SYSTEM AND PROCESS FOR ALTERING MUSICAL OUTPUT FOR AUDIO ENTERTAINMENT BASED ON LOCATION

BACKGROUND

[001] Embodiments of the invention described in this specification relate generally to audio entertainment systems and processes, and more particularly, to altering musical output for audio entertainment based on location.

[002] People naturally desire to match music to their personal experience and the atmosphere of their environment. Audio entertainment in automobiles, watercraft vehicles, aircraft vehicles, and other vehicles is based on traditional modes of distributing and consuming music, and does not create a customized audio experience.

[003] Conventional music distribution inside a vehicle, such as an automobile, has been done, to date, via radio (including FM radio, AM radio, satellite-based radio, etc.), relying on radio DJs to customize music. Other existing options include compact discs (CDs) and digital music files, which are selected by the user and are limited in their customization in relation to the vehicular driving experience. Some existing approaches employed by applications exist to simply mix or "mash" music regardless of the real-time location-based conditions surrounding a traveling vehicle. Still other conventional services seek to customize music based solely on the music listener's musical preferences. None of the existing options or approaches create truly customized listening experiences for automobile and other vehicle drivers and passengers in automobiles or other traveling vehicles.

[004] Therefore, what is needed is a way to create a truly customized listening experience for automobile and other vehicle drivers and passengers in automobiles or other traveling vehicles by synchronizing the pacing and layering of music and other audio output to reflect the near real-time density and speed of traffic and by selecting music and other audio output that relates to current weather conditions and geographical location.

BRIEF DESCRIPTION

[005] A process and a system are disclosed to alter music and other audio output for audio entertainment in a vehicle based on location of the vehicle. Some embodiments of the invention include a novel process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle. In some embodiments, the process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle includes steps for providing vehicle environmental data and audio content to a

software application that analyzes the vehicle environmental data and, based on the analysis of the vehicle environmental data, matches, mixes, and alters the audio content to create an audio entertainment composition that is transmitted to one or more audio output devices for playback of the audio entertainment composition in the vehicle.

[006] In some embodiments, the vehicle environmental data is provided to the software application by a vehicle computing device that is present in the vehicle. In some embodiments, the vehicle computing device comprises one of an internet enabled mobile computing device and an in-vehicle computing device. In some embodiments, the vehicle environmental data includes one or more of a present vehicle location, vehicle driving speed, traffic information, and weather information. In some embodiments, the present vehicle location is determined in near real-time by location data received by the vehicle computing device from a plurality of satellites of a global positioning system (GPS).

[007] In some embodiments, the audio content is provided to the software application by at least one of a digital audio library and a streaming audio service. In some embodiments, the streaming audio service comprises a plurality of streaming audio files and a streaming audio file list of the plurality of streaming audio files. In some embodiments, the digital audio library comprises a plurality of audio files stored on a local vehicle digital storage medium and an audio library index of the plurality of audio files. In some embodiments, the local vehicle digital storage medium comprises a computing device storage medium that persistently stores the plurality of audio files on the vehicle computing device. In some embodiments, the local vehicle digital storage medium comprises a permanent storage of the vehicle. In some embodiments, the permanent storage of the vehicle is hard-wire connected to the in-vehicle computing device. In some embodiments, the permanent storage of the vehicle is wirelessly connected to the internet enabled mobile computing device. In some embodiments, the wireless connection comprises a Bluetooth wireless connection between the internet enabled mobile computing device and the permanent storage of the vehicle.

[008] Some embodiments of the invention include a novel location-based audio output altering system. In some embodiments, the location-based audio output altering system includes (i) a cloud-based audio composition mixing and matching service, (ii) a cloud server computing device that runs the software application to provide the cloud-based audio composition mixing and matching service, and (iii) a vehicle computing device that connects to the cloud-based audio composition mixing and matching service to provide vehicle

environmental data and receive the audio entertainment composition. In addition to providing vehicle environmental data, the vehicle computing device of some embodiments provides the audio library index to the cloud-based audio composition mixing and matching service. In some embodiments, cloud-based audio composition mixing and matching service creates the audio entertainment composition as a mixed list of audio selected from the audio library index and transmits the mixed list of audio to the vehicle computing for playback of audio content corresponding to the mixed list of audio. In some embodiments, cloud-based audio composition mixing and matching service creates the audio entertainment composition as a mixed list of streaming audio selected from the streaming audio file list and transmits the mixed list of streaming audio to the streaming audio service for streaming playback of audio content corresponding to the mixed list of streaming audio.

[009] The preceding Summary is intended to serve as a brief introduction to some embodiments of the invention. It is not meant to be an introduction or overview of all inventive subject matter disclosed in this specification. The Detailed Description that follows and the Drawings that are referred to in the Detailed Description will further describe the embodiments described in the Summary as well as other embodiments. Accordingly, to understand all the embodiments described by this document, a full review of the Summary, Detailed Description, and Drawings is needed. Moreover, the claimed subject matters are not to be limited by the illustrative details in the Summary, Detailed Description, and Drawings, but rather are to be defined by the appended claims, because the claimed subject matter can be embodied in other specific forms without departing from the spirit of the subject matter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Having described the invention in general terms, reference is now made to the accompanying drawings, which are not necessarily drawn to scale, and wherein:

[0011] **Figure 1** conceptually illustrates a process for altering musical output for audio entertainment in a vehicle based on location of the vehicle in some embodiments.

[0012] **Figure 2** conceptually illustrates a graphical user interface (GUI) of some embodiments that is visually output on a touch-sensitive screen of a vehicle computing device when the process for altering musical output for audio entertainment in a vehicle based on location of the vehicle is being performed by a software application.

[0013] **Figure 3** conceptually illustrates a network architecture of a location-based audio output altering system in some embodiments.

[0014] **Figure 4** conceptually illustrates an electronic system with which some embodiments of the invention are implemented.

DETAILED DESCRIPTION

[0015] In the following detailed description of the invention, numerous details, examples, and embodiments of the process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle and the location-based audio output altering system are described. In describing embodiments of the process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle and the location-based audio output altering system, reference is made to certain trademarks and/or word marks, including Bluetooth®. The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc.. While reference is made to the products and technology associated with these trademarks and word marks, it will be clear and apparent to one skilled in the art that the scope of the invention is neither restricted by such products and technology nor to the embodiments set forth and that the invention can be adapted for any of several applications.

[0016] Some embodiments of the invention include a novel process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle and a novel location-based audio output altering system.

[0017] Embodiments of the process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle and the location-based audio output altering system described in this specification differ from and improve upon currently existing options. In particular, some embodiments differ by creating a music listening experience for the vehicle or automobile that is highly customized to the traveling or driving experience. In addition, these embodiments improve upon the currently existing options which do not synchronize with the movement of the vehicle or automobile or the atmosphere surrounding it. For example, the existing systems do not automatically reflect the density of traffic or conditions of the weather. In contrast, the process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle and the location-based audio output altering system synchronizes the pacing and layering of music to reflect the density and speed of traffic. The process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle and the location-based audio output altering system also selects music that relates to current weather conditions and geographical location. In some embodiments, the process for altering music and other audio output for audio entertainment in a

vehicle based on location of the vehicle and the location-based audio output altering system can save the audio compositions generated by the software.

[0018] The process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle and the location-based audio output altering system of the present disclosure generally works by analyzing the density of traffic and selecting audio to compliment it. In dense traffic, for example, the software would select audio files that are heavily layered with many sounds and elements present. Conversely, in sparse traffic, the software would select audio files with few layers and audio elements. Similarly, at high speeds the software would select music with an accelerated tempo or rhythm, and/or adjust the tempo/rhythm of the audio. At lower speeds, then, the software would select audio files with slower tempos and rhythm, and/or adjust the tempo/rhythm of the audio. In some embodiments, the software seamlessly mixes and alters these audio files in real-time or near real-time as conditions change throughout the drive. In addition, audio files are tagged in some embodiments with indicators for special content, such as weather or location. For example, elements from audio tracks with lyrics or sounds referencing rain, would be mixed into the audio experience when such weather conditions were detected by the software. Together this creates a unique and customized audio driving experience. Data including location data, GPS, weather data, traffic data, automobile sensor data, communications between automobiles and speedometer data, may be used individually or in combination to create a customized music listening experience. Also, the user interacts with a graphical user interface (GUI) to select their audio source and set up preferences indicating genre preferences and level of audio-drive integration.

