Mirage

Sampler Engine

Version 1.0.9

Overview

What is Mirage?

Mirage is our sample-based synthesis engine. It is a VST/AU synthesiser plugin that features a powerful set of controls for processing our custom sample libraries, such as Phoenix or Wraith (currently libraries can only be made with our internal tools). Mirage is designed for rapid, flexible sound design and for ease-of-use.

Tooltips

Mirage has a large number of controls and settings. To make understanding the function of these controls a little easier, all Mirage controls feature popup tooltips. If you hover over a control with your mouse cursor, a popup box containing a text description of the control will temporarily appear. You can toggle whether or not you want to see these by clicking the 'Show Tooltips' setting in the settings menu.

Installing Mirage

Windows

Simply run the EXE installer and follow the instructions to install Mirage. There are 3 components that are installed: the plugins, the library data file, and the library presets. Mirage is available as a plugin for any Windows DAW (digital audio workstation) that can host a either a 32-bit VST2, or a 64-bit VST2. After successful installation, you may need to restart your DAW.

The installer will move the VST files to a folder of your choice. The default is `C:/Program Files/VSTPlugins` for the 64-bit VST, and `C:/Program Files (x86)/VSTPlugins` for the 32-bit VST. Most DAWs are already set up to scan these directories for VSTs. An alternative location that DAWs scan is `C:/Program Files/Steinberg/VSTPlugins` or `C:/Program Files/Common Files/VST2`. In the settings of your DAW you will most likely find a way to set other directories for the DAW to scan. If you know your DAW is set up to scan a particular folder, you can install the Mirage plugin there. The 32-bit VST2 plugin is a single file called `mirage32.dll`, and the 64-bit version is called `mirage64.dll`.

The installer will also install the library data file and the library presets to locations of your choosing. It is recommend to leave the presets location as the default one. The default library data file location is `C:/Users/name/Documents/FrozenPlain/Mirage/Libraries` and the default preset location is `C:/Users/name/Documents/FrozenPlain/Mirage/Presets`.

Mac

To install Mirage on Mac simply double click the installer package and follow the steps. There are 3 components that are installed: the plugins, the library data file, and the library presets. Mirage is available both as a 64-bit VST plugin and a 64-bit Audio Unit plugin, there are no versions for 32-bit. The minimum required Mac version is 10.9. After successful installation, you may need to restart your DAW.

The VST plugin is installed to `/Library/Audio/Plug-Ins/VST`. The Audio Unit is installed to `/Library/Audio/Plug-Ins/Components`. The presets are installed to `/Library/Audio/Presets/FrozenPlain/Mirage Presets`. Finally, the library (which is an MDATA file) is installed to `/Library/Application Support/FrozenPlain/Mirage Libraries`. Libraries can be large files, and so you might not want them on your default hard drive. Once installed, you can move the MDATA file to any location that you want. If you do so, when you next open up Mirage a box will pop up and prompt you to reset the location of the file.

Mirage saves settings on your computer about its GUI and libraries. This is a file called `mirage.json`. And is stored in `/Users/your-name/Music/Audio Music Apps/Plug-In Settings/FrozenPlain`.

Glossary

- **Layer**: One of the 3 sound generating parts that can be controlled and modulated. These are then mixed with the other layers and the effects are applied.
- **Library**: A collection of sampled instruments that are bundled together into a pack. Wraith is an example of a library - which focuses on ambient and drone instruments.
- **Instrument**: A playable instrument that is almost always sample-based - meaning the sound is generated from audio files rather than algorithms or wavetables. These can be selected for each layer. Instruments can be either multi-sampled or just a single sample.
- **Preset**: A saved version of Mirage - with all of the controls set in a certain way. Mirage can load any `.mirage-something` preset, but the file name ending will be different to signify which library was saved in the preset.
- **Preset Folder**: Mirage keeps track of a single folder (and its subfolders) from which you can easily browse Mirage presets. By default this is in your documents then FrozenPlain/Mirage/Presets, but it can be set to any location.
- **Settings Menu**: The popup menu that is found by clicking on the gear icon at the top of the Mirage GUI.
- **MDATA**: The file extension that libraries are stored in. An MDATA contains all of the audio files that make up the sample library, as well as various other pieces of configuration data. This means that they can be large files.

