CSCI3280 Introduction of Multimedia Project – Group 4

Member:

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1. Short Description and Workload Division
2. **Basic User Interface:** Cheung Yin Man  
   We design a user-friendly interface for users and provide a control list, a searching bar, a volume control button, a play button, a stop button, an add button, screenshot button and connect button. When we right click the video file, Edit/Remove Item button will be displayed for users to manage the video files.
3. **Music Management:** Yung Man Lee  
   We establish a convenient database to store the information of the video files in CSV format, which can be both manually entered and removed by the users. When the user add a file to the database via UI, the music will undergo **data validation** to ensure the file exist, the video type supported and the same song cannot be added more than once. **Multi-selection** is also supported. Every changes, including add, remove and edit, is written to the file directly after changes.

**Note:** To ensure the player can access the storage even when it is on CD-R, the order of searching for "KaraokeSystemDatabase.csv" would be: Current directory > MyDocuments > MyVideos > Desktop > System Temp

1. **Music information display:** Cheung Yin Man & Yung Man Lee

The music information in the database will be displayed in the list control, including the music title, singer and album name. **File name is treated as the title** when it is added via UI. If certain information is not available, “N/A” will be displayed on certain places.

1. **Lyrics displaying:** Cheung Yin Man & Yung Man Lee  
   With Kfstorm.LrcParser library, lyrics in LRC format is parsed and displayed synchronously with time provided.
2. **Multi-keyword music searching**: Cheung Yin Man  
   Users can type in keywords/multi-keyword (music title and/or singer name) to search music based on the database (i.e. local searching), the result will be displayed in the list control.
3. **Music decoding and playback:** Yung Man Lee

Video and audio should be separated into different stream and decoded with ffmpeg. Decoded images are drawn into video frames and synchronized with the sound.

1. **Network connection**: Li Check Yau,  LI Xiujing & NG Sze Yiu  
   There are ( >=3) nodes on the whole network. Users can connect to other PCs via the network and get the IP address with manual method(expect hard coding).
2. **Video searching:** Li Check Yau ,LI Xiujing & NG Sze Yiu

Users can search through the local database (we have discussed in part 5) and network database.

When users connect to the network and search files, all the results from both databases should be combined and displayed in the same list control of the UI. Duplicate content will not be displayed repeatedly.

1. **Playing criteria**: Li Check Yau ,LI Xiujing & NG Sze Yiu

After searching, video player will play the local video file first. If the searching video file doesn’t exist, video player will stream the video from other nodes.

1. **Real-time video streaming:** Li Check Yau ,LI Xiujing & NG Sze Yiu  
   Non-local video will be played automatically when player received a piece of audio and video data from the other nodes (after certain amount of buffering<50%)
2. **Peer-to-Peer playing**: Li Check Yau ,LI Xiujing & NG Sze Yiu  
   Non-local video file will be streamed from at least two other computers simultaneously and it will be played in an (interleaving ?????) way to make.
3. Program’s operation manual
   1. Deploy Environment  
      IDE: Visual Studio 2013 Community

Nuget is internal package for Visual Studio 2013 Community. For other version, install Nuget Packages for solution in Visual Studio.

OS: Windows 7 or above (x64)

* 1. Operation scenario

1. Click the add button to add videos to the player.

2. Double click a video file. It will play automatically.

3. Enter keyword in the searching bar. It will display all the relevant files which contain the keyword.

4. Right click a video file, there are Edit and Remove Buttons for users to manage their video files and its lyrics file.

5. Clicking the screenshot button can extract the current frame of the video.

1. Third-party libraries
   1. CsvHelper (Version 2.13.5.0)

Facilitate the read and write process for music information

<https://joshclose.github.io/CsvHelper/>

* 1. Kfstorm.LrcParser (Version 1.0.3)

Format and parse the lyrics files

<https://github.com/kfstorm/LrcParser>

* 1. FFmpeg

Decode the video  
<https://www.ffmpeg.org>

* 1. FFmpeg.AutoGen

Generate C# compatible code for using FFmpeg   
<https://github.com/Ruslan-B/FFmpeg.AutoGen>

* 1. WaveOutPlayer

Sound playback  
<http://www.codeproject.com/Articles/3352/A-low-level-audio-player-in-C>

1. Enhanced features
2. Support other video format: Yung Man Lee  
   Support several video formats which is supported by FFmpeg, e.g. .MOV / .AVI. These kind of formats can be played smoothly.
3. Screen capture: Cheung Yin Man & Yung Man Lee  
   Provide the function of screenshot, which can shows the content of a computer’s screen at the moment of shot.
4. Support more than 3 clients:
5. Support more than 2 sources: