Systems and methods of adjusting a seat in a vehicle are discussed. Such a system can include a vehicle seat that can have a plurality of adjustable aspects, such as a headrest, seat back, armrests, lumbar support, etc. The system can also include a display component that can visually present one or more options associated with settings for the vehicle seat. Additionally, there can be an input component that can receive one or more selections of the one or more options, and there can be a control component that can determine one or more adjustments based at least in part on the one or more selections. The vehicle seat can adjust a subset of the plurality of aspects based at least in part on the one or more determined adjustments.
FIG. 1

- SEAT(S) (110)
- INPUT COMPONENT (120)
- DISPLAY COMPONENT (130)
- OTHER OUTPUT COMPONENT(S) (140)
- CONTROL COMPONENT (150)
- FOB (160)
- VEHICLE INFORMATION COMPONENT (170)
VISUALLY PRESENT SEAT ADJUSTMENT OPTIONS

RECEIVE SELECTION OF SEAT ADJUSTMENT OPTIONS

ANALYZE SELECTION IN CONNECTION WITH CONDITIONS

IMPLEMENT SELECTION(S) BY ADJUSTING SEAT

MONITOR CURRENT SETTINGS IN CONNECTION WITH CONDITIONS

FIG. 6
FIG. 8

- COMPUTING DEVICE
  - NETWORK
    - COMMUNICATION CONNECTION(S)
    - INPUT DEVICE(S)
    - OUTPUT DEVICE(S)
    - STORAGE
  - MEMORY
  - PROCESSING UNIT
SEAT ADJUSTMENT SYSTEM
CROSS-REFERENCE TO RELATED APPLICATIONS


BACKGROUND

[0002] In vehicle seats, particularly in the case of commercial vehicles, where occupants will remain in their seats for prolonged periods of time, it is important for occupants to sit in a manner that preserves both comfort and health. Prolonged sitting, especially in improper positions or without intermittent breaks to move legs, can lead to a myriad of health problems, including potentially fatal blood clots.

[0003] Conventional seats can be adjusted in a number of ways to improve occupant comfort. However, conventional seat adjust systems provide controls for adjusting seats as physical controls out of the line of sight of a driver while watching the road surface, requiring at least one hand off of the wheel to operate the controls, and in some situations (e.g., seat warmer controls near a center console, etc.), can require taking the driver’s eyes off of the road, which can increase the risk of accidents.

SUMMARY

[0004] The following presents a simplified summary of the invention in order to provide a basic understanding of some aspects of the invention. This summary is not an extensive overview of the invention. It is not intended to identify key/critical elements of the innovation or to delineate the scope of the invention. Its sole purpose is to present some concepts of the innovation in a simplified form as a prelude to the more detailed description that is presented later.

[0005] The innovation disclosed and claimed herein, in one aspect thereof, comprises a system of adjusting a seat in a vehicle. Such a system can include a vehicle seat that can have a plurality of adjustable aspects, such as a headrest, seat back, armrests, lumbar support, etc. The system can also include display component that can visually present one or more options associated with settings for the vehicle seat. Additionally, there can be an input component that can receive one or more selections of the one or more options, and there can be a control component that can determine one or more adjustments based at least in part on the one or more selections. The vehicle seat can adjust a subset of the plurality of aspects based at least in part on the one or more determined adjustments.

[0006] In another aspect of the subject innovation, methods of seat adjustment can be included. One such method can include the acts of visually presenting a plurality of seat adjustment options associated with a seat in a vehicle and receiving a selection of at least one of the plurality of seat adjustment options. Additionally, such a method can include analyzing the selection in connection with one or more conditions and adjusting one or more settings of the seat based at least in part on the selection.

[0007] In further aspects, the subject innovation can include systems and methods of automatic adjustment of a vehicle seat. One example method can include the act of receiving a profile from a remote device. The profile can include a plurality of settings for the vehicle seat. Additionally, the example method can include analyzing the profile in connection with one or more conditions and adjusting one or more aspects of the vehicle seat to conform to at least a subset of the plurality of settings.

[0008] To the accomplishment of the foregoing and related ends, certain illustrative aspects of the innovation are described herein in connection with the following description and the annexed drawings. These aspects are indicative, however, of but a few of the various ways in which the principles of the invention can be employed and the subject innovation is intended to include all such aspects and their equivalents. Other advantages and novel features of the innovation will become apparent from the following detailed description of the innovation when considered in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 illustrates a system that can facilitate adjustment of the seat and other settings associated with a vehicle in accordance with aspects of the subject innovation.

