Karlheinz Essl

REplay PLAYer

generative sound file shredder
© 2000-2020, vs. 6.0 for macOS (64 bit)

http://www.essl.at/works/replay.html

Alert

By default, macOS will block the installation of apps that are not from the Mac App Store or created by identified developers. If you are unable to install REplay PLAYer on your Mac please follow the three steps below or go to Macworld.com for help.

1. In Finder, Control-click or right click the icon of the REplayPLAYer app.
2. Select "Open" from the top of contextual menu that appears.
3. Click "Open" in the dialog box. If prompted, enter an administrator name and password.

About

REplay PLAYer is a computer program that de-constructs a given sound file and re-composes it by using realtime composition algorithms - a field of research that has been investigated by Karlheinz Essl since the 1990ies. With this project, Karlheinz Essl is following once again his vision of a music "that is composed in an auto-poetic process at the moment of its sounding."

REplay PLAYer can be used as a tool to generate an infinite and every-changing sonic stream from a single sound file for artistical, compositional or mere recreational purposes. It can also be regarded as a computer based instrument for live performances, as an interactive sound installation or a generator for ambient music.

What's new in version 6.0?

• improved manual control with the mouse in the waveform window
• several improvements and bug fixes
• enhanced audio engine
• now runs with macOS 10.15 Mohave

Shareware registration

REplay PLAYer 6.0 is released as shareware. Please register your copy to ensure the further development of this program. You can purchase a registration code for $ 25.00 by sending an e-mail request to khz@essl.at

Only registered users can record the output to disk, access the advanced control features of the Specials, and use the FX control panel and the MIDI controls. In the meantime, you can have a look at the enclosed Screenshot.pict to see the hidden control windows and their functionalities.

Once your purchase has arrived, you will receive a registration code by e-mail. Now control-click the progranm REplayPLAYer_5.2.app and select the option "Show Package Contents". Double-click the folder "Content". Afterwards, double-click on the folder „Resources" where you find an empty text document named "REplayPLAYer-Registration.txt". After double-clicking it (or opening it with TextEdit), type in your exact registration code and save the file.

System requirements

• Apple Macintosh Computer (Intel)
• MacOS X 10.12 or better

Quick intro

• Copy the content of the REplayPLAYer_6.0 disk image somewhere on your harddisk.
• Start the application by double-clicking on REplayPLAYer_6.0.app
• After the program has started, select "Load Sound..." from the "Shredder" menu. Select a sound file (AIFF, WAV, MP3) from your hard disk. For best results, use uncompressed mono sound files with 16bit and 44100 kHz.
• Turn on "Audio" in the grey "Audio Status" window. Here you can also set the driver and the parameters for your audio interface.
• Select "Start" on the same "Shredder" menu.
• Listen and enjoy.

What the REplay PLAYer does

The REplay PLAYer stores an entire sound file in the computer's RAM from which it cuts out particles of varying length from different positions of the file. The length of the particles is determined by the "granularity" parameters which can be changed in the grey square field. Then the program will overlap these particles according to the density parameter which can also be changed there. The position on the sound file from which the grains are taken is determined by a separate algorithm which various modes you can control in manyfold ways. Furthermore, those grains can also be transposed either by transposition algorithms or manually. As a registered user, you can also store your creations directly to disk, you can access the advanced control features and use the built-in effects and VST or AU plugins. Furthermore, you can control many of the system parameters by MIDI.

Menus

REplayPLAYer_6.0

• About REplay PLAYer...: general information about the program and its author.

File

• no function, to be ignored.

Edit

• Overdrive: check for enhanced audio performance.

Shredder

Here you can load a sample and start/stop the shredder process.

• Load Sound...: select a sound file (AIFF, WAV, MP3) from your hard disk
• Start: starts the process
• Stop: stops it

• Specials...: Opens a separate window which allows you to access several advanced control facilities. This works only for registered users.

- Params: here you can change the speed when you run the process in the "Loop" mode. You change it between 10% (= tenth of original speed) and 800% (= eight times faster than original). Below you can determine the gap between the "min" and "max" position of the sample which is most effective if you run the process in "Freeze" mode and scrub manually through the sample, or if you use the automatic "Walk" mode. Furthermore, you can determine the "distance" for "Jump" mode which will influence how far the random can jump within the sample from one position to another. The "smoothing factor" allows you to apply a softening envelope to each grain. Try it out!

- Crossfade: performs a smooth crossfade between the looped original sample and its shredded version by dragging the horizontal slider accordingly. The pull-down menu above allows you the select "original" or "shredder", or random which will perform a random-walk on this slider resulting in a time-variant random mix between both sources.

• FX...
opens a separate window which allows you to access the FX control panel. This works only for registered users.

