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# 1. Welcome to Trash

Trash is a whole new take on mangling and transforming your sound. Blend together up to four different distortion types with an intuitive XY pad, and carve out frequencies for a dramatic effect with the Tilt control. Morph your track into other objects and spaces with over 300 creative impulse responses, including reverse reverbs, piano cabinets, and plexiglass tubes.

Shape specific parts of your audio by splitting it into low, mid, and high frequency bands. You can add a little distortion to just one part of the spectrum, or go wild and mess everything up. Spice up boring loops with Trash's Envelope and use its dynamic distortion capabilities to create sounds that blend through one another, while Auto Gain and the Limiter keep your levels in check.

This document shows you how to get started using Trash, and describes all features in detail, starting with the overview.

We hope you enjoy Trash!

### **Document Conventions**

In this document the following formatting is used to highlight useful information:

Italics	Indicates paths to locations on your hard disk or other storage devices.
Bold	Highlights important names, concepts, and software interface elements.
[Brackets]	References keys on the computer keyboard.
<b>&gt;</b>	Denotes a single step instruction.
$\rightarrow$	Denotes the expected result when following instructions.

The following three icons denote special types of information:



The **light bulb** icon indicates a useful tip, suggestion, or interesting fact.



The **information** icon highlights essential information in a given context.



The warning icon alerts you of potential risks and serious issues.

# 2. Trash versions

Trash comes in multiple different versions. In addition to the full version, Trash Lite makes a reduced set of key features available for free. Both Trash and Trash Lite are also available for iPad. The following overview highlights key differences and helps you find the relevant information in this manual.

# Trash (full version)



#### Desktop:

- · Available in AAX, AU, and VST3 plugin formats
- · Includes all features described in this manual

#### · iPad:

- Supports Logic Pro for iPad (AUv3 plugin format)
- Includes all features described in this manual, except for the Preset browser and custom impulse responses
- Uses plug-in presets in Logic Pro for iPad for preset management

### **Trash Lite**



#### Desktop:

- Available in AAX, AU, and VST3 plugin formats
- Includes the Trash module, the Input and Output controls, and the Header

#### · iPad:

- Supports Logic Pro for iPad (AUv3 plugin format)
- Includes the Trash module, the Input and Output controls, and the Header, except for the Preset browser
- · Uses plug-in presets in Logic Pro for iPad for preset management

## **Upgrading from Trash Lite**

You can upgrade from Trash Lite to the full version and unlock all of its features.



DAW projects using Trash Lite will load with the full version of Trash after upgrading. Your settings are retrieved, preserving the sound of your session.

### Upgrading on desktop

Once you have purchased the full version of Trash and received your new serial number, you can authorize it on your computer.

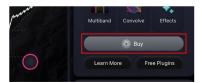
- ▶ To authorize Trash in Product Portal, open Product Portal and enter your new serial number.
- ▶ To authorize Trash directly in the Trash Lite plugin, click **Upgrade** and follow the instructions.



### Upgrading on iPad

You can upgrade to the full version of Trash by making an in-app purchase.

▶ To purchase Trash directly in the Trash Lite plugin on iPad, click **Buy** and follow the instructions.



# 3. Getting started

Trash complements distortion with features that let you fine-tune your sounds, or take them beyond what you would expect from a distortion effect. This section introduces you to key concepts and shows you the best controls to start playing.



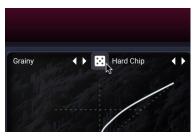
The fastest way to hear Trash in action is to roll the dice in the Header and randomly select presets from the factory content.



#### **Distortion**

At its heart, Trash is a distortion effect. Use the Trash module to add warmth and saturation to audio signals, or clip, mangle, and squash them beyond recognition.

1. Click Randomize in the Trash module to randomly select four distortion types.



2. Turn up **Drive** to increase the amount of distortion.



3. Use the XY pad to explore the sound of the four distortion types.

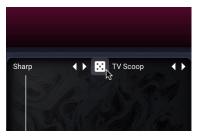


Learn more in Trash module.

### Convolution

Convolution uses impulse responses to simulate the sound of spaces, objects, and devices. Use the Convolve module to explore the sound of four impulse responses at the same time.

1. Click Randomize in the Convolve module to randomly select four impulse responses.



2. Turn up **Mix** to increase the amount of the convolution effect.



3. Use the XY pad to explore the sound of the four impulse responses.



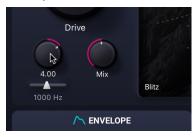
Learn more in Convolve module.

