**Assignment 2**

**CMPT 365**

**Joshua Campbell**

[**jkcampbe@sfu.ca**](mailto:jkcampbe@sfu.ca)

**301266191**

Program Information:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | C++ | Java | Other |  |  |
| Language? | X |  |  |  |  |
|  |  |  |  |  |  |
|  | Any Resolution | Input must be 64x64 |  |  |  |
| Works on any resolution? | X |  |  |  |  |
|  |  |  |  |  |  |
|  | Any video | One particular video | An image | A column of an image | Hard-coded ASCII data |
| Works on | X |  |  |  |  |

See the ProofOfExcellence.pdf file included in the root folder of the project submission .zip for screenshots for proof

**Tools Used:**

This program was written in C++ using Visual Studio 2012. It is an MFC application (for GUI) and it utilizes SDL2 (for audio) and OpenCV for opening and processing the video frames.

**Summary:**

This project will handle opening and processing video files. It takes these video files, resizes the image/frame to 64x64 pixels, converts them to grey scale, and then converts the grey scale image into a matrix (64x64) of 16 levels of grey for converting and playing as a sound file. The program does this by taking each column of the image and taking the top rows of the image as high frequencies and the low rows of the image as low frequencies. It then uses the 16 levels of grey to determine the intensity/volume of the sound being played such that bright shades are loud and dark shades are quiet. The program processes this data into a wave form of raw data and then uses SDL2’s mixer library to play this raw sound data.

**Issues:**

In order to display the current image, OpenCV must create a new window. Unfortunately, this window seems like it cannot be moved while the video is playing.

**Steps to Compile and Run:**

Due to Size Limitations, in order to compile the program, you will need to download some .lib files for OpenCV 3.0

Run Steps:

1. Next, go into the supplied Dlls folder and copy these dll files into the Source/CMPT365-A2 folder

2. Run the exe for the program

3. Click the Open Video button to open a video

4. Once a video has been opened, press the play button in order to play the video as a sound.

5. To stop the video, press the “Stop” button.

Compiling Steps:

1. go to http://opencv.org/downloads.html and download OpenCV Version 3.0 for Windows

2. run the exe file to extract the contents

3. once extracted, go into the opencv/build/x86/vc11/lib folder and copy these files into the Project's Source/CMPT365-A2/lib folder:

opencv\_ts300.lib

opencv\_ts300d.lib

opencv\_world300.lib

opencv\_world300d.lib

4. next, go into the opencv/build/x86/vc11/staticlib folder and copy these files into the Project's Source/CMPT365-A2/lib folder:

opencv\_core300.lib

opencv\_core300d.lib

opencv\_imgproc300.lib

opencv\_imgproc300d.lib

opencv\_highgui300.lib

opencv\_highgui300d.lib

opencv\_ml300.lib

opencv\_ml300d.lib

opencv\_video300.lib

opencv\_video300d.lib

opencv\_features2d300.lib

opencv\_features2d300d.lib

opencv\_calib3d300.lib

opencv\_calib3d300d.lib

opencv\_objdetect300.lib

opencv\_objdetect300d.lib

opencv\_flann300.lib

opencv\_flann300d.lib

5. In Visual Studio 2012, right click on the CMPT365-A2 project from the solution explorer and click on "properties"

6. Under the properties window, go to the linker section and edit the "Additional Library Directories" section to include the Project's Source/CMPT365-A2/lib folder

6. Next, go into the supplied Dlls folder and copy these dll files into the Source/CMPT365-A2 folder

7. Finally, run the program in Debug mode to compile and run the application

8. See "Run Steps" 3 through 5 for how to operate the program