[0019] To make the process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle and the location-based audio output altering system of the present disclosure, one may design, encode, and compile software that is able to complete the requisite tasks and provide the user with a customized audio driving experience. The software can be encoded to include modules for accessing the layered files of audio tracks and to analyze cultural information based on geographic location or information about the drivers destination, and information about other automobiles on the road, in order to enhance the dynamic experience.

[0020] Additionally, the system and process may be adapted for use as software on devices used by pedestrians when walking or jogging. Also, in some embodiments, the audio generated by the software may be saved locally on the device as a unique composition.

[0021] Several more detailed embodiments are described in the sections below. Section I describes a process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle. Section II describes a location-based audio output altering system. Section III describes an electronic system that implements some embodiments of the invention.

I. PROCESS FOR ALTERING MUSIC AND OTHER AUDIO OUTPUT FOR AUDIO ENTERTAINMENT IN A VEHICLE BASED ON LOCATION OF THE VEHICLE

[0022] In some embodiments, the process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle includes steps for providing vehicle environmental data and audio content to a software application that analyzes the vehicle environmental data and, based on the analysis of the vehicle environmental data, matches, mixes, and alters the audio content to create an audio entertainment composition that is transmitted to one or more audio output devices for playback of the audio entertainment composition in the vehicle.

[0023] In some embodiments, the vehicle environmental data is provided to the software application by a vehicle computing device that is present in the vehicle. In some embodiments, the vehicle computing device comprises one of an internet enabled mobile computing device and an in-vehicle computing device. In some embodiments, the vehicle environmental data includes one or more of a present vehicle location, vehicle driving speed, traffic information, and weather information. In some embodiments, the present vehicle location is determined in near real-time by location data received by the vehicle computing device from a plurality of satellites of a global positioning system (GPS).

[0024] In some embodiments, the audio content is provided to the software application by at least one of a digital audio library and a streaming audio service. In some embodiments, the streaming audio service comprises a plurality of streaming audio files and a streaming audio file list of the plurality of streaming audio files. In some embodiments, the digital audio library comprises a plurality of audio files stored on a local vehicle digital storage medium and an audio library index of the plurality of audio files. In some embodiments, the local vehicle digital storage medium comprises a computing device storage medium that persistently stores the plurality of audio files on the vehicle computing device. In some embodiments, the local vehicle digital storage medium comprises a permanent storage of the vehicle. In some embodiments, the permanent storage of the vehicle is hard-wire connected to the in-vehicle

computing device. In some embodiments, the permanent storage of the vehicle is wirelessly connected to the internet enabled mobile computing device. In some embodiments, the wireless connection comprises a Bluetooth wireless connection between the internet enabled mobile computing device and the permanent storage of the vehicle.

[0025] By way of example, **Figure 1** conceptually illustrates a process 100 for altering musical output for audio entertainment in a vehicle based on location of the vehicle. As shown in this figure, the process 100 starts by an internet enabled device or in-car computer (at 110), which obtains environmental data, such as GPS-derived location data, traveling speed, traffic conditions, weather information, etc. Audio content (at 120) is then fed from a digital music library or a streaming music service to a software application (at 130) that analyzes the environmental data and matches, mixes, and alters the audio content. The process 100 then creates musical compositions and sends the musical compositions to the audio output device(s) for playback of audio output (at 140).

[0026] In a related example, **Figure 2** conceptually illustrates a graphical user interface (GUI) 200 that is visually output on a touch-sensitive screen of a vehicle computing device when the process 100 is being performed by a software application that implements the process 100 for altering musical output for audio entertainment in a vehicle based on location of the vehicle. As shown, the GUI 200 includes an integration levels setting, in which a user may select low, medium, or high settings for how synchrozied the music is in relation to the user's environment. The GUI 200 also includes a track source selection icon which when selected allows the user to select track(s) based on one or more of artist name, album name, tag(s), and randomly. The GUI 200 also includes a personalized tabs icon which when selected allows the user to create a new tag with selection of associated tracks, artists, and/or albums. A set of audio playback icons are displayed for the user to control playback of audio compositions, and a sign in icon is shown to allow the user to personalize the settings and save them to the user's profile and/or to connect with friends. Finally, when the settings are completed and the user wants to play a new audio composition, a track listing is visually output on the screen.