[0010] FIG. 2 illustrates a seat that can be used in accordance with aspects of the innovation.

[0011] FIG. 3 illustrates aspects of a seat adjustment system that can be employed in aspects of the subject innovation.

[0012] FIG. 4 illustrates portions of a seat in accordance with aspects of the subject innovation, showing an extendable leg support.

[0013] FIG. 5 illustrates portions of a seat useable in connection with various embodiments of the subject innovation, showing optional features of an armrest.

[0014] FIG. 6 illustrates a method of adjusting a seat in accordance with aspects of the subject innovation.

[0015] FIG. 7 illustrates a computer-readable medium or computer-readable device comprising processor-executable instructions configured to embody one or more of the provisions set forth herein, according to some embodiments.

[0016] FIG. 8 illustrates a computing environment where one or more of the provisions set forth herein can be implemented, according to some embodiments.

DETAILED DESCRIPTION

[0017] The innovation is now described with reference to the drawings, wherein like reference numerals are used to refer to like elements throughout. In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the subject innovation. It may be evident, however, that the innovation can be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form in order to facilitate describing the innovation.

[0018] As used in this application, the terms “component”, “module,” “system”, “interface", and the like are generally intended to refer to a computer-related entity, either hardware, a combination of hardware and software, software, or software in execution. For example, a component may be, but is not limited to being, a process running on a processor, a processor, an object, an executable, a thread of execution, a program, or a computer. By way of illustration, both an application running on a controller and the controller can be a component. One or more components residing within a pro-
cess or thread of execution and a component may be localized on one computer or distributed between two or more computers.

Furthermore, portions of the claimed subject matter can be implemented as a method, apparatus, or article of manufacture using standard programming or engineering techniques to produce software, firmware, hardware, or any combination thereof to control a computer to implement the disclosed subject matter. The term “article of manufacture” as used herein is intended to encompass a computer program accessible from any computer-readable device, carrier, or media. Of course, many modifications may be made to this configuration without departing from the scope or spirit of the claimed subject matter.

In various aspects, embodiments of the subject innovation can include systems and methods of adjusting a seating system, as well as a seating system that can be adjusted in accordance with aspects described herein. Systems and methods of the subject innovation can provide for visual, auditory, and tactile interactions that can facilitate adjustment of a seat or seating system. Various embodiments of the subject innovation can include visual presentation of information (e.g., settings, options, etc.) to a driver via a visual zone, such as a display screen (e.g., monitor, touch screen, etc.), heads-up display, etc., which can facilitate adjustment of seating settings without distorting from the task of driving. In aspects, one or more profiles of settings (which can include, e.g., seating settings, multimedia settings, etc.) can be applied based on predetermined conditions, user selection, etc. Settings can be saved in a vehicle, or maintained on a remote device such as a fob, smart key, or mobile phone.

Referring initially to the drawings, FIG. 1 illustrates a system 100 that can facilitate adjustment of seating and other settings associated with a vehicle in accordance with aspects of the subject innovation. System 100 can include one or more seats 110, which can include a driver seat 110 and one or more passenger seats 110. Although embodiments discussed herein primarily discuss a single seat 110, it is to be appreciated that this discussion is for the purposes of illustration only and not meant to be limiting, as multiple seats 110 can also be used, with settings for each separately adjustable. System 100 can also include an input component 120 that can receive occupant selections related to adjusting seat(s) 110 as inputs from a variety of sources, which can include physical controls such as buttons, switches, sliders, knobs, levers, joystick, etc.; input received via a touch screen or touch pad; voice commands; gestures received via one or more cameras; etc. In aspects, input component 120 can receive inputs relating to the health of one or more occupants associated with the system 100, such as via monitoring breathing, pulse, weight, height, waist size, etc. Display component 130 can be included to provide visual output to a user of system 100 (e.g., an occupant of one of the seats 110), which can provide information in a display screen, touch screen, on a heads-up display, or other means of visual display. This information can include current settings for vehicle systems, including system 100, multimedia systems, and other vehicle systems, options for changing those current settings, and feedback regarding user inputs. For system 100, these settings can include adjustment of any of the following aspects of the seat(s) 110: position and orientation (e.g., angle of inclination, etc.) of the one or more seats 110, as well as individual portions of the one or more seats 110; activation and control over features and components associated with the one or more seats 110, such as lumbar or other back support or movement devices, seat warming, air flow and temperature of air flowing through portions of the one or more seats 110, etc.; profiles that include settings for one or more seats 110 (e.g., profiles including settings specifying position and orientation for one or more seats 110 and optionally components thereof (e.g., headrest, lumbar support, etc.); profiles including settings for one or more seats 110 and for a multimedia system; etc.). Additionally, one or more other output components 140 can be included, such as audio output through a vehicle speaker system (e.g., which can include speakers in the one or more seats 110, such as in a headrest of a seat, etc.) in the form of voice, tone, etc.; haptic feedback for user inputs received via physical controls, touchpad, etc.; etc. A control component 150 can monitor inputs, outputs, and component states; select information to present via display component 130 or the one or more other output components 140; and instruct other components to perform appropriate actions based at least in part on at least one of inputs or current states. For example, control component can determine adjustments to be made to seat(s) 110 based on occupant selections received via input component 120, on conditions (including component states, etc.), or based on a combination of both; the determined adjustments can then be implemented by seat(s) 110.