# **Filtering**

Filters are key for shaping the tone of the distortion, as well as for filtering out unwanted distortion and harmonics.

Use the Tilt equalizer in the Trash module for powerful tonal shifts in your distortion sound:

1. Turn up **Tilt** in the Trash module to adjust the gain of the Tilt equalizer.



2. Adjust the Tilt Frequency to change the tonal balance.



And use the Filter for sculpting your final sound:

1. Switch on the Filter to add it to the final sound.



2. Turn down **Frequency** to tame high frequencies and make the sound darker.



Learn more in Trash module and Filter.

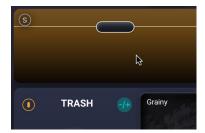
# **Multiband processing**

Multiband processing lets you dive deeper into the sound by using the Trash and Convolve modules on specific frequency bands. Trash makes this fun and intuitive with its central Multiband display and by using color coding to differentiate between bands.

1. Drag the Crossover Frequency handle from the left side of the Multiband display towards the center to create the low frequency band.



2. Click the low frequency band to select it and see the colors change to indicate the newly selected band.



3. Adjust any of the controls in the Trash or Convolve module, the changes are only applied to the low frequency band.



Learn more in Multiband display.

### Modulation

Modulation breathes life into static sounds. The Envelope makes distortion in Trash dynamic and lets you add movement to your sound. Use it to modulate **Drive** and the XY pad in the Trash module, or the **Frequency** of the Filter.

1. Turn the Modulation Amount in the Filter display to the left to apply modulation from the Envelope to **Frequency**.



2. Turn up **Modulation** in the Envelope to adjust the global amount of modulation.



3. Adjust the Envelope's **Attack** and **Release** times to create dynamic filter effects.



Learn more in Envelope.

### **Audio Levels**

Audio levels are essential in a distortion effect. The input level has a huge impact on the distortion sound, while the output level can vary dramatically depending on your settings. Use **Auto Gain** and the **Limiter** to keep your levels in check.

1. Switch on **Auto Gain** so Trash automatically adjusts the output gain to match the input level.



2. Adjust the input **Gain** and listen to how the distortion sound changes.



Learn more in Input and output.

## 4. Overview

Trash is a distortion playground that not only lets you explore a huge range of timbral effects but is also fun and intuitive. You can guickly achieve great results by playing the XY pads in the Trash and Convolve modules, and experiment with multi-band processing, the envelope, and the filter. Trash's user interface is designed to give you easy access to all controls so you can stay in the flow.

The following overview shows the all off the different areas and modules in Trash:



- Header: Contains global controls including the Preset selector, Bypass, and MIX. For more information, refer to Header.
- Multiband display: Lets you configure up to three frequency bands that can be processed independently using the Trash and Convolve modules. For more information, refer to Multiband display.
- Trash module: Distorts the sound by combining four different distortion types with the powerful Tilt filter. For more information, refer to Trash module.
- 4. Convolve module: Creates depth and context by processing the sound with up to four different impulse responses. For more information, refer to Convolve module.
- **Envelope**: Sets the sound in motion by modulating key controls with an envelope follower that tracks the input signal. For more information, refer to Envelope.
- Filter: Sculpts the final sound of the effect and can be used to add an extra layer of screaming distortion. For more information, refer to Filter.
- 7. Input and output: Gives you controls to manage the input and output levels of the plugin. For more information, refer to Input and output.
- Window resizing: Lets you adjust the size of the plugin window by clicking and dragging.

# 5. Multiband display

The Multiband display lets you shape specific parts of your audio by splitting it into low, mid, and high frequency bands. Each of the three frequency bands can be processed independently using the Trash and Convolve modules. By default, Trash is using a single band across the whole frequency spectrum.

► Create additional bands by dragging the Crossover Frequency handles inwards from the edges of the display.