Libraries

Mirage is an engine that can load sample libraries that are in the propriety MDATA file format. An MDATA contains all of the audio files that make up the sample library, as well as various other configuration data. This means that they can be large files. At the moment these libraries can only be created by FrozenPlain. Mirage can load up one library at a time, this is done with the Library Picker Panel. When you open a new instance of Mirage, no library will be loaded, meaning there will be no instruments to play.

Library Picker Panel

This panel lists the available Mirage Libraries that can be loaded up, and controls for adding new libraries. The panel is opened by clicking the '3-lines' icon in the top left of Mirage. By clicking on an available library, it is loaded and the picker panel is closed. If clicking an 'available to buy' library you will be taken to the library webpage. As with all controls in Mirage, if you hover over a button, a tool-tip will appear describing the button's function.
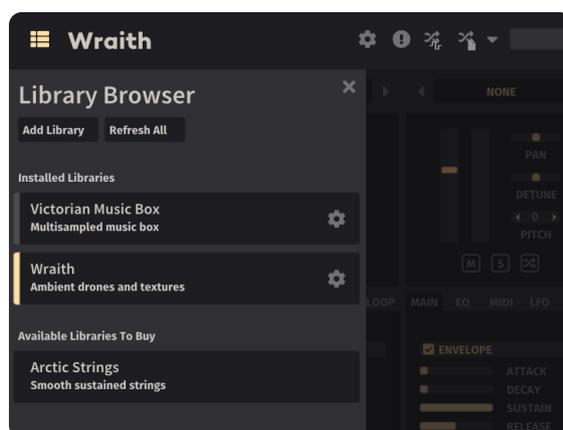
Presets

Preset Files

Mirage uses the same preset format regardless of what library is loaded. However, the preset file name will end differently depending on what library it is. For example, a Mirage preset which uses Wraith will be might be called `preset.mirage-wraith` . Mirage can load any preset file that ends with `.mirage-something` .
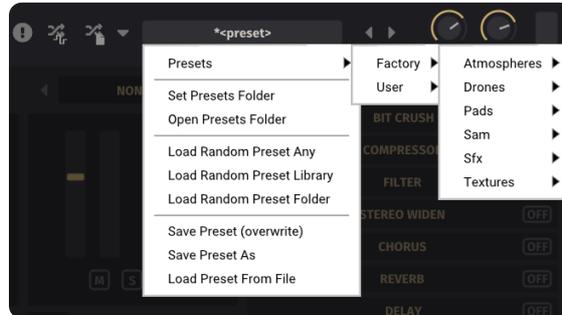
The Preset Folder

Mirage keeps tracks of a single dedicated presets folder. Mirage scans this folder (and its subfolders) for `.mirage-something` files. These are then displayed in the preset browser GUI, and can be easily loaded in various ways. You can manually organise this folder in any way you like. By default, presets are grouped into which library they are from, and whether they are factory or user presets. This preset folder is `C:/Users/name/FrozenPlain/Mirage/Presets` on Windows and `/Library/Audio/Presets/FrozenPlain/Mirage Presets` on Mac. You can select an alternate folder using the 'Set Presets Folder' button in the preset menu.

Randomising Presets

In order to quickly try a new preset, there are 3 ways that you can load a random one. These options are available in the presets menu. These are the options:

- Randomise Any: Loads any Mirage preset in the presets folder (included any presets in subfolders). The preset could be for any library.
- Randomise Library: Loads any Mirage preset that is for the same library that is currently loaded. For example if you have the Wriath library loaded, this button will load another Wriath preset.
- Randomise Folder: Loads any Mirage preset that is in the same folder as the current one. For example if your current loaded preset is in a folder called 'Pads', another preset from 'Pads' will be loaded.