The order of the sections from left to right mirrors the signal flow through the various effects:

- Volume: here you can set the volume range. In "default" the full range between -12 and 0 dB is used by a random-driven algorithm, while "min" would attenuate the signal by -12 dB. Selecting "max" would play each grain with its original, non-attenuated amplitude (= 0 dB).

- EQ: a simple graphical equalizer for "lo", "mid" and "hi" frequencies. Selecting "linear" in the pull-down menu will not affect the signal while "random" would perform a time-variant random transitions on the three EQ bands.

- Plug1: one of the 3 VST or AU Plugins. Select "load" to load a VST plugin and „param" to access its control window. With the dial wheel you can adjust the balance between dry and wet signal. Or you select one of the presets in the pull-down menu: "dry", "mix" or "wet". Choosing "random" will result in a random-driven time-variant process.

- Plug2: same as above.

- Plug3: same as plug1. This is the best place for putting a limiter and/or

compressor plugin.

- Panning: random-controlled algorithm for the balance between left and right channel. You can determine the speed by selecting several presets in the first pull-down menu; furthermore, also three different settings for the width (narrow, medium, wide) can be chosen.

• DSP Settings..
opens a separate window where you can set the parameters of the DSP (digital signal processing) and select external audio interfaces.

Record

This works only for registered users. Select "Locate..." in the "Record" menu and determine the file path of the sound file that you want to create. Per default, this file is called "snd.aiff" which is a 44.1 kHz AIFF stereo sound file. Selecting "start" will start the recording, whereas "stop" will certainly finish this process ;-)

Mode

The start position of the selected particles in the file is determined by several modes which can be changed by the "Mode" pull-down menu:

• Freeze: a single randomly chosen position in the file is kept. Now one can use the "scrub" fader to move along in the file, or dragging the "min" and "max" slider to determine a region from which the program will extract its sound snippets. You can change the gap between "min" and "max" in the "Specials..." of the "Shredder" menu.
• Walk: performing a random walk on the file by smooth transitions between randomly chosen positions in the file
• Jump: the position is changed randomly be jumping around in the file
• Regions: by automatically moving the position of "min" and "max" a constantly changing region is created from which the program will start to cut off sound particles.
• Loop: reads through the sample in loop mode. You can change the reading speed in the "Specials..." of the "Shredder" menu.
• Random: randomly changes between the modes Walk, Jump, Regions and Loop.
• Select all: the entire samples can be used

Granularity

Grain size and density can be either controlled manually, or by selecting presets from pull-down menu. Those presets are:

 • Default: a fixed setting with medium granularity and medium density
 • Shuffle: long grains with low density
 • Polyphony: medium grains size with high density
 • Granular_lo: small grains with low density
 • Granular_hi: small grains with high density
 • Random: automatically changes granularity and density by performing smooth fades between random positions

Thanks to the square control field one can change grain size and density at the same time by dragging the mouse inside this field.

The best way is to experiment with the sliders and presets in the „Granularity" and "Mode" menus. Due to the introduced chance operations and the complex relationship between the parameters and the supplied sound material it is sometimes hard to predict the result.

Transposition

Here you can determine the transposition of the sound grains;
1) by selecting a preset from the pull-down menu,
2) by setting the region of the transposition by turning the "min" and "max" sliders,
3) by dragging the horizontal transposition slider below the oncreen keyboard,
4) by clicking or moving the mouse (button held down) across the onscreen keyboard. The range of the possible transpositions is 2 octaves: one octave down, and one octave up.

• Original: does not apply any transposition
• Detuned: randomly chosen pitch modifications in a very small range around the original tune.
• Medium Range: similar, but within a small range
• Medium Range: similar, but within a broader range
• Full range: similar, but within the full range of two octaves

Beside those presets which perform a static setting of the transposition parameters "min" and "max", there are three time-variant functions:

• Moving Regions: by randomly moving the "min" and "max" knobs the transposition range varies in time
• Glissando: performs glissando movements between randomly seleceted positions on the transposition scale in different speeds
• Jumping: jumps around in the transposition range by applying brownian-like movements in moving speeds

Levels

Two LED displays for the signal level of the left and right channel. Besides them is a new type of display which shows the amount of CPU usage graphically: in a continous shift from green two yellow to red the CPU load is symbolized. Green means low, yellow middle, and red high CPU usage.

MIDI control

With a MIDI controller attached to your computer, you can use it to control many of the REplay PLAYer system parameters. By this, you can literally turn this program into an instrument! Please take care that the MIDI controller sends on controller number 7.