In aspects, system 100 can also include a fob, smart key, or other remote device 160 (e.g., a smart phone, such as one running mobile application software associated with system 100, etc.), which can store settings or profiles of settings, and can receive user inputs to system 100. As used herein, a “profile” or “profile of settings” is a collection of associated settings that can be implemented, wherein at least one of the settings relates to a seat 110. As examples, a first profile could include a first preferred position and orientation of a seat 110 and settings for a lumbar support (e.g., when and to what extent it should be activated), while a second profile could include a second preferred position and orientation of a seat 110 and multimedia settings (e.g., what media to play, with what corresponding audio settings, etc.). Such a profile can be implemented either automatically upon occurrence of a condition (e.g., upon activation or deactivation of a vehicle, upon detection of erratic driving, upon a change in transmission state of a vehicle (e.g., entering or exiting a parking or neutral state, etc.), upon detection of one or more health states of an occupant, etc.), based on user input, or upon a combination thereof (e.g., a seat back can be reclined into a horizontal position based on user input only when certain conditions (e.g., vehicle parked, etc.) are met, etc.). Fob, etc. 160 can be used to store settings or profiles, to select settings or profiles, or to control one or more other systems associated with the vehicle (e.g., doors, ignition, alarm, multimedia system, etc.). In these or other embodiments, settings or profiles can optionally be maintained locally at a vehicle instead of or in addition to at a fob 160. When settings or profiles are maintained at a fob 160, a user associated with fob 160 can establish such settings or profiles in a first vehicle associated with a first system 100, and implement such settings or profiles in a second vehicle associated with a second system 100, allowing the settings or profiles to travel with the user regardless of vehicle, so long as the vehicle employs an embodiment of system 100.

In various aspects, system 100 can include and employ information from a vehicle information component 170. Various information about the vehicle can be determined by vehicle information component 170 and employed in con-
nection with system 100, such as vehicle speed, acceleration, indications of erratic driving or unintended lane departures, vehicle occupancy or travel time (e.g., a length of time of uninterrupted driving or continued occupancy of one or more seats 110, etc.), estimated travel time (e.g., based on route information determined by a navigation system, etc.), transmission state (e.g., whether in gear and what gear, in neutral, parked, etc.), temperature (e.g., internal temperature, external temperature, etc.), current settings associated with vehicle systems, etc. This information can be provided to input component 120 and used by system 100 in a variety of ways. For example, control component 150 can determine, based at least in part on information received via vehicle information component 170, to recommend one or more settings or profiles, to automatically implement one or more settings or profiles, to prevent implementation of one or more settings or profiles, etc. In a first example, if an occupant has two profiles, a first profile that provides for a more comfortable ride, and a second profile that better maintains driver alertness, control component 150 can recommend adopting the second profile based at least in part on indicators that the driver may be drowsy, such as determinations of erratic driving, unintended lane departures, etc. In a second example of the same situation, the second profile could be implemented automatically. In a third example of the same situation, other settings could be implemented automatically, such as to shake the driver's seat 110 or cause it to vibrate briefly, etc. In a fourth example, certain settings (e.g., reclining a seat back past a given threshold, etc.) could be prevented from being implemented based on vehicle information (e.g., vehicle is in motion, etc.). In a fifth example, upon a determination of an internal temperature or an external temperature below a first threshold, a seat warmer or flowing heated air through portions of seat 110 can be activated; while determination of an internal temperature or an external temperature above a first threshold can cause air conditioning ducts in the vehicle (potentially including in seat 110) and flowing cool air through portions of seat 110 to be activated. It is to be appreciated that these are but a few of the numerous example situations wherein information received via vehicle information component 170 can be used at least in part to recommend one or more settings or profiles, to automatically implement one or more settings or profiles, to prevent implementation of one or more settings or profiles, etc.

FIG. 2 illustrates a seat 200 that can be used in accordance with aspects of the innovation, for example as seat 110 in system 100, or as other seats in systems and methods discussed herein. Many of the features discussed in connection with seat 200 are optional, and it is to be understood that various embodiments may include some, none, or all of these features even where seat 200 is employed.

Seat 200 can include a headrest 210, which can optionally include: one or more airbags to reduce damage from collisions; one or more speakers which can be used in connection with vehicle systems including system 100 (alternatively or additionally, these can be located in seat 200 adjacent to headrest 210), multimedia systems, noise cancellation, hands-free calling, etc. Headrest 210 can include features such as sensors for monitoring occupant conditions, or a stretch fabric connecting it to seat back 220, which can provide aesthetic advantages as well as preventing foreign articles from entering mechanisms connecting headrest 210 or providing for motion of headrest 210.

Seat back 220 can include one or more optional in-seat airbags, as well as optional monitors for the health or other conditions of an occupant (e.g., breathing monitors, etc.). In some aspects, seat back 220 can include one or more ventilated portions 222, which can provide for cooling in either a passive manner or an active manner via flow temperature controlled air through the one or more ventilated portions 222. The position or orientation of seat back 220 can be adjusted in a variety of ways, with the most frequently employed including moving the entire seat 200 upward or downward, forward or backward, etc., changing an angle of inclination of seat back 220, etc.

Seat bottom 230 can also include one or more optional in-seat airbags, and can include an optional extendable leg support (shown in FIG. 4, discussed infra) which can adjust the length of the seat bottom 230 to accommodate occupants of a range of heights. In addition to the adjustment in position or orientation of the entire seat 200, the position and orientation of seat bottom 230 can be adjusted, for example, by adjusting an angle of inclination of seat bottom 230.

Seat 200 can optionally include one or more armrests 240, which can optionally include a docking station (not shown) for a media player, smart phone, etc. Optional controls and climate control ducts or heating and cooling elements (both shown in FIG. 5, discussed infra) can be included in at least one armrest 240. Physical controls 250 can also be included in seat 200 as ergonomically designed controls for adjusting at least one of the position or orientation of seat 200 or a portion thereof.

Seat 200 can include several other optional features. A base of seat 200 can include a suspension system (e.g., semi-active suspension, etc.) to reduce road vibration felt by an occupant of seat 200. Seat 200 can comprise a lightweight composite frame to provide for reduced weight without compromising durability. The shape of seat 200 and portions thereof can be designed to reduce pressure points that can lead to pain, soreness, or numbness of an occupant. Unnecessary material can be reduced or removed, further reducing weight, and in some situations increasing flow-through of climate controlled air in the vehicle. Portions of seat 200 (e.g., of headrest 210, seat back 220, or seat bottom 230, etc.) can comprise one or more of a light weight comfort foam, or a flexible polymer cushioning material such as Skydex®, which uses a plurality of lightweight polymer sheets formed into opposed hemispheres or other shapes. A seatbelt of seat 200 can include sensors for monitoring a heart of the occupant, measuring a pulse, measuring a waist, etc. Additionally, one or more components of seat 200 (e.g., headrest 210, seat back 220, seat bottom 230, armrest 240, etc.) can be designed in a modular manner that can connect or disconnect readily from other portions of seat 200, such that individual components can be replaced instead of the entire seat 200, lowering costs associated with maintenance, replacement, shipping, etc. Additionally, as discussed below, this modularity can provide for variation in components that can allow for customization, etc. of seat 200.

