U.S. PROVISIONAL PATENT APPLICATION

for

SYSTEM AND METHOD FOR EXTRACTION OF META DATA FROM A DIGITAL MEDIA STORAGE DEVICE FOR MEDIA SELECTION IN A VEHICLE

Inventors:

Brian L. Douthitt

Karl W. Schripsema

Michael J. Sims

SYSTEM AND METHOD FOR EXTRACTION OF META DATA FROM A DIGITAL MEDIA STORAGE DEVICE FOR MEDIA SELECTION IN A VEHICLE

FIELD

[0001]   The present invention relates generally to the field of data extraction from a digital audio/video source in a vehicle and in particular, a system and method for extracting and processing meta data from media files accessible from a digital media storage device, such as a media player, in the vehicle.

BACKGROUND

[0002]   Vehicles typically include a number of electronic systems such as an audio system, a mobile telephone system, a navigation system, video entertainment system, etc. Along with those systems, media players (i.e., digital audio/video players or MP3 players) may be setup in the vehicle for a user to access digital audio or video content stored on the media player. A conventional media player includes a data storage device (i.e., memory) and an embedded software application that allows a user to transfer media files to the player and create custom lists of selected media files, referred to as playlists. Media files may be transferred to the memory of the player from various sources, including disks (e.g., CDs, DVDs, etc.) and Internet sites. Most players are configured to be coupled to a personal computer via a connection port (e.g., USB port, parallel port, serial port, etc.) in order to transfer media files. The media files typically include data, referred to as meta data, which identifies the contents of the file. For example, with digital audio files, such as MP3 files, the meta data comprises a tagging format which may include the title of the song, the artist's name, the title of the album, track number, genre, etc. The tagging format for MP3 (i.e., MPEG Audio Layer III) files is commonly referred to as ID3.

[0003]   A media player is typically configured to include a memory having one or more media files stored therein. A media player in a vehicle may be configured to be coupled to or integrated with other vehicle electronic systems, such as the audio system, for playing the media files from the player. In one known configuration, a media player may be connected via an analog audio output (e.g., a headphone jack) from the media player to the auxiliary input of the vehicle's audio system, such that the playback is controlled by the controls of the media player. In another known configuration, the media player's control interface is coupled to the control interface of the head unit of an audio system (i.e., radio), in addition to connecting the analog audio output of the media player to auxiliary input of the vehicle's audio system. In this configuration, the user can control the playback of the media from the head unit of the audio system. Yet, in another configuration, an audio system may include a database of meta data about certain media files. The audio system is configured to determine the meta data of a media file based on a unique identifier relating to that file.

[0004]   It would be advantageous to provide a system for extracting meta data from a media player in a vehicle that is configured to: 1) establish a communication link between a control module and a media player; 2) identify media files stored on a media player; 3) retrieve meta data from a media file of the media player upon receiving a command from a user; 4) automatically retrieve meta data from a media file of the media player upon establishing a wireless communication link with the media player; 5) generate and/or update a database of meta data based on the meta data extracted from the media player, including converting the information to acoustic baseforms so that a user may access and manipulate the media files via voice commands and speech recognition; 6) audibly list the meta data entries of a media file based on an audible command of the user; 7) generate a second database of meta data using the meta data extracted from a second media player, wherein the meta data of the first media player is retained across power cycles, thereby eliminating the time consuming process of extracting meta data each time a media player is connected to the system; and 8) provide for the use of multiple

databases concurrently, for example, when two or more media players are linked to the control module concurrently.

SUMMARY

[0005] In accordance with one embodiment, a method is provided for extracting meta data from a digital media storage device in a vehicle over a communication link between a control module of the vehicle and the digital media storage device. The method includes establishing a communication link between control module of the vehicle and the digital media storage device, identifying a media file on the digital media storage device, and retrieving meta data from a media file, the meta data including a plurality of entries, each entry including text data or enumerated code. The method further includes identifying the text data or code in each entry of the media file and storing the plurality of entries in a memory.

[0006] In accordance with another embodiment, a control system in a vehicle is provided for extracting meta data from a digital media storage device over a communication link. The system includes a communication module for establishing a communication link with the digital media storage device, a processing module coupled to the communication module, the processing module being configured to retrieve via communication module meta data associated with a media file from the digital media storage device, the meta data including a plurality of entries, wherein each of the plurality of entries includes text data, and a memory module configured to store the plurality of entries retrieved from the digital media storage device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The invention will be more readily understood by reference to the following description taken with the accompanying drawings, in which:

[0008] Figure 1 is a block diagram of a control system for extracting meta data from a media player in a vehicle in accordance with an exemplary embodiment.

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[0009]   Figure 2 is a block diagram of a control system for extracting meta data from a media player in a vehicle including the control module of FIG. 1 in accordance with an embodiment.

[0010]   Figure 3 is a block diagram of an integrated system for controlling a vehicle's audio and telephony systems.

[0011]   Figure 4 illustrates a method for extracting meta data from a media player in response to a user command in accordance with an embodiment.

[0012]   Figure 5 illustrates a method for processing media file data from a media player and organizing the media files in accordance with an embodiment.

[0013]   Figure 6 illustrates a method for speech-enabled playback of a media file in accordance with an embodiment.

[0014]   Figure 7 illustrates a method for audibly listing media files in accordance with an embodiment.

DETAILED DESCRIPTION

[0015]   Figure 1 is a block diagram of a control system for extracting meta data from a media player in a vehicle in accordance with an exemplary embodiment. The control system enables a vehicle occupant, such as a driver, to extract the meta data from the occupant's media player 114 and subsequently generates a phonemic representation of the extracted text data. Other vehicle occupants (e.g., passengers) may also use the system to extract the meta data from their personal media player 114. Alternatively, a control system may be provided that extracts meta data from a mass storage device. However, the description herein will primarily refer to an exemplary control system for extracting meta data from a media player 114. It should be understood that although a system for extracting meta data will be described in detail herein with reference to media player 114, one or more of the systems and methods for extracting meta data herein may be applied to, and find utility in, other types of digital storage or audio/video devices as well. For example, one or more of the systems for extracting meta data may be suitable

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