The Multiband display consists of the following controls:



- 1. Frequency band: Represents the frequency range of the respective band, Low, Mid, or High. Clicking on a band switches the Trash and Convolve modules to the instances specific to this band. Both the frequency band and the controls are color coded in pink for the Low band, yellow for the Mid band, and purple for the high band.
- S (Solo): Activates the solo function for the frequency band, muting the other frequency bands. Solo is non-exclusive, so you can activate it on multiple bands at the same time.
- Band Gain: Adjusts the output level of the frequency band in the range from -40 to + 10 dB. The amount of gain in dB is shown on the handle when you use the control.
- Crossover Frequency: Adjusts the crossover frequency between adjacent bands, Low and Mid, or Mid and High. By adjusting the crossover frequencies you can define the frequency ranges of the bands, which can have a dramatic effect on the sound. The crossover frequency in Hz is displayed next to the handle.

# 6. Trash module

The Trash module lets you blend together up to four different distortion types with its intuitive XY pad. The available distortion types cover a wide range of sounds, from the classic overdrive of guitar amps to digital lo-fi characteristics. The Randomize button loads random distortion types which can lead to inspiring results.

You can add dynamics and movement by modulating the Drive control and the XY pad. The Tilt equalizer lets you carve out frequencies at the input of the module, which has a dramatic effect on the sound.

The Trash module has multiple instances that are specific to the frequency band selected in the Multiband display, enabling you to process each band independently. For more information, refer to Multiband display.

The Trash module consists of the following elements and controls:



- Drive: Adjusts the input gain of the Trash module, effectively controlling the intensity of the distortion.
- 2. On/Off: Activates or deactivates the Trash module. When deactivated, all signal processing in the module is bypassed.
- Modulation amount (-/+): Adjusts the strength of the modulation applied from the Envelope to the Drive control. For more information, refer to Assigning modulation to controls.
- XY pad: Blends between the four distortion types loaded in each corner of the XY pad, enabling you to intuitively explore new flavors of distortion. The result is visualized using the transfer curve, which shows the relationship between the input level (X-axis) and the output level (Y-axis).
- 5. Randomize: Loads random distortion types in all four corners of the XY pad.
- Distortion selector: Opens a menu that you can use to select a distortion type that is loaded in the respective corner of the XY pad. You can also load the previous or next distortion type by using the left and right arrow buttons. For more information, refer to Distortion selector.

- 7. Modulation node: Activates the Modulation node in the XY pad, which you can use to create a path for the modulation applied from the Envelope. For more information, refer to Assigning modulation to controls.
- Swap: Switches the order of the Trash and Convolve modules in the signal path. You can 8. either apply convolution to the distorted signal or distort the signal after the convolution has been applied.
- 9. Style pane: Shows the Style controls that you can use to adjust the sound in a way specific to the respective distortion type. For more information, refer to Style controls.
- 10. Mix: Blends between the input and the output of the Trash module, enabling you to adjust the amount of the distortion affect.
- 11. Tilt: Adjusts the gain of the tilt equalizer, which shapes the sounds before it is distorted. At center position, no equalization is applied. Turning the control to the left boosts low-frequency content and attenuates high-frequency content. Turning the control to the right boost highfrequency content and attenuates low-frequency content.
- 12. Tilt Frequency: Adjusts the center frequency of the tilt equalizer. At the center frequency, no equalization is applied. Frequency content below and above the center frequency is processed according to the Tilt control.

#### Distortion selector

The Distortion selector in the Trash module gives you access to 69 different distortion types organized into categories based on their sound and timbre.

▶ To open the Distortion selector, click the name of the distortion type in the respective corner of the XY pad.



The Distortion selector consists of the following elements and controls:



- 1. Randomize: Loads a random distortion type in the respective corner of the XY pad.
- 2. XY pad indicator: Shows the corner of the XY pad in which you are loading the distortion type.
- Categories: Switches the list of distortion types to show all entries available in the selected category.

**4. Distortion types**: Shows the distortion types of the selected category by name and transfer function. Clicking on an entry loads the distortion type in the respective corner of the XY pad.

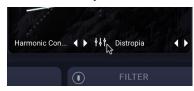


Selecting different distortion types can result in hugely varying output levels. To avoid excessive volume levels, turn down the Out Gain control, or use the Auto Gain function and **Limiter** to compensate. For more information, refer to Input and output.

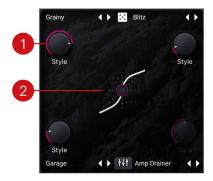
## Style controls

Some of the distortion types in Trash feature the additional Style control. The control interacts with the distortion type in a specific way that gives you variations of the distortion sound and lets you increase its intensity. You can find Style controls for each of the four distortion types in the Style

▶ To show the Style controls, click the Style pane button in the Trash module.