FIG. 3 illustrates aspects of a seat adjustment system 300 that can be employed in aspects of the subject innovation. System 300 can include a seat including a headrest 310, seat back 320, and first seat bottom 330, which can be interchanged with a second seat bottom 330₂, for example due to
wear, or due to differing features of seat bottoms 330 and 330a. For example seat bottoms 330 of different firmnesses, coverings, etc. can be used in conjunction with systems, methods, and seats of the subject innovation, as well as seats designed having other differing features, such as seat bottoms 330 designed to be used in hot weather, seat bottoms 330 designed to be used in cold weather, economy seat bottoms 330 that are more affordable, luxury seat bottoms 330 that have multiple features and/or are designed to maximize comfort, etc. A lever or latch 332 can be employed to facilitate removal and replacement of seat bottoms 330. System 300 can include physical controls 350 for adjusting or selecting settings or profiles. Additionally, a display (e.g., heads up display, monitor, touch screen, etc.) can be provided in a visual area 360 such that an occupant of the seat need not take their eyes off of the road to interact with system 300. Further, as discussed supra, a fob or other remote device 370 can be provided to select and/or store settings or profiles. Although not shown, other features such as an armrest can be included in system 300.

[0031] Information related to settings, profiles, and current states can be presented in viewing area 360 in any of a variety of ways, such as via a menu, icons, one or more virtual representations of a seat (e.g., current settings or profile), recommended settings or profile, one or more saved settings or profiles, etc.), visual representations of various settings (e.g., via graphical representations of sliders, dials, etc. indicating ranges of motion (e.g., total possible range, currently allowed range, recommended range, etc.) for positions or orientations of various components, etc.

[0032] FIG. 4 illustrates portions of a seat 400 in accordance with aspects of the subject innovation, showing a seat back 420 and a seat bottom 430. Seat bottom 430 can optionally include a leg support 434 that can be extended outward from the remainder of seat bottom 430. The position of leg support 434 can be controlled in any of a plurality of ways described herein; additionally or alternatively, leg support 434 can automatically extend as seat 400 is moved backwards, so as to automatically provide additional leg support for taller occupants.

[0033] FIG. 5 illustrates portions of a seat 500 useable in connection with various embodiments of the subject innovation, showing a portion of a seat back 520, a portion of a seat bottom 530, and an armrest 540. Armrest 540 can optionally include physical controls 542 and climate control ducts or heating and cooling elements 544. Physical controls 542 can be used in connection with systems and methods described herein, and can have fixed functionality assigned to each of one or more physical controls 542, or at least one of the physical controls 542 can be a “soft” control (e.g., button, etc.) the functionality of which depends on context (e.g., on a current menu or mode, such that physical controls 542 can control multimedia settings when in a multimedia menu or mode, and can control seat settings when in a seat adjustment menu or mode, etc.).

[0034] FIG. 6 illustrates a system 600 of adjusting a seat in accordance with aspects of the subject innovation. While, for purposes of simplicity of explanation, the one or more methodologies shown herein, e.g., in the form of a flow chart, are shown and described as a series of acts, it is to be understood and appreciated that the subject innovation is not limited by the order of acts, as some acts may, in accordance with the innovation, occur in a different order and/or concurrently with other acts from that shown and described herein. For example, those skilled in the art will understand and appreciate that a methodology could alternatively be represented as a series of interrelated states or events, such as in a state diagram. Moreover, not all illustrated acts may be required to implement a methodology in accordance with the innovation.

[0035] Method 600 can begin at step 610 by visually presenting an occupant of the seat with a plurality of seat adjustment options. In various embodiments, these seat adjustment options can be presented in various ways. For example, the plurality of seat adjustment options can include one or more profiles of settings, wherein each profile comprises settings specifying position and orientation for the seat and one or more components thereof (e.g., headrest, seat back, seat bottom, lumbar support, etc.). Additionally or alternatively, the plurality of seat adjustment options can include one or more settings associated with the seat. These can be presented in a variety of formats, such as visually presenting an image of the seat or of components thereof, visually presenting a menu or list of options, hierarchically presenting options such that, for example, a seat to be adjusted can be selected, at which point adjustments on the entire seat can be made or a component of the seat can be selected, at which point adjustments of that component can be made. In some aspects, the plurality of seat adjustment options can include descriptive representations (e.g., terminology, coloring, etc.) for different settings or profiles (e.g., a “comfort” mode that can improve occupant comfort, an “alertness” mode that can improve occupant alertness, a “health” mode that can provide for healthier sitting, etc.). In some aspects, the visual presentation of the plurality of seat adjustment options can comprise one or more recommendations, such as recommendations of a profile, recommendations of individual settings, etc., which can be based on occupant characteristics (e.g., height, weight, dimensions, health characteristics, etc.), vehicle or trip information, etc. Additionally, information associated with the plurality of seat adjustment options can be presented in one or more ways as well, such as via audio, etc.

