

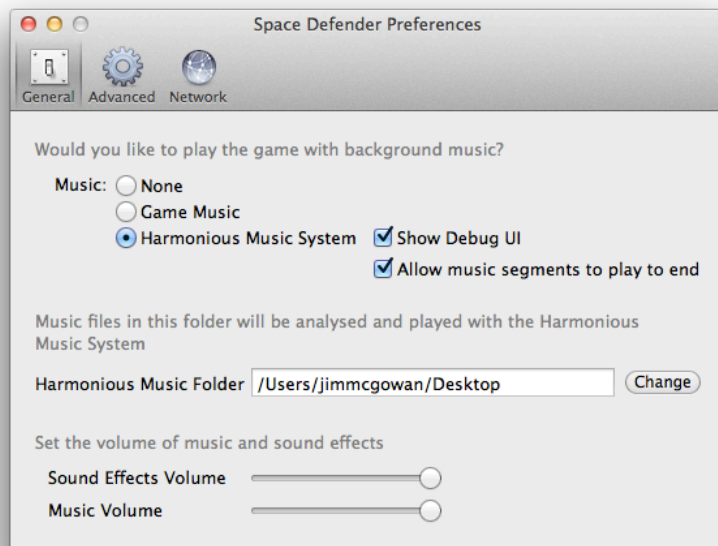
Using the Harmonious System with the Space Defender Game

System Requirements

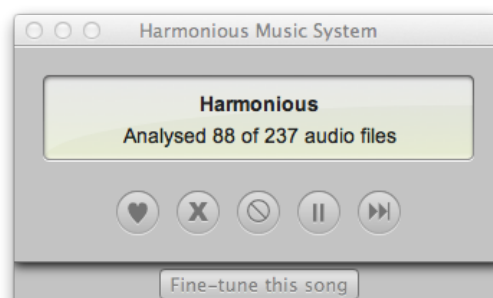
The Space Defender game with the Harmonious Music System requires Mac OS X version 10.6 or higher.

Analysing Music

Before the game can be played with music from the Harmonious system, it requires the location of the music files to use and time to analyse those files. You can select a music folder/directory from the game's preferences window, made visible by selecting the "Preferences" item in the "Space Defender" menu. In the preferences window, select the "General" tab and click the "Change" button next to the text field labelled "Harmonious Music Folder".



When you have selected a folder, the Harmonious system will begin to analyse the any MP3 or AAC music files with the extensions ".mp3" or ".m4a" in that folder or any subfolders it contains. The progress of the analyser can be seen in the Harmonious Music System window. If this is not visible it can be opened by selecting the "Harmonious Window" item in the "Space Defender" menu.

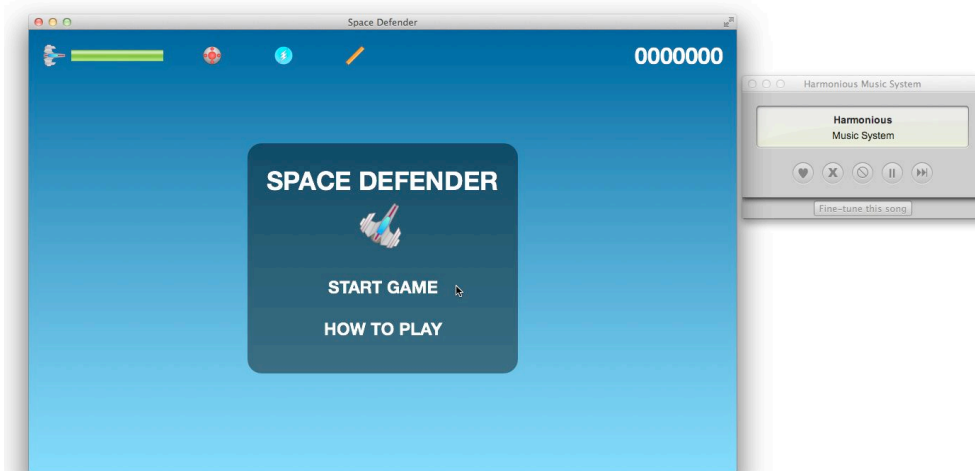


If you are analysing a large collection of music (over 500 files) it is recommended to leave the game running overnight to complete the analysis. Typical analysis time is in the range of 6 hours for 1000 files. The analyser works in the background, so the game may be used whilst it is in progress, but analysis of a more than a few hundred files can cause a noticeable processor load in the early stages of analysis (this will lighten as the analysis progresses). Quitting the game whilst analysis is in progress will cause the system to save its progress to date and will resume from the same point when the game is relaunched.