The Style pane consists of the following controls:



- Style control: Adjusts the sound in a way specific to the respective distortion type. Turning the control to the right will increase the intensity of the distortion. If a distortion type does not support this feature, the Style control is grayed out.
- 2. XY pad: Lets you adjust the position in the XY pad directly from the Style pane.

## 7. Convolve module

The Convolve module lets you blend together up to four different impulse responses with its intuitive XY pad. The available impulse responses cover a wide range of sounds, from devices like speakers and radios to various spaces and objects. The Randomize button loads random impulse responses which can lead to inspiring results.

You can adjust the Mix and Width of the convolution effect, and create an even wider stereo image using the Stereoize control. In addition to its built-in library, Trash also lets you import custom impulse responses so you can emulate anything you like.



The Convolve module has multiple instances that are specific to the frequency band selected in the Multiband display, enabling you to process each band independently. For more information, refer to Multiband display.

The Convolve module consists of the following elements and controls:



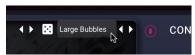
- 1. XY pad: Blends between the four impulse responses loaded in each corner of the XY pad, enabling you to intuitively explore new combinations of spaces, objects, and devices. The result is visualized using the waveform, which shows the amplitude (X-axis) of the impulse response over time (Y-axis).
- 2. Randomize: Loads random impulse responses in all four corners of the XY pad.
- Impulse Response selector: Opens a menu that you can use to load an impulse response in the respective corner of the XY pad. You can also load the previous or next impulse response by using the left and right arrow buttons. For more information, refer to Impulse response
- 4. On/Off: Activates or deactivates the convolve module. When deactivated, all signal processing in the module is bypassed.
- Mix: Blends between the input and the output of the Convolve module, enabling you to adjust the amount of the convolution effect.
- Stereoize: Creates a wide stereo image by offsetting the left and right stereo channels in time, also knows as Haas effect. Turning the control to the right increases the offset and therefore the perceived stereo width.

- 7. Width: Adjusts the stereo width of the convolution effect from mono to wide stereo. At center position, the original stereo width of the signal is preserved. Turning the control to the left emphasizes mono components in the signal. Turning the control to the right emphasizes stereo components in the signal. Width only has an effect if you are processing stereo signals.
- Swap: Switches the order of the Trash and Convolve modules in the signal path. You can either apply convolution to the distorted signal or distort the signal after the convolution has been applied.

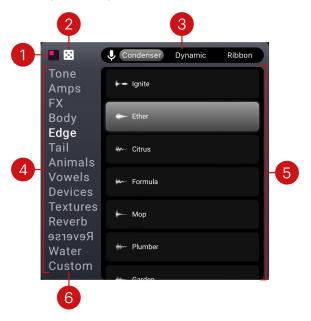
## Impulse response selector

The Impulse Response selector in the Convolve module gives you access to many different Impulse Responses organized into categories based on their sound and origin. Some of the impulse responses in Trash feature the additional Microphone selector that you can use to change the character of the impulse response.

▶ To open the Impulse Response selector, click the name of the impulse response in the respective corner of the XY pad.



The Impulse Response selector consists of the following elements and controls:



- 1. XY pad indicator: Shows the corner of the XY pad in which you are loading the impulse response.
- 2. Randomize: Loads a random impulse response in the respective corner of the XY pad.
- Microphone selector: Switches between three different microphone types used to record the selected impulse response, Condenser, Dynamic, and Ribbon. Each microphone type applies a specific character to the sound of the impulse response. If an impulse response does not support this feature, the Microphone selector is hidden.
- 4. Categories: Switches the list of impulse responses to show all entries available in the selected category.

- 5. Distortion types: Shows the impulse responses of the selected category by name and waveform. Clicking on an entry loads the impulse response in the respective corner of the XY pad.
- 6. Custom: This special category lets you import your own impulse responses from the file system. For more information, refer to Importing custom impulse responses.

### Importing custom impulse responses

The Impulse Response selector in the Convolve module lets you import impulse responses to customize your sound. Each instance of the Trash plugin can load a single audio file in the Custom category.