[0036] Method 600 can continue with step 620, by receiving a selection associated with the plurality of seat adjustment options. Selections can be received via any of the input modes discussed herein, such as via physical controls, voice input, touch screen, touchpad, etc. At step 630, the received selection can be analyzed in connection with one or more conditions, for example, to ensure that the selection is safe given current conditions. As one example, if the vehicle is currently in motion, but the driver selects (e.g., accidentally, etc.) a profile that reclines the seat fully (e.g., for sleeping, etc.), that selection can be determined to be not permitted. Selections with are not permitted can be blocked at step 640, which can be followed by re-presenting the plurality of seat adjustment options, optionally with an explanation to the occupant of why the selection was not permitted. In other situations, the analysis of step 630 can additionally include analyzing conditions to customize settings to those conditions (e.g., make adjustments to seat position based on current or previously determined occupant characteristics, etc.). If the selection is determined to be permitted, then at step 650 the selection can be implemented and settings of the seat can be adjusted to conform to the selection. In some aspects, portions of the selection can be implemented and portions blocked, such as when a profile is selected that includes one or more settings that are permitted and one or more settings that are not. Additionally, the method can include optional step 660, wherein the current settings of the seat can be monitored in
connection with conditions (e.g., vehicle, trip, occupant, etc.). Based on this monitoring, recommendations or notifications can be provided to the occupant, or alternative seat settings can be implemented automatically in various embodiments. For example, if conditions include indications of driver drowsiness (e.g., unintended lane departure, etc.), the driver can be alerted and alternate settings that can enhance alertness can be recommended. Alternatively, the seat can be shaken or vibrated automatically, or settings that enhance alertness can be implemented automatically. In another example, if a seat is fully reclined but a vehicle is put in gear, notifications or recommendations can be provided, or the seat inclination can be automatically adjusted.

Still another embodiment can involve a computer-readable medium comprising processor-executable instructions configured to implement one or more embodiments of the techniques presented herein. An embodiment of a computer-readable medium or a computer-readable device that is devised in these ways is illustrated in FIG. 7, wherein an implementation 700 comprises a computer-readable medium 708, such as a CD-R, DVD-R, flash drive, a platter of a hard disk drive, etc., on which is encoded computer-readable data 706. This computer-readable data 706, such as binary data comprising a plurality of zero’s and one’s as shown in 706, in turn comprises a set of computer instructions 704 configured to operate according to one or more of the principles set forth herein. In one such embodiment 700, the processor-executable computer instructions 704 is configured to perform a method 702, such as at least a portion of one or more of the methods described in connection with embodiments disclosed herein. In another embodiment, the processor-executable instructions 704 are configured to implement a system, such as at least a portion of one or more of the systems described in connection with embodiments disclosed herein. Many such computer-readable media can be devised by those of ordinary skill in the art that are configured to operate in accordance with the techniques presented herein.

In other aspects, monitoring such as in step 660 can include profiles being automatically implemented based on conditions that can be predetermined or user selected. For example, a user could set a first profile to automatically be implemented upon starting the vehicle. In another example, a second and third profiles can be alternated between for set amounts of time. In a further example, seat warming can be automatically implemented based on a determined internal or external temperature. In further embodiments, systems and methods of the subject innovation can perform adjustments automatically without the need for ongoing occupant input. One embodiment of such an automatic system or method can include receiving one or more profiles from a remote device (e.g., fob, smart phone, etc.), and determining whether one of the one or more profiles should be automatically implemented based on current conditions (e.g., vehicle just started, vehicle placed in gear, temperature above or below a threshold, etc.).