[0027] In some embodiments, the process for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle is performed by way of a location-based audio output altering system. An example of a location-based audio output altering system is described below.

II. LOCATION-BASED AUDIO OUTPUT ALTERING SYSTEM

[0028] The location-based audio output altering system of the present disclosure may be comprised of the following elements. This list of possible constituent elements is intended to be exemplary only and it is not intended that this list be used to limit the location-based audio output altering system of the present application to just these elements. Persons having ordinary skill in the art relevant to the present disclosure may understand there to be equivalent elements that may be substituted within the present disclosure without changing the essential function or operation of the location-based audio output altering system.

[0029] In some embodiments, the location-based audio output altering system includes (i) a cloud-based audio composition mixing and matching service, (ii) a cloud server computing device that runs the software application to provide the cloud-based audio composition mixing and matching service, and (iii) a vehicle computing device that connects to the cloud-based audio composition mixing and matching service to provide vehicle environmental data and receive the audio entertainment composition.

[0030] The various elements of the location-based audio output altering system of the present disclosure may be related in the following exemplary fashion. It is not intended to limit the scope or nature of the relationships between the various elements and the following examples are presented as illustrative examples only. GPS, weather, and traffic data gathered from the vehicle computing device is provided to the software application. The software then analyzes the data, selects digital music files that match the data, and mixes the digital music files to create the audio entertainment composition.

[0031] In some embodiments, the vehicle computing device comprises at least one of an internet enabled mobile computing device and an in-vehicle computing device. In some embodiments, the in-vehicle computing device is connected to a touch sensitive screen that receives gesture-based touch input from a user in the vehicle and visually outputs a graphical user interface (GUI) comprising audio entertainment composition information.

[0032] In addition to providing vehicle environmental data, the vehicle computing device of some embodiments provides the audio library index to the cloud-based audio composition mixing and matching service. In some embodiments, cloud-based audio composition mixing and matching service creates the audio entertainment composition as a mixed list of audio selected from the audio library index and transmits the mixed list of audio to the vehicle computing for playback of audio content corresponding to the mixed list of audio. In

some embodiments, cloud-based audio composition mixing and matching service creates the audio entertainment composition as a mixed list of streaming audio selected from the streaming audio file list and transmits the mixed list of streaming audio to the streaming audio service for streaming playback of audio content corresponding to the mixed list of streaming audio. In this way, the location-based audio output altering system synchronizes the music to the environment of the vehicle by mixing the music to be reflective of the data.

[0033] By way of example, **Figure 3** conceptually illustrates a network architecture of a location-based audio output altering system 300. As shown in this figure, the location-based audio output altering system 300 includes a smart phone mobile device 305 (associated with a first user in a passenger car), a tablet mobile device 310 (associated with a second user in a van), and an in-vehicle computing device 315 (associated with a third user in a vehicle). The location-based audio output altering system 300 also includes a GPS satellite 320 that provides real-time location information to the smart phone mobile device 305, the tablet mobile device 310, and the in-vehicle computing device 315.

[0034] In some embodiments, the location-based audio output altering system 300 displays a single screen graphical user interface (GUI) with the audio composition play list and the set of icons that allow the user to change the settings. An example of such a GUI is described above by reference to **Figure 2**. For example, the smart phone mobile device 305 may be present with the first user in the passenger car while driving slowly in a park area, which allows the software application to select calmer and slower mixes of audio content with few layers and less complexity. By contrast, if the tablet mobile device 310 is with the second user in the van while driving fast on the autobahn in Germany, then the software application may select a more up-tempo mix of audio to playback during the driving.

[0035] In order for the software application to obtain the environment data and user selections, connections need to be established to each respective vehicle. In this figure, the smart phone mobile device 305 communicates with the location-based audio output altering system 300 through communication tower 325 and gateway 330, the tablet mobile device 310 communicates with the location-based audio output altering system 300 by way of access device 335, and the in-vehicle computing device 315 communicates with the location-based audio output altering system 300 directly by connection to the location-based audio output altering cloud service 340 (labeled "CLOUD" in **Figure 3**. A stationary desktop computer 350 may also access the location-based audio output altering system 300 in some embodiments. For instance, a

user of the desktop computer 350 may make a connection into the location-based audio output altering system 300 to upload audio files for future streaming and playback in the user's vehicle during a travel trip. The audio compositions are obtained via the location-based audio output altering cloud service 340. Also, the location-based audio output altering cloud service 340 may include an archival system 345 for storing uploaded audio files, user profile information, and audio compositions generated per user.