You can import mono and stereo audio files with a maximum length of 1 second at any sample rate. Trash resamples the audio file at the project sample rate. The following file formats are supported:

- Waveform Audio File Format (.wav)
- Audio Interchange File Format (.aif)
- MPEG-1 Audio Layer III (.mp3)
- Advanced Audio Coding codec (.m4a)
- Free Lossless Audio Codec (.flac)



You can also try importing all kinds of different audio files and experiment with them in the Convolve module.

1. Click on the name of the impulse response to open the Impulse Response selector.



2. Select the Custom category.



3. Click the + icon in the empty custom impulse response entry.



4. Select an audio file containing an impulse response on your file system and click Open to import.



→ The custom impulse response is loaded and available in the **Custom** category of the Impulse Response selector.



# 8. Envelope

The Envelope adds movement to the distortion sound by modulating key controls with an envelope follower that tracks the input signal. You can change the envelope follower's response to the level contour of the input signal by adjusting the Attack and Release times. The resulting modulation can be applied to the following modulation targets:

- **Drive** in the Trash module
- The XY pad in the Trash module
- **Frequency** in the Filter

The Envelope contains the following controls:



- Modulation: Adjusts the global modulation amount applied to all three modulation targets, Trash module Drive ,Trash module XY pad, and Filter Frequency. At zero position, there is no modulation. Moving the slider up modulation increases for all modulation targets, relative to the value of their dedicated modulation amount controls.
- Attack: Adjusts the attack time, which is the time it takes the envelope follower to respond to rising input levels.
- Release: Adjusts the release time, which is the time it takes the envelope follower to respond to falling input levels.

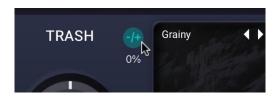
### Assigning modulation to controls

You can define how the Envelope adds movement to your distortion sound by assigning its modulation to Frequency, Drive, and the XY pad in the Trash module. The Modulation amounts and the Modulation node in the XY pad let you not only route the modulation to the controls, but also set the strength of the modulation applied to them.

### Assigning modulation to Drive and Frequency

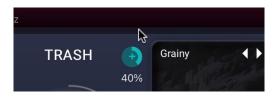
To assign modulation from the Envelope to the Trash module's Drive control and the Filter's Frequency control:

1. Click and hold the Modulation amount (-/+).





2. Drag the Modulation amount up and down to adjust the strength of the modulation applied to the control.





3. Click and drag the Envelope's **Modulation** control up and down to adjust the global modulation amount. When set to 0%, no modulation is applied even if the individual Modulation amounts have been set.



→ The controls are modulated by the Envelope according to the individual Modulation amounts and the global **Modulation** control.

### Assigning modulation to the Trash XY pad

To assign modulation from the Envelope to the Trash module's XY pad:

1. Click the Modulation node button to activate the Modulation node in the XY pad.



2. Click and drag the Modulation node in the XY pad to set the path for the modulation. The Envelope modulation will travel along this path and create automatic blends between the loaded Distortion types.





→ The XY pad is modulated by the Envelope according to the position of the Modulation node and the global **Modulation** control.

# 9. Filter

The Filter lets you further sculpt the sound you have created using the Trash and Convolve modules. You can use this resonant low-pass filter to tame high frequencies with the **Frequency** control, create wild sounds by adding resonance with the **Scream** control, or add texture by turning up the **Heat** control.

The Filter contains the following controls:



- **Frequency**: Adjusts the cutoff frequency of the low-pass filter. Frequency content above the cutoff frequency is attenuated. Moving the slider from top to bottom changes the sound from bright to dark.
- Scream: Adjusts the resonance amount of the low-pass filter. Moving the slider up boosts frequency content around the cutoff frequency. At higher values the filter goes into selfoscillation.
- **Heat**: Adjusts the input gain, enabling you to drive the filter into saturation and add another layer of distortion to the sound.
- **Modulation amount (-/+)**: Adjusts the strength of the modulation applied from the Envelope to the Frequency control. For more information, refer to Assigning modulation to controls.

# 10. Input and output

The input and output controls let you manage your levels. Using the intelligent Auto Gain function and the Limiter, Trash will assist you in keeping the output level in check so you can focus on creating your sounds. Additionally, you can choose to activate Oversample for the best possible audio quality.