In various aspects, occupant information can be used to customize profiles, settings, and recommendations (e.g., of profiles, settings, or other actions, etc.) to the occupant. This information can be obtained in a variety of ways. Occupant height and weight can be entered by an occupant, as most persons are familiar with this information about themselves. Alternatively, weight can be determined via a scale in the seat. Other characteristics can be determined via monitoring of health or as otherwise described herein. In aspects, a setup mode can be used to make personalized recommendations based on occupant characteristics. For example, the length of the lower half of the leg (below the knee) can be determined by having an occupant sit in the seat with their knees at a known angle (e.g., 90°, or as determined by sensors (e.g., sensing foot position to use with a known knee position (due to its proximity to the seat front edge) and seat elevation, via cameras, etc.), etc.), and determining a seat elevation at which their feet can barely make contact with the floor of the vehicle. As another example, the length of the leg above the knee can be determined via an occupant sitting with their back against a seat back and extending a leg support until it makes contact with the back of the lower half of the leg. Waist measurements can be determined via a seat belt as described herein. In some aspects, age can be determined as well, based on occupant input (age, alone or combined with other characteristics (e.g., weight, height, heart monitoring, breathing monitoring, etc.) can be used to make recommendations regarding healthy sitting, taking breaks to stretch legs, etc.). Based on determined characteristics, recommended settings or profiles can be generated that are customized for each occupant. These settings or profiles can be used by occupants as generated, or can be customized.

Still another embodiment can involve a computer-readable medium comprising processor-executable instructions configured to implement one or more embodiments of the techniques presented herein. An embodiment of a computer-readable medium or a computer-readable device that is devised in these ways is illustrated in FIG. 7, wherein an implementation 700 comprises a computer-readable medium 708, such as a CD-R, DVD-R, flash drive, a platter of a hard disk drive, etc., on which is encoded computer-readable data 706. This computer-readable data 706, such as binary data comprising a plurality of zero’s and one’s as shown in 706, in turn comprises a set of computer instructions 704 configured to operate according to one or more of the principles set forth herein. In one such embodiment 700, the processor-executable computer instructions 704 is configured to perform a method 702, such as at least a portion of one or more of the methods described in connection with embodiments disclosed herein. In another embodiment, the processor-executable instructions 704 are configured to implement a system, such as at least a portion of one or more of the systems described in connection with embodiments disclosed herein. Many such computer-readable media can be devised by those of ordinary skill in the art that are configured to operate in accordance with the techniques presented herein.

In various aspects, occupant information can be used to customize profiles, settings, and recommendations (e.g., of profiles, settings, or other actions, etc.) to the occupant. This information can be obtained in a variety of ways. Occupant height and weight can be entered by an occupant, as most persons are familiar with this information about themselves. Alternatively, weight can be determined via a scale in the seat. Other characteristics can be determined via monitoring of health or as otherwise described herein. In aspects, a setup mode can be used to make personalized recommendations based on occupant characteristics. For example, the length of the lower half of the leg (below the knee) can be determined by having an occupant sit in the seat with their knees at a known angle (e.g., 90°, or as determined by sensors (e.g., sensing foot position to use with a known knee position (due to its proximity to the seat front edge) and seat elevation, via cameras, etc.), etc.), and determining a seat elevation at which their feet can barely make contact with the floor of the vehicle. As another example, the length of the leg above the knee can be determined via an occupant sitting with their back against a seat back and extending a leg support until it makes contact with the back of the lower half of the leg. Waist measurements can be determined via a seat belt as described herein. In some aspects, age can be determined as well, based on occupant input (age, alone or combined with other characteristics (e.g., weight, height, heart monitoring, breathing monitoring, etc.) can be used to make recommendations regarding healthy sitting, taking breaks to stretch legs, etc.). Based on determined characteristics, recommended settings or profiles can be generated that are customized for each occupant. These settings or profiles can be used by occupants as generated, or can be customized.
In some embodiments, computer readable instructions to implement one or more embodiments provided herein are in storage 810. Storage 810 can also store other computer readable instructions to implement an operating system, an application program, and the like. Computer readable instructions can be loaded in memory 808 for execution by processing unit 806, for example.

[0044] The term “computer readable media” as used herein includes computer storage media. Computer storage media includes volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information such as computer readable instructions or other data. Memory 808 and storage 810 are examples of computer storage media. Computer storage media includes, but is not limited to, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, Digital Versatile Disks (DVDs) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by device 802. Any such computer storage media can be part of device 802.

[0045] The term “computer readable media” includes communication media. Communication media typically embodies computer readable instructions or other data in a “modulated data signal” such as a carrier wave or other transport mechanism and includes any information delivery media. The term “modulated data signal” includes a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal.