[0036] While the example location-based audio output altering system 300 described above by reference to **Figure 3** allows for altering music and other audio output for audio entertainment in a vehicle based on location of the vehicle, a person skilled in the relevant art would understand there to be other types of communication options that can provide such audio entertainment mixing and matching with real-time conditions. For example, instead of a vehicle-based system, a jogger or a person in a boat could utilize the features of the system to obtain environment-synchronized audio entertainment mixes. Therefore, the above-described embodiments of the invention are presented for purposes of illustration and not of limitation.

III. ELECTRONIC SYSTEM

[0037] In this specification, the term “software” is meant to include firmware residing in read-only memory or applications stored in magnetic storage, which can be read into memory for processing by a processor. Also, in some embodiments, multiple software inventions can be implemented as sub-parts of a larger program while remaining distinct software inventions. In some embodiments, multiple software inventions can also be implemented as separate programs. Finally, any combination of separate programs that together implement a software invention described here is within the scope of the invention. In some embodiments, the software programs, when installed to operate on one or more electronic systems, define one or more specific machine implementations that execute and perform the operations of the software programs.

[0038] **Figure 4** conceptually illustrates an electronic system 400 with which some embodiments of the invention are implemented. The electronic system 400 may be a computer, phone, PDA, in-car computer, tablet computing device, smartphone mobile device, or any other sort of electronic device. Such an electronic system includes various types of computer readable media and interfaces for various other types of computer readable media. Electronic system 400 includes a bus 405, processing unit(s) 410, a system memory 415, a read-only 420, a permanent storage device 425, input devices 430, output devices 435, and a network 440.

[0039] The bus 405 collectively represents all system, peripheral, and chipset buses that communicatively connect the numerous internal devices of the electronic system 400. For instance, the bus 405 communicatively connects the processing unit(s) 410 with the read-only 420, the system memory 415, and the permanent storage device 425.

[0040] From these various memory units, the processing unit(s) 410 retrieves instructions to execute and data to process in order to execute the processes of the invention. The processing unit(s) may be a single processor or a multi-core processor in different embodiments.

[0041] The read-only-memory (ROM) 420 stores static data and instructions that are needed by the processing unit(s) 410 and other modules of the electronic system. The permanent storage device 425, on the other hand, is a read-and-write memory device. This device is a non-volatile memory unit that stores instructions and data even when the electronic system 400 is off. Some embodiments of the invention use a mass-storage device (such as a magnetic or optical disk and its corresponding disk drive) as the permanent storage device 425.

[0042] Other embodiments use a removable storage device (such as a floppy disk or a flash drive) as the permanent storage device 425. Like the permanent storage device 425, the system memory 415 is a read-and-write memory device. However, unlike storage device 425, the system memory 415 is a volatile read-and-write memory, such as a random access memory. The system memory 415 stores some of the instructions and data that the processor needs at runtime. In some embodiments, the invention’s processes are stored in the system memory 415, the permanent storage device 425, and/or the read-only 420. For example, the various memory units include instructions for processing appearance alterations of displayable characters in accordance with some embodiments. From these various memory units, the processing unit(s) 410 retrieves instructions to execute and data to process in order to execute the processes of some embodiments.

[0043] The bus 405 also connects to the input and output devices 430 and 435. The input devices enable the user to communicate information and select commands to the electronic system. The input devices 430 include alphanumeric keyboards and pointing devices (also called “cursor control devices”). The output devices 435 display images generated by the electronic system 400. The output devices 435 include printers and display devices, such as cathode ray tubes (CRT) or liquid crystal displays (LCD). Some embodiments include devices such as a touchscreen that functions as both input and output devices.

[0044] Finally, as shown in **Figure 4**, bus 405 also couples electronic system 400 to a

network 440 through a network adapter (not shown). In this manner, the computer can be a part of a network of computers (such as a local area network ("LAN"), a wide area network ("WAN"), or an intranet), or a network of networks (such as the Internet). Any or all components of electronic system 400 may be used in conjunction with the invention.

