CSM3 - BPM Cardio Workout AutoMixer

Client

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Description

Create an application that would utilize the existing music library on an individual's machine and generate a *single* music file for a pre-determined cardio workout.

Individuals would input their age, sex and perceived fitness level into the application. Users would then select from a menu of cardio workouts as well as the desired length they would like the session to last. The app would then select music and build a single audio file for upload to a music player or to be played directly on the host machine.

Various pre-existing applications have been researched. Some allow the creation of specific music files or playlists for a particular workout, some which monitor your workout either through GPS or heart rate which then affects song selection. One application (Workout Muse Pro) is available that is similar in spirit, but it works on interval time periods, not the (presumed) positive linkage between music beats-per-minute (BPM) and target cardio heart rate (CHR).

This application would be unique in that it would:

- Auto detect and develop a database for the *musical* BPM for the songs in a user's music library (perhaps just those tagged WORKOUT).
- *Learn* over a period of workouts a user's relationship between (target) CHR and the BPM songs that are most successful at helping the user reach their cardio target.
- Mixing of songs with different tempos, along with volume and stereophonic elements in the user interface should allow a user to complete an entire workout listening to vignettes of songs specifically chosen for their cardio goals.
- Obviously, the learning for the device will have to continuously evolve for a user and their always changing music library. A mechanism for the user to provide feedback to the software with respect to the CHRs achieved during specific target intervals will be needed.

Unfortunately, our project cannot provide extensive hardware for development. Developers will need to use their own workstations (or work at school), and have either real devices or simulator support for some target platforms (e.g., you might make an Android or iOS app if the team has the equipment - but none will be provided via this project). Alternately, the app could be built to run on OS X and/or Windows and/or Linux and/or the "web" and the application would render a single MP3 file containing the mix of, say, 13 songs that are in the workout. In this case, the app would be generating an MP3 file that could work with any media player - hence no special hardware required.

Codes and documentation will be made available under an OpenSource.org license (http://www.opensource.org/licenses/alphabetical).

Location

Flexible