[0046] Device 802 can include one or more input devices 814 such as keyboard, mouse, pen, voice input device, touch input device, infrared cameras, video input devices, or any other input device. One or more output devices 812 such as one or more displays, speakers, printers, or any other output device can also be included in device 802. The one or more input devices 814 and/or one or more output devices 812 can be connected to device 802 via a wired connection, wireless connection, or any combination thereof. In some embodiments, one or more input devices or output devices from another computing device can be used as input device(s) 814 or output device(s) 812 for computing device 802. Device 802 can also include one or more communication connections 816 that can facilitate communications with one or more other devices 820 by means of a communications network 818, which can be wired, wireless, or any combination thereof, and can include ad hoc networks, intranets, the Internet, or substantially any other communications network that can allow device 802 to communicate with at least one other computing device 820.

[0047] What has been described above includes examples of the innovation. It is, of course, not possible to describe every conceivable combination of components or methodologies for purposes of describing the subject innovation, but one of ordinary skill in the art may recognize that many further combinations and permutations of the innovation are possible. Accordingly, the innovation is intended to embrace all such alterations, modifications and variations that fall within the spirit and scope of the appended claims. Furthermore, to the extent that the term “includes” is used in either the detailed description or the claims, such term is intended to be inclusive in a manner similar to the term “comprising” as “comprising” is interpreted when employed as a transitional word in a claim.

What is claimed is:

1. A system, comprising:
a vehicle seat comprising a plurality of adjustable aspects;
a display component that visually presents one or more options associated with settings for the vehicle seat;
an input component that receives one or more selections of the one or more options; and
a control component that determines one or more adjustments based at least in part on the one or more selections, wherein the vehicle seat adjusts a subset of the plurality of aspects based at least in part on the one or more determined adjustments.

2. The system of claim 1, further comprising a remote device that stores the one or more selections, wherein the input component receives the one or more selections from the remote device.

3. The system of claim 1, wherein the vehicle seat comprises one or more speakers that output information associated with the one or more options or the one or more adjustments.

4. The system of claim 1, further comprising a vehicle information component that monitors one or more vehicle conditions of a vehicle associated with the vehicle seat, wherein the one or more adjustments are based at least in part on the one or more conditions.

5. The system of claim 1, wherein the display component provides a recommendation associated with at least one of the one or more options, wherein the recommendation is based at least in part on the one or more vehicle conditions.

6. The system of claim 1, wherein the input component receives one or more occupant conditions of an occupant of the seat, wherein the display component provides a recommendation associated with at least one of the one or more options, wherein the recommendation is based at least in part on the one or more occupant conditions.

7. The system of claim 1, wherein the vehicle seat comprises an extensible leg support, and the plurality of adjustable aspects comprises an amount of extension of the extensible leg support.

8. The system of claim 1, wherein the vehicle seat comprises heating and cooling elements, and the plurality of adjustable aspects comprises activation of at least one of the heating elements or the cooling elements.

9. The system of claim 1, wherein the display component visually presents the one or more options via a heads-up display.

10. The system of claim 1, wherein the one or more selections are received via one or more physical controls.

11. The system of claim 1, wherein the one or more selections are received via voice input.

12. The system of claim 1, wherein the one or more selections are received via a touch screen or a touchpad.

13. A method, comprising:

visualizing a plurality of seat adjustment options associated with a seat in a vehicle;
receiving a selection of at least one of the plurality of seat adjustment options;
analyzing the selection in connection with one or more conditions; and
adjusting one or more settings of the seat based at least in part on the selection.

14. The method of claim 13, further comprising:

monitoring the one or more settings in connection with the one or more conditions; and
providing at least one of a notification or a recommendation based at least in part on the monitoring.

15. The method of claim 13, further comprising blocking at least a portion of the selection based at least in part on the analyzing the selection in connection with the one or more conditions.

16. The method of claim 13, wherein the receiving comprises receiving the selection from a remote device.

17. The method of claim 13, wherein the one or more conditions comprises one or more vehicle conditions of the vehicle.

18. The method of claim 13, wherein the one or more conditions comprises one or more occupant conditions of an occupant of the seat.

19. The method of claim 13, wherein the visually presenting comprises visually presenting the plurality of seat adjustment options via a heads-up display.

20. A method, comprising:
   receiving a profile from a remote device, wherein the profile comprises a plurality of settings for a vehicle seat;
   analyzing the profile in connection with one or more conditions; and
   adjusting one or more aspects of the vehicle seat to conform to at least a subset of the plurality of settings.

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