As well as these buttons in the preset menu, there is a randomise button that is on the top panel. This allows you to use the randomise feature easier. The type of randomisation that this button uses can be set to one of the 3 modes listed above. This is selected in the preset menu.

Installing New Presets

The installer for Mirage automatically adds presets to the Mirage presets folder. This will be `C:/Users/name/FrozenPlain/Mirage/Presets` on Windows, and `/Library/Audio/Presets/FrozenPlain/Mirage Presets` on Mac. If you have manually set a presets folder (using the 'Set Presets Folder' button on Mirage), it will be that location instead.

You can manually add new presets to this folder, or rearrage the directories, Mirage will find them. Presets can also exist elsewhere on your computer. However, these will not automatically appear in the preset browser menus. These must be loaded by selecting 'Load Preset' from the presets menu and navigating to the individual file.

Making Your Own Preset Packs

In the preset menu of the Mirage GUI you can save a preset as a file. To make these into a pack simply bundle the presets files together (the ZIP format is common for this), and point whoever is installing them to this manual. You are allowed to share or sell Mirage presets, but you may not share or sell any other type of Mirage file.

The 3 Layers

Instruments

Mirage is built around an architecture of 3 layers. These are displayed in 3 columns starting from the left of the main panel. Each layer is identical. The first, and perhaps most important control of each layer is the instrument picker. This is the popup menu at the top of each layer. The adjacent left and right arrows can be used to move through the sounds as well. In Mirage, instruments are almost always sample-based, with the exception of instruments in the Specials folder, if it exists. The list of available instruments is determined by which library is loaded.


Layer Controls

Each layer has a lot of the controls that you might expect in a sampler; pitch controls, ADSR envelope, filter, LFO, and loop controls, allowing for a great deal of control over the character of the instrument. These 3 layers are then mixed together equally and fed into the effects rack.

Effects

Mirage has a selection of simple effects that can be applied to the audio. These effects are applied to the sum of the 3 layers. The effects are shown in a list on the right hand side of the main panel. Each effect is expanded or collapsed by clicking on the effect name, and is turned on or off with the ON button on the right of each. The ordering of the effects cannot be changed in this version of Mirage, but may be possible in future versions.
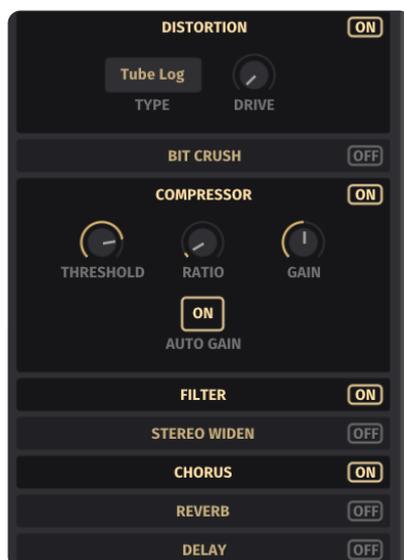
MIDI

MIDI Learn

All automatable parameters in Mirage can be easily assigned to a MIDI CC. Perhaps the most common MIDI CC used is the mod-wheel, which is CC1. This, or any CC number, can be used to control a parameter of Mirage. This is done by first right clicking on a parameter on the GUI, such as a filter cutoff, and then selecting MIDI learn from the menu that pops up. Once pressed, Mirage waits to receive a MIDI CC message. The first message that it receives triggers Mirage to bind that CC to the parameter. Now whenever you move that CC, the parameter in Mirage will move too. This binding can be undone by again right clicking the parameter and clicking Remove MIDI Learn.

Sustain Pedal

Mirage supports control from sustain pedals. A sustain pedal is a special kind of MIDI controller that sends MIDI CC-64 messages. These messages represent an on or off state. When Mirage receives a sustain pedal on message, all notes that are currently held will sustain until a corresponding sustain pedal off message is received, even if the notes are released from the keyboard. This is a common behaviour for synths and samplers alike. It roughly simulates the behaviour of a real piano sustain pedal.

Effects Parameters

Distortion

Use various algorithms to distort the signal.

Name	Type	Description	ID
Type	Menu	Distortion algorithm	DistType
Drive	Knob/Slider	Intensity of distortion effect	DistDrive
Distortion On	Switch	Turn the distortion effect on or off	DistOn

Bit Crush

Apply a lo-fi effect to the signal by either reducing the sample rate or by reducing the sample resolution. Doing either distorts the signal.

Name	Type	Description	ID
Bits	Knob/Slider	Resolution of audio	BitcBits
Sample Rate	Knob/Slider	Sample rate of audio	BitcRate
Wet	Knob/Slider	Level of processed signal	BitcWet
Dry	Knob/Slider	Level of unprocessed signal	BitcDry
Bit Crush On	Switch	Turn the bit crush effect on or off	BitcOn

Compressor

Compress the signal to make the quiet sections louder.

Name	Type	Description	ID
Threshold	Knob/Slider	The threshold that the audio has to pass above before the compression should start taking place	CompThr
Ratio	Knob/Slider	The intensity of compression, high ratios meaning more compression	CompRt
Gain	Knob/Slider	The volume level after the compression effect.	CompGain
Auto Gain	Switch	Automatically re-adjust the gain so to stay consistent regardless of compression intensity	CompAuto
Compressor On	Switch	Turn the compression effect on or off	CompOn

Filter

Adjust the volume frequency bands in the signal, or cut out frequency bands altogether. The filter type can be selected with the menu.

Name	Type	Description	ID
Filter On	Switch	Turn the filter effect on or off	FlOn
Cutoff	Knob/Slider	Frequency of filter effect	FlCut
Reso	Knob/Slider	Amount of volume peak at cutoff	FlRes
Gain	Knob/Slider	Volume gain of shelf filter	FlGain
Type	Menu	Type of filter	FlType

Stereo Widen

Increase or decrease the stereo width of the signal.

Name	Type	Description	ID
Width	Knob/Slider	Increase or decrease the stereo width	SterWd
Stereo Widen On	Switch	Turn the stereo widen effect on or off	SterOn

Chorus

An effect that changes the character of the signal by adding a modulated and pitch varying duplicate signal.

Name	Type	Description	ID
Rate	Knob/Slider	Speed of chorus modulation	ChorRate
HighPass	Knob/Slider	Cutoff frequency of highpass filter on the chorus effect	ChorHP
Depth	Knob/Slider	Intensity of the chorus effect	ChorDpth
Wet	Knob/Slider	Level of processed signal	ChorWet
Dry	Knob/Slider	Level of unprocessed signal	ChorDry
Chorus On	Switch	Turn the chorus effect on or off	ChorOn

Reverb

Algorithmically simulate a real room with its reflections and reverberations.

Name	Type	Description	ID
Size	Knob/Slider	Size of virtual space	RvSize
Damping	Knob/Slider	Amount of high frequency reduction	RvDamp
Width	Knob/Slider	Stereo width	RvWidth
Dry	Knob/Slider	Volume of the unprocessed signal	RvDry
Wet	Knob/Slider	Volume of the processed signal	RvWet
Reverb	Switch	Turn the reverb effect on or off	RvOn

Delay

Simulate an echo effect, as if the signal is bouncing off a distant surface.

Name	Type	Description	ID
Time L	Knob/Slider	Delay time of the left channel in milliseconds	DlMsL
Time R	Knob/Slider	Delay time of the right channel in milliseconds	DlMsR
Time L	Menu	Delay time of the left channel, synced to the host tempo	DlSyncL
Time R	Menu	Delay time of the right channel, synced to the host tempo	DlSyncR
Sync	Switch	Sync the delay times to the host tempo	DlSyncOn
Feedback	Knob/Slider	The amount that the delayed signal should be fed back into the effect	DlFeed
Damping	Knob/Slider	The amount of high frequency reduction on the delayed signal	DlDamp
Wet	Knob/Slider	Level of processed signal	DlWet
Delay On	Switch	Turn the delay effect on or off	DlOn

Convolution

The Convolution reverb effect applies a reverb to the signal. The characteristic of the reverb is determined by the impulse response (IR). The IR can be selected from the menu.

Name	Type	Description	ID
IR	Control	The impulse response to load	ConvIR
HighPass	Knob/Slider	Cutoff of highpass filter on the convolution reverb wet signal	ConvHP
Wet	Knob/Slider	Level of processed signal	ConvWet
Dry	Knob/Slider	Level of unprocessed signal	ConvDry
Convolution Reverb On	Switch	Turn the convolution reverb effect on or off	ConvOn

Layer Parameters

Mixer

Name	Type	Description	ID
Volume	Knob/Slider	Volume of layer	L0Vol
Mute	Switch	Silence this layer	L0Mute
Solo	Switch	Silence all other layers	L0Solo
Pan	Knob/Slider	Position in stereo field	L0Pan
Detune	Knob/Slider	Layer pitch in cents, hold shift for finer adjustment	L0Detune
Pitch	Dragger	Layer pitch in semitones	L0Pitch

MAIN

Name	Type	Description	ID
Volume Envelope	Switch	Choose whether to use an envelope for the volume, or to just trigger each sound to play out entirely, or until the key is pressed again	L0VlEnOn
Attack	Knob/Slider	Length of volume ramp up	L0Att
Decay	Knob/Slider	Length of volume ramp down after attack	L0Dec
Sustain	Knob/Slider	Level to sustain volume when note held	L0Sus
Release	Knob/Slider	Length of volume ramp down after note release	L0Rel
Filter	Switch	Enable/disable filter	L0FlOn
Cutoff	Knob/Slider	The frequency at which the filter should take effect	L0FlCut
Resonance	Knob/Slider	The volume peak at the set cutoff	L0FfRes
Type	Menu	Type of filter	L0FlTy

EQ

Name	Type	Description	ID
EQ	Switch	Turn on or off the equaliser effect for this layer	L0EqOn
Frequency	Knob/Slider	Band 1: frequency of this band	L0EqFr0
Resonance	Knob/Slider	Band 1: sharpness of the peak	L0EqRs0
Gain	Knob/Slider	Band 1: volume gain at the frequency	L0EqGn0
Type	Menu	Band 1: type of EQ band	L0EqTy0
Frequency	Knob/Slider	Band 2: frequency of this band	L0EqFr1
Resonance	Knob/Slider	Band 2: sharpness of the peak	L0EqRs1
Gain	Knob/Slider	Band 2: volume gain at the frequency	L0EqGn1
Type	Menu	Band 2: type of EQ band	L0EqTy1

MIDI

Name	Type	Description	ID
Transpose	Dragger	Transpose incoming notes in semitones, this might sound more realistic than the algorithmic tuning of the pitch control	L0Trn
Keytrack	Switch	Tune the sound based on the keys played, if disabled it will always play the sound at its root pitch	L0KTr
Monophonic	Switch	Only allow one voice of each sound to play at a time	L0Mono
Velocity Mapping	Knob/Slider	Choose how MIDI velocity should affect the volume of this layer. There are 6 modes that can be selected for this parameter via the buttons on the GUI. By setting one layer to be quiet at high velocities and another layer to be quiet at low velocities you can create an instrument that sounds different based on how hard the notes are played. (0) Ignore velocity, always play full volume. (1) Loudest at high velocity, quietist at low velocity (2) Loudest at low velocity, quietist at high velocity (3) Loudest at high velocity, quietist at middle velocity and below (4) Loudest at middle velocity, quietist at both high and low velocities (5) Loudest at bottom velocity, quietist at middle velocity and above,	L0Vel