Here is a list of the available MIDI controls:

chn #1:   granularity
chn #2:   density
chn #3:   glissando
chn #4:   mininum pitch
chn #5:   maximum pitch
chn #6:   crossfade between original and shreddered sound
chn #7:   volume range
chn #8:   mix into VST 1
chn #9:   mix into VST 2
chn #10: mix into VST 1
chn #11: EQ lo
chn #12: EQ mid
chn #13: EQ hi
chn #14: panning

Manual Control

The waveform of the sample is displayed in the rectangular wave table. You can also use this display to scratch manually through the sample. You can use the mouse to set the size of the region (shown as a green field) which is being used for the granulation process.

1) Choose „Freeze" in the „Mode" menu.
2) Select a region with the mouse in the waveform window and drag it to the desired length.
3) When pressing the caps-lock key on the keyboard, you can shift this region with the mouse.
4) Moving the mouse up enlarges the region, moving it down reduces its size.

Further information

Samples

REplay PLAYer requires a sound file to start with. If you are a electronic musician or a composer you will certainly have dozens of sound files stored on your hard disk. Please note that the program works best with mono sound files. If you'd selected a stereo sound file, the program would only use its left channel.

You can use AIFF, WAV or MP3 files. However, best results will be obtained be using uncompressed mono audio files (AIFF, WAV) with 16bit and 44100 kHz.

The duration of the sample is limited by the available RAM of the computer - a good length would be between several seconds up to several minutes.

The theory behind

The concept of music that is created at the moment of its sounding ("realtime composition") and the vision of a composition that is not provided in form of fixed notation has been haunting Karlheinz Essl since the mid 1980ies. Departing from theoretical concepts that have been formulated by Karlheinz Stockhausen and Gottfried Michael Koenig in the late 1950ies, he started to dig into the field of algorithmic music where he and Gerhard Eckel started to develop a software library for musical composition in realtime - the so-called "Realtime Composition Library for MAX". The first fruit of this labour was a piece called "Lexikon-Sonate" (1992 ff.) - a realtime

composition for computer-controlled piano that replaced a pianist by a computer which composes and performs this never-ending piece in realtime. A theory of structure generatores emerged in the course of this project and can be found on the web at:

http://ww.essl.at/bibliogr/struktgen.html

Thanks

I want to thank my friend Gerhard Eckel for using one of his MSP externals which serves as the core of the granulation engine. Finally I also want to thank my friend Boris S. Hauf for his suggestions for enhancing the user interface and David Stevens for his valuable feedback during the beta test phase.

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History

1.0 light (released 27 Feb 2001)
First public release
        Public domain freeware version

2.0b1 (released 7 Mar 2001)
Start of the beta testing program
        Recording enabled
        Support for VST plugins
        New improved and enhanced user interface
        Extended documentation

2.0b2 (released 14 Mar 2001)

New menu driven user interface
Pitch algorithms included
Specials control window for advanced purposes
New "Loop" mode does time stretching/compression
Extended documentation

2.0b3 (released 16 Mar 2001)
Major changes of the user interface
Minor improvements and enhancements
Additional controls in "Specials..."
+ "distance" parameter for "Jump" mode
+ sample information

2.0b4 (released 19 Mar 2001)
Changes of the user interface
FX control panel added which supports now 3 independent VST plugins and a 3 band graphic equalizer

2.0 (released 2 April 2001)
Test release of the shareware version
Added presets

2.0.1 (released 20 April 2001)
Final release of the shareware version
Minor improvements
Modifications of the README file

2.4 (released 19 June 2001)
First major update
New user interface with waveform display of the sound material
Improved audio engine
CPU load display
Panning algorithm added
Minor and major bug fixes and enhancements
Presets omitted

2.4.1 (released 24 June 2001)
The forgotten registration file is now included

2.4.2 (released 24 Jan 2003)
Recompiled version which should run smoothly under MacOS 9.2

3.0 (released 8 Aug 2004)
Runs under MacOS X
Supports external audio devices
Loads AIFF, WAV and MP3 files
MIDI control added
Time grid included in waveform display
Smoothing factor (in Special/mode) added
Several improvements and bug fixes

3.0.1 (released 10 Aug 2004)
  correcting a bug which could truncate a loaded soundfile

3.0.2 (released 11 Aug 2004)
  access to DSP settings also for not-registered users

3.1 (released 4 Sep 2005)
  fixes problems with certain VST PlugIns

3.2 (released 23 Aug 2007)
  released as Universal Binary

4.0 (released 7 May 2013)
  optimized audio engine
   improved user interface
   works with VST and AU plugIns

5.0 (released 1 Aug 2018)
  new user interface
  improved audio engine
  now supports stereo VST plugIns (32-bit)
  minor bug fixes

5.1 (released 6 Nov 2019)
  64bit
  runs with macOS 10.14 (Mojave)

6.0 (released 19 Apr 2020)
  improved onscreen control with the mouse in the waveform window
  several improvements and bug fixes
  enhanced audio engine

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Vienna, 19 Apr 2020
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