If you change the music folder setting, this will cause the system to empty its database and begin analysing the files in the new folder. A subsequent change to previously selected folder will require that folder's contents to be re-analysed.

Each time the game is launched the music folder will be scanned for any new files added since the last launch. Any new files found will be analysed.

Controlling the Game and the Harmonious System



Full instructions for both the game and the Harmonious system are available from the “Help” menu. In summary, the game is played by using the cursor keys to maneuver the space ship and using the space bar to fire. The P key will pause and unpauses the game. Special weapons are fired using the following keys:

- Z: “Zap” nearby enemies
- B: Erect a temporary barrier
- M: Drop a mine.

The harmonious system can be controlled by clicking any of the buttons on the Harmonious window. From left to right, the buttons are

- Like the current music match
- Dislike the current music match
- Ban the current music segment
- Pause/Unpause the music playback

Skip to a new music segment.

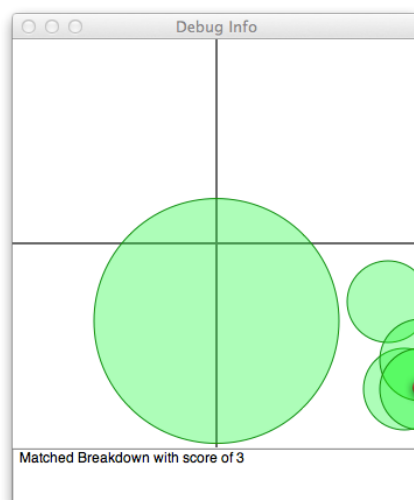


These controls are mapped to the keys 1, 2, 3, 4 and 5 respectively. The “Fine tune this song” button reveals the fine tune controls, which can be used to manually adjust the systems emotional interpretation of the currently playing music segment.

Switching between the game original music and the Harmonious system is done in the “General” tab of the preferences window. An option labelled “Allow music segments to play to the end” is also provided here. With this option checked, music selections made by Harmonious will play in their entirety. With this option unchecked, music will transition on every cue from the game.

Debugging Interface

The Harmonious system contains a debugging UI that shows the arousal/valence plane, which forms the basis of the mood matching system. This can be shown by selecting the “Show Debug UI” option in the “General” tab of the preferences window.



The UI shows the circular representation of the currently playing music segment’s mood. Green circles show the areas of the plane for which the music is a good match, red circles show the areas that are not a good match. The green areas are those determined by the music analyser and the player’s ‘liked’ matches. The red areas are those created by the player ‘disliking’ matches. A text area gives the match score of the currently playing music

Advanced Options

The Space Defender game's original music and sound effects were created with FMOD Designer. The game makes use of the FMOD Event Network System to allow the FMOD Designer application to be connected to the game for real time adjustment of the music and sound effect settings. Connect the Designer application to the default port number of 17997 when the game is running.

The "Advanced" tab of the Space Defender preferences window allows the various values that determine the behaviour of the game, such as movement speeds, weapon fire rates, enemy spawn rates, etc, to be changed. The "Network" tab gives the option for the game to broadcast its various state variables to the network over UDP, which can be used, for example, to connect the game to other audio prototyping software such as Max/MSP or PD.

Troubleshooting

To reset the game and the harmonious system to a clean, default state, quite the game and remove the files at *<home folder>/Library/Preferences/net.jimmcgowan.space-defender-harmonious.plist* and *<home folder>/Library/Application Support/Harmonious/Harmonious.storedata*. The former contains the preferences for the game and system (including the location of the music folder) and the latter contains the music analysis database. These files will be recreated in their default form the next time the game is launched.