LFO

Name	Type	Description	ID
LFO	Switch	Enable/disable the low frequency oscillator (LFO)	L0LfoOn
Shape	Menu	Shape of oscillator	L0LfoSh
Mode	Menu	Retrigger: Each voice has it's own LFO, Free: New voices will align to the previous LFOs	L0LfoMd
Amount	Knob/Slider	Intensity of the LFO effect	L0LfoAm
Target	Menu	The parameter that the LFO should modulate	L0LfoTg
Time	Menu	The speed of the LFO, synced to the host	L0LfoSyt
Time	Knob/Slider	The speed of the LFO in Hz	L0LfoHZ
Sync	Switch	Sync the LFO speed to the host	L0LfoSyO

LOOP

Name	Type	Description	ID
Loop	Switch	Loop the sound	L0LpOn
Start	Knob/Slider	Starting point of the loop	L0LpStrt
End	Knob/Slider	Ending point of the loop	L0LpEnd
XFade	Knob/Slider	Size of the crossfade which smooths the transition from the loop end to the loop start	L0LpXf
Ping Pong	Switch	When the sound reaches a boundary of the loop, alternate its play direction	L0LpPP
Start	Knob/Slider	Offset the starting point of samples as a percent of the sample duration	L0Offs
Reverse	Switch	Play the sound in reverse	L0Rev

Master Parameters

Name	Type	Description	ID
Vol	Knob/Slider	Master volume	MastVol
Velo	Knob/Slider	The amount that the MIDI velocity affects the volume of notes	MastVel

Changelog

Version 1.0.9

- Fixed bug where setting the loop end to 100% would stop the layer making any sound.
- Improved popup menu behavior.

Version 1.0.8

- Mac: disallow mono instances of the AudioUnit plugin. Mirage only functions stereo.
- Improvements to PDF manual.

Version 1.0.7

- Mac: Added deep codesigning to VST and AU bundles.

Version 1.0.6

- Improved plugin stability.
- Windows: Fixed bug where the whole DAW was being shutdown when closing the GUI window. (PostQuitMessage() was being called when the GUI window was closed).
- Fixed bug with popup submenus flickering on some computers.
- Fixed crash caused by multithreading issue that happened in DAWs such as Cubase.
- Multithreaded voices are now off by default and can be turned on in the settings menu.
- Mac: Fixed error where preset folders could not be written to when trying to save a preset file (the installer now writes files and folders with less strict permissions).
- Mac: Fixed missing / at the start of the folder names for the postinstall script.
- Mac: Moved config file save location to be user Music directory instead of Application Support.
- Debugging: Log files write separate log files for each format - AU/VST/Installer etc.
- Debugging: OSX installer logs are written to separate files in /tmp.

Version 1.0.5

- Fixed potential crash caused by fetching available library list from online.

Version 1.0.4

- Windows: Fixed issue with installer where file paths with non-english characters would fail to write.
- Fixed multi-threaded related crashes.
- Reduced pops and clicks when turning on or off effects.

Version 1.0.3

- Fixed audio pops when starting an instrument with 0ms attack.
- Fixed audio pops when using square or sawtooth LFOs.

Version 1.0.2

- Added a check when loading a library for if the current Mirage version has the features required for the library.
- Detune slider is now skewed to be more precise for adjustments close to 0.

Version 1.0.1

- Mac version released.
- Fixed a bug where saving the plugin state after it failed to load would forget about the failed plugin state.
- Fixed a bug where trying to load a preset from a library that is not installed would cause a crash.
- Made the column headings fit better in the Windows installer.

Version 1.0.0

- Initial release.

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