[0045] These functions described above can be implemented in digital electronic circuitry, in computer software, firmware or hardware. The techniques can be implemented using one or more computer program products. Programmable processors and computers can be packaged or included in mobile devices. The processes may be performed by one or more programmable processors and by one or more set of programmable logic circuitry. General and special purpose computing and storage devices can be interconnected through communication networks.

[0046] Some embodiments include electronic components, such as microprocessors, storage and memory that store computer program instructions in a machine-readable or computer-readable medium (alternatively referred to as computer-readable storage media, machine-readable media, or machine-readable storage media). Some examples of such computer-readable media include RAM, ROM, read-only compact discs (CD-ROM), recordable compact discs (CD-R), rewritable compact discs (CD-RW), read-only digital versatile discs (e.g., DVD-ROM, dual-layer DVD-ROM), a variety of recordable/rewritable DVDs (e.g., DVD-RAM, DVD-RW, DVD+RW, etc.), flash memory (e.g., SD cards, mini-SD cards, micro-SD cards, etc.), magnetic and/or solid state hard drives, read-only and recordable Blu-Ray® discs, ultra density optical discs, any other optical or magnetic media, and floppy disks. The computer-readable media may store a computer program that is executable by at least one processing unit and includes sets of instructions for performing various operations. Examples of computer programs or computer code include machine code, such as is produced by a compiler, and files including higher-level code that are executed by a computer, an electronic component, or a microprocessor using an interpreter.

[0047] While the invention has been described with reference to numerous specific details, one of ordinary skill in the art will recognize that the invention can be embodied in other specific forms without departing from the spirit of the invention. For instance, **Figure 1** conceptually illustrates a process. The specific operations of the process may not be performed in the exact order shown and described. Specific operations may not be performed in one continuous series of operations, and different specific operations may be performed in different

embodiments. Furthermore, the process could be implemented using several sub-processes, or as part of a larger macro process. Thus, one of ordinary skill in the art would understand that the invention is not to be limited by the foregoing illustrative details, but rather is to be defined by the appended claims.

CLAIMS

I claim:

1. A location-based audio output altering system comprising:

a cloud-based audio composition mixing and matching service;

a cloud server computing device that runs the software application to provide the cloud-based audio composition mixing and matching service; and

a vehicle computing device that connects to the cloud-based audio composition mixing and matching service to provide vehicle environmental data and receive the audio entertainment composition.

2. The location-based audio output altering system of claim 1, wherein the vehicle computing device comprises a smartphone mobile computing device.

3. The location-based audio output altering system of claim 1, wherein the vehicle computing device comprises a tablet computing device.

4. The location-based audio output altering system of claim 1, wherein the vehicle computing device comprises an integrated vehicle computing device that is integrated with the vehicle.

5. The location-based audio output altering system of claim 5 further comprising a touch sensitive display screen that is installed in the vehicle to be flush with a dashboard of the vehicle and that allows a user to interact with the cloud-based audio composition mixing and matching service by touch gesture.

6. The location-based audio output altering system of claim 1, wherein the vehicle computing device obtains environment data to provide to the cloud-based audio composition mixing and matching service.

7. The location-based audio output altering system of claim 6, wherein the

environment data comprises a travel speed, traffic density, GPS-based location data, and weather information.

8. The location-based audio output altering system of claim 7, wherein the cloud-based audio composition mixing and matching service identifies a set of matching audio content files that reflect the environment data and generates a mix of the matching audio content files in real-time.

9. The location-based audio output altering system of claim 8, wherein the cloud-based audio composition mixing and matching service generates an up-tempo mix when traffic density is high and travel speed is fast.

10. The location-based audio output altering system of claim 8, wherein the cloud-based audio composition mixing and matching service generates a slow paced mix when traffic density is low and travel speed is slow.

ABSTRACT

A process and a system are disclosed to alter music and other audio output for audio entertainment in a vehicle based on location of the vehicle. The process and the system provide vehicle environmental data and audio content to a software application that analyzes the vehicle environmental data and, based on the analysis of the vehicle environmental data, matches, mixes, and alters the audio content to create an audio entertainment composition that is transmitted to one or more audio output devices for playback of the audio entertainment composition in the vehicle. The process and the system synchronize the pacing and layering of music to reflect the density and speed of traffic and relate the music to current weather conditions and geographical location.