vehicle comprising
at least one seat and
a seat adjustment arrangement according to claim 21 for adjusting the seat.

25. A seat adjustment arrangement for at least one seat of a vehicle, the seat adjustment arrangement comprising
a seat controller module,
wherein the seat controller module comprises
- a module wireless communication port being provided for communicatively connecting to a mobile phone wireless communication port via electromagnetic waves for receiving a user spoken seat adjustment comment signal data,
- a processor module being adapted for
  - converting the user spoken seat adjustment comment signal data to a corresponding a seat adjustment comment text and
  - converting the seat adjustment comment text to at least one seat adjustment command, and
- a seat adjustment unit being adapted for adjusting the seat according to the seat adjustment command.

26. A vehicle comprising

at least one seat and

a seat adjustment arrangement according to claim 25 for adjusting the seat.

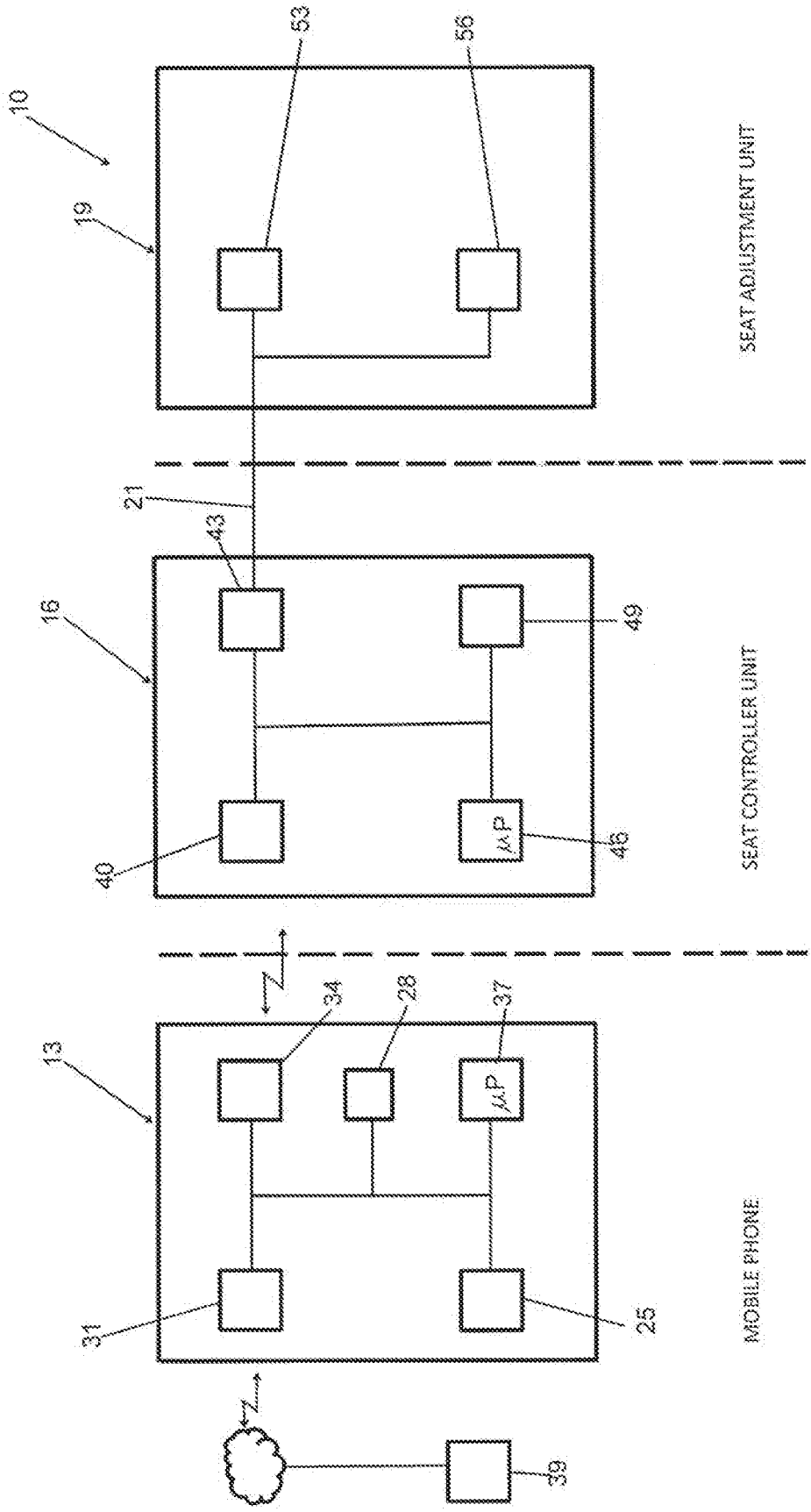
10
19
53
56
SEAT ADJUSTMENT UNIT
21
43
16
49
40
μP
46
SEAT CONTROLLER UNIT
Z
34
28
37
13
μP
31
25
MOBILE PHONE
Z
39

Fig.1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2016/051999

A. CLASSIFICATION OF SUBJECT MATTER

B60N 2/04(2006.01)i, G10L 15/00(2006.01)i, B60R 11/02(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)
B60N 2/04; B60N 2/02; B60N 2/44; H04M 3/00; G10L 15/28; B60R 16/02; G10L 15/00; B60R 11/02

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: vehicle, seat adjustment, voice, microphone, processor, ,mobile phone, and wireless communication

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2012-111277 A (DENSO CORP.) 14 June 2012 See paragraphs [0022]-[0027], [0033]-[0039] and figures 1-5.	1,3,5-11,13
Y		2,4,12,14-26
Y	US 2011-0244846 A1 (MIN, BYUNG WOO) 06 October 2011 See abstract, paragraphs [0061], [0066], [0070]-[0076], [0085], claims 1, 5, and figures 1, 5.	2,4,14-26
Y	US 2014-0265479 A1 (BENNETT, PAUL) 18 September 2014 See paragraph [0023], claims 1, 8, and figure 1.	12
A	JP 2004-198702 A (NISSAN MOTOR CO., LTD.) 15 July 2004 See abstract, paragraphs [0014]-[0037], and figures 1-2.	1-26
A	JP 2004-345540 A (OMRON CORP.) 09 December 2004 See abstract, paragraphs [0071]-[0078], and figures 1-3.	1-26

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

☒ See patent family annex.

* Special categories of cited documents:
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"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
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/IB2016/051999

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JP 2004-198702 A	15/07/2004	None	
JP 2004-345540 A	09/12/2004	None	