

PFClean 2.1 Tutorial

Effects Stack Overview



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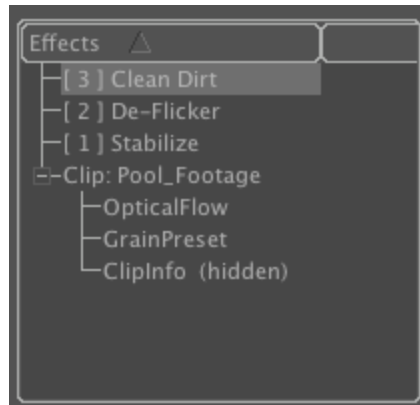
Introduction

The "effects stack" is the name given to any of the series of operations that can be applied to a clip. A clip's effects stack is shown in two places:

1. In the clip summary overlay in the main player window:



2. In the clip overview panel accessed by the "Clip" button in the "Edit" tool:



As new effects are added, and old ones deleted, both of these lists are updated to show the current state of the effects stack. In the above screenshots, and throughout this tutorial, the "pool" footage is used. The footage requires 3 cleanup operation on it as described in its own tutorial - first it needs to be stabilised, then deflickered and finally the dirt cleaned up.

The effect stack is read from bottom to top and the effects it contains are applied in that order.

Download Footage

This tutorial requires you to download and uncompress the following footage to an easily accessible storage location: http://www.thepixelfarm.co.uk/Footage/Pool2_Footage.zip and http://www.thepixelfarm.co.uk/Footage/Pool_Footage.zip

Setting up footage

Load both clips into PFClean by dragging the folders into the media bins from the file browser.

The effect stack in the player window

The effect stack in the player window shows the currently active effect in yellow, effects which need recalculating in red, temporarily disabled effects with the word ("disabled") appended to them, and effects above the currently active as grey.



(Note that an Blur node has been arbitrarily added just to have enough effects present in the stack to show the full range of colours - it plays no part in the cleanup of the clip).

The player window always shows the results of applying the effects stack up to and including the currently active effect.

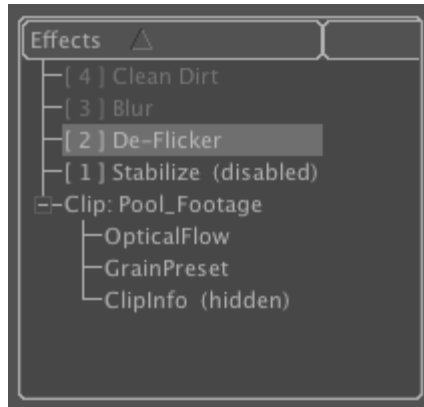
Also in this panel is shown the current available motion and active masks. While both of these are fully explained elsewhere, the available motion is worth briefly mentioning here. This item shows whether there is motion analysis data available for use by the currently active effect should it require it (effects such as Dirt/Dust requires motion analysis, and so does Deflicker and many other). If motion analysis has already been calculated for an effect lower down in the stack, then the results of this can be used higher up in the stack. So, in the above screenshot the Dirt effect can re-use the motion analysis data calculated as part of the Deflicker effect. If the Deflicker effect was not present, the Dirt effect would have to calculate its own motion analysis data (a potentially time consuming process)

You can change the currently active effect using the cursor up and cursor down keys to move between the effects in the stack. Note that you can move below the first effect in the stack so that the base clip is active, ie the original clip is shown without any effects applied.

As you move through the effects stack the tools area updates to show the controls specific to the active effect.

The effect stack in the clip overview panel

The effect stack in the clip overview panel shows the currently active effect as being highlighted, temporarily disabled effects with the word ("disabled") appended to them, and effects above the currently active one as being grayed out.



Click on an effect to make that the currently active effect.

The items below the "Clip" entry in the effects stack list represent "global" settings for the clip which are applicable to all effects in the stack, such as linear/logarithmic colour space; deinterlacing parameters; grain settings etc... These items in the list can't be directly selected.

Rendering an effect

If the effects stack becomes large, then playback of the clip may slow to unacceptable levels. PFClean has to apply the result of each item in the effects stack in turn to achieve the final image. For some effects this can be a relatively slow process, but even for quicker effects performance will inevitably suffer as the effects stack grows.

The user has two complementary options to alleviate this problem: memory based caching and disk based caching.

A memory based cache is used to keep recently accessed frames in memory thus speeding up responsiveness. The use of the memory cache is controlled via the "Options" pull down menu and is OFF by default. The size of the memory cache is controlled in the "Preferences" window and defaults to a quarter of physical memory. The two green lines in the scrub bar indicate if a frame is currently in the cache. The top green line shows if the results from the currently active effect are cached, the bottom slightly darker green line shows if the results of the effect immediately below the currently active effect are cached. The benefit of caching a frame at different levels in the effects stack is that this speeds up responsiveness when the parameters of the currently active effect are changed; the downside is that it requires more memory.

However, a memory cache alone will not be sufficient to deal with long duration clips. For such clips a disk cache must be used. The user has the option to "render out" to disk the results of the currently active item in the effects stack, and/or the top-most item in the effects stack, ie the final result. Select which you want with the "Current" and "Final" buttons and press "Render" to start caching frames to disk.

The disk cache is created in a sub-directory of the project directory. The project directory should always be located on a large, fast disk. In order to manage the disk space required for these renders the Media Bins place 2 indicators above each clip which show if they have a "scratch" and/or final render ("scratch" being any intermediate, non-final render). The presence of a scratch render on a clip is shown as a small red square above the clip, and a final render as a green square. The Media Bins "CSR" and "CFR" buttons (Clear Scratch Render and Clear Final Render) can be used to delete the relevant disk cache of clips highlighted in the Media Bins. Note that the clips must not be in use in any tool.

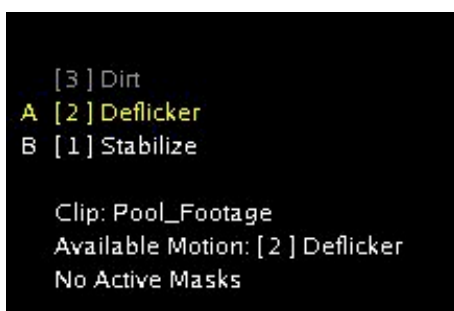
The effect stack and the A/B split

An A/B split can be used to simultaneously view the output of two different items in the effects stack. Press the "A/B" split to show, on the "A" side of the split, the result of the currently active effect and, on the "B" side of the split, the base clip, ie with no effects rendered.



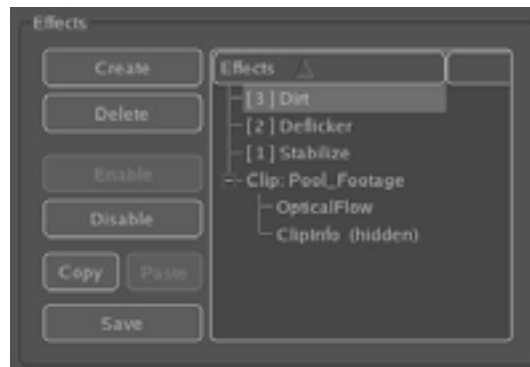
The A/B split can be rotated by dragging the red line with the shift-middle mouse button held; and translated by dragging the red box with the same keyboard/mouse combination.

Pressing the cursor up and cursor down keys allows you choose which effect's output is shown in the "B" side of the split. The effect stack overlay in the player window shows which effect is being shown on the "A" and "B" side of the split:



Managing the effect stack

The effects stack is managed by the "Effects" control in the clip overview panel:



The "Create" button adds a new effect immediately above the currently active effect. The "Delete" button removes the currently active effect. "Enable" and "Disable" allow you to temporarily ignore the currently active effect.

The "Copy", "Paste" and "Save" buttons are described in the next section.

Effect stack transfer

An entire effects stack can be copied from one clip and applied to any number of other clips. This is useful if you have a number of clips that all require basically the same cleanup operations applied to them, typically because they originated from a common source.

In our "pool" sequence we have created an effects stack, configuring each effects' parameters, to cleanup the clip. Now import the "pool2" clip which is taken from the same source as the "pool" clip and so requires the same cleanup operations applied to it.

Select the "pool" clip for editing, press the "Copy" button, now select the "pool2" clip for editing and press the "Paste" button. You should now see that the effects stack has been copied onto the "pool2" clip.



Note that the Dirt effect is marked as being "(empty)". This is because only the Dirt effect parameters have been transferred not the actual items of dirt themselves since these are obviously clip dependent.

The effects stack that has been transferred is a completely independent copy and therefore modifying either the original or newly created effects stack will not affect the other. The transferring effects stack overwrites any existing effects stack present on the clip you are transferring to.

In this tutorial the effect stack that has been transferred is completely suitable for use on the new clip without further modification. This is rarely the case in general. The effect stack transfer is designed to act as a starting point from which the user can adjust the effect parameters, masks, add/remove effects etc... in order to cleanup the new clip.

When an effects stack is transferred to a new clip the entire effect stack has to be recalculated on the image data of the new clip. This is not done automatically since it is a time consuming process which will ultimately be wasted if the user needs to tweak the stack which is usually the case.

The simplest way to recalculate the entire effects stack to do a "Final Render" as described the "Rendering an effect" section above.



It is important to recognise the limitations of copying an effects stack from one clip and applying it to another, particularly when the clips may well differ in duration and possibly resolution. Every effort is made to transfer as much information as possible but it is up to the user to verify that the data transferred is still applicable to the new clip. For example, a mask may or may not be relevant to the new clip depending on whether its masking some image feature unique to the original clip or whether its masking some common feature between clips such as film perforation holes. This is invariably a user decision.

It is also possible to copy and paste effects stacks from the Media Bins. Select the clip you wish to copy from, press Control-C, select the clip you wish to paste to and press Control-V. Note that the clip being pasted to must not be in use by any tool and that you can only currently paste to a single clip at a time.

There is a second, less flexible way, of transferring effects stacks between clips. The "Save" button can be used to give a name to the current state of the effects stack. Then, in the Batch panel, this effect stack can be selected to be applied to a list of clips. This method is considerably less flexible than the copy-paste method described above because no time or position information must be present in the effects stack - the stack must just contain effects which have clip-independent parameters. This method does offer some advantages over the copy-paste method such as having the effects stack automatically recalculated on the new clip and the possibility of applying the effect stack in addition to any already present. However, that said it has generally been superseded by the copy-paste method.