The input and output controls are as follows:



- **In Gain**: Adjusts the input level of the plugin.
- Auto Gain: Activates or deactivates the Auto Gain function that compensates for changes of the signal level in the plugin. When activated, Trash automatically adjusts the output gain to match the loudness of the input signal as closely as possible.
- Limiter: Activates or deactivates the Limiter. When activated, the limiter reduces peaks in the signal and prevents it from clipping.
- Oversample: Activates oversampling for improved signal processing quality. Activating oversampling increases the plugin's CPU load.
- Out Gain: Adjusts the output level of the plugin.

## 11. Header

The Header gives you access to presets, global **Bypass** and **Mix**, as well as the Options window.

The Header contains the following menus and controls:

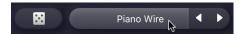


- **1. Random preset**: Loads a random preset from the Preset selector, giving you quick access to new and inspiring sounds.
- 2. **Preset selector**: Shows the name of the current preset. Clicking the name opens the drop-down menu that lets you browse and manage presets. By clicking on the left and right arrows you can load the previous or next preset in the list, respectively. For more information, refer to Presets.
- **3. Bypass**: Bypasses the plugin completely by routing the input signal directly to the output.
- **4. Mix**: Blends between the input signal and the output signal of the plugin, enabling you to control the global effect amount.
- **5. Options**: Opens the Options window that shows the software version and gives access to options including tooltips and usage data, as well as your license. For more information, refer to Options.

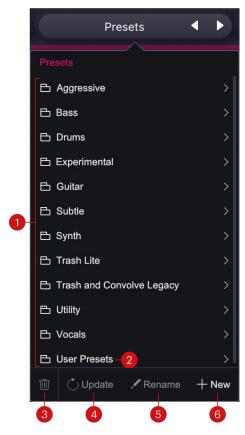
### **Presets**

Shows the name of the current preset. Clicking the name opens the drop-down menu that lets you browse and manage presets. By clicking on the left and right arrows you can load the previous or next preset in the list, respectively.

▶ To open the Presets selector, click the preset name in the Header.



The Presets selector consists of the following elements and controls:



- 1. **Preset list**: Shows all presets, sorted by category. Clicking a category shows the presets in this category. Clicking a preset loads all of its settings.
- **2. User Presets**: Shows all user presets. User presets are saved in the following user preset folders.
  - macOS: /Users/<user name>/Documents/iZotope/Trash/Presets
  - Windows: User\<user name>\Documents\iZotope\Trash\Presets
- **3. Delete**: Deletes the selected user preset. If a factory preset is selected, this function is not available and grayed out.
- **4. Update**: Saves any changes you have made to the selected user preset. If a factory preset is selected, or the preset's settings have not been changed, this function is not available and grayed out.
- **5. Rename**: Renames the selected user preset. If a factory preset is selected, this function is not available and grayed out.
- **6. New**: Saves a new user preset in the user preset folder.

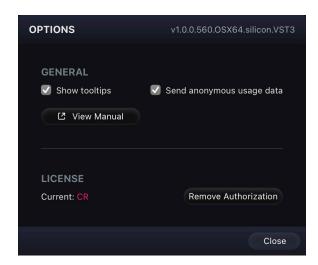
## **Options**

The Options window lets you check the plugin's software version and gives you access to options including tooltips and usage data, as well as your license.

➤ To open the Options window, click the Options button (cog wheel icon) in the Header.



The following options are available:



#### General:

- **Show tooltips**: Activates or deactivates the tooltips in the user interface. When activated, hovering over a control shows a brief description of its functionality.
- **Send anonymous usage data**: Activates or deactivates anonymous usage data tracking. When activated, this information helps us improve the software.
- View Manual: Opens the Trash online manual in your web browser.

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#### base64

v0.4.0

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Version 2.10.15

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base64.cpp and base64.h

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René Nyffenegger rene.nyffenegger@adp-gmbh.ch

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\*\*\*\*\*\* UTF8 Validation logic (utf8\_validation.hpp) \*\*\*\*\*\*

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libFLAC and libFLAC++

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Mesa 3-D graphics library Version: 7.0

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v3.10.4

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• DARIO ANDREA UNIVERSITY OF PISA, ITALY E-MAIL: bini@dm.unipi.it

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SOFTWARE REVISION DATE:

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SOFTWARE LANGUAGE:

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### OGG / Vorbis

libogg and libvorbis

Version 1.3.2

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Version 1.9.1

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#### xsimd

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### Yoga

Version 1.9.0

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#### zlib

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Jean-loup Gailly jloup@gzip.org

Mark Adler madler@alumni.caltech.edu