HAPPY LITTLE
PAINT SHADER

www.blackstar-solutions.de

General Information

Copyright and Disclaimer

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Licence

A single licence for this product is limited to a unique Cinema 4D licence and a single computer. The Plugin must not be transferred beyond these restrictions.

Installation

Installing BlackStar's Happy Little Paint Shader is similar to embedding any other Cinema 4D Plugin:

- Extract the Zip-File you received to your Cinema 4D "plugins"-folder

- On the first start-up of Cinema 4D you will be asked to enter your licence key for the Paint Shader

To purchase Happy Little Paint Shader visit http://www.blackstar-solutions.de

Supported Platforms and Cinema 4D Versions

The Plugin is currently available for the operating systems Microsoft Windows® and Mac OS X both 32 Bit and 64 Bit. Supported Cinema 4D Versions are 11.0 and above.

Support and Contact

For support and information beyond this manual please contact us via our support board: http://www.at2-software.com/board/ (no registration needed).

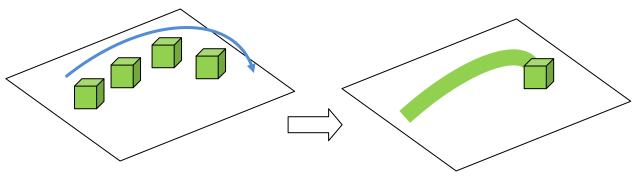For any sales issues please contact us at: blackstar@blackstar-solutions.de

⚠ **Important:**
Concerning support requests please be sure always to add information about your operating system, your Cinema 4D version and your Paint Shader version if available. You can find your Plugin version in the supplied text file "version_info.txt".

Introduction and overview

The Happy Little Paint Shader basically "remembers" some objects' position history over time and exposes it for rendering. Thus it can easily be used to create things like wet maps or do fancy painting work within animations. Other applications may be drawing foot steps on a surface, sand or snow.

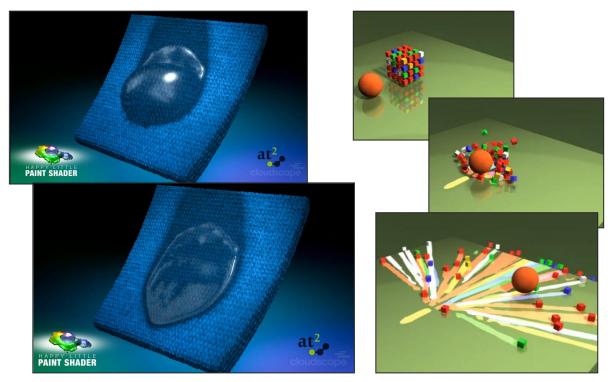A simple sketch of the basic idea would be as such:

Green objects moving in contact with a plane.

The Shader of the plane "paints" by using the position history of the animated object.

The key features are:

- Create wet maps in Cinema 4D easily
- Use the objects position history to make it paint on a surface
- Effects like "Fade-Out" and "Dilate" allows for realistic advanced wet paint look
- Pre-Bake the Painting-information to render single frames with correct history
- Comes with an own Proximal Centauri Shader which is faster and more convenient than the native one when it comes to Painting
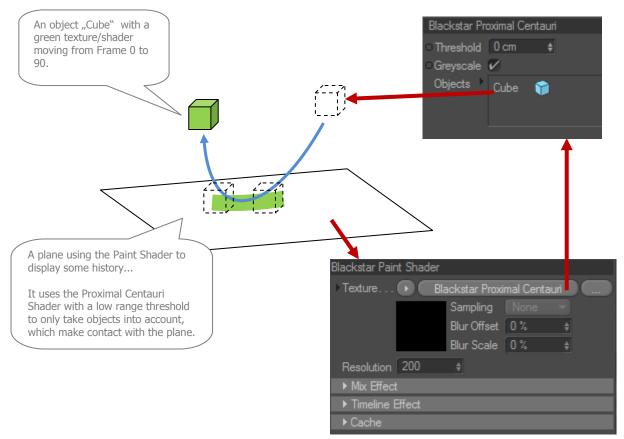
Some render results done with the Paint Shader:

Using the Happy Little Paint Shader

The general usage of the Paint Shader is similar to every other Shader in MAXON Cinema 4D. In the "Texture"'s property of a channel, select "Paint Shader".

The Paint Shader alone can be understood as a "History Shader" – it's main input is another shader and it "re-displays" its output from past frames. You can e.g. show in the current frame 42 of your animation just what the given input shader showed in frame 17.
Using the included Proximal Centauri Shader as input shader, a toolset for creating wet maps and alike emerges. Proximal Centauri is a shader which returns the color of a nearby object within a given range to the object it is applied to. Thus combining it with Paint Shader you can display e.g. the movement of an object over a surface in time:

An object „Cube" with a green texture/shader moving from Frame 0 to 90.

A plane using the Paint Shader to display some history...

It uses the Proximal Centauri Shader with a low range threshold to only take objects into account, which make contact with the plane.

Resolution:

Significant for the quality of the "projection" of the Cube onto the Plane is the Resolution which can be altered in the main Paint Shader stettings. It can be understood as the number of samples per Mesh being squared: a value of 200 means 200x200 = 40,000 samples.
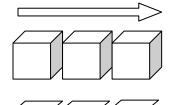
Additional intermediate frames for a smoother sampling rate can be specified during baking (see below).

Mix Effect

A question naturally arising is, what to do with overlapping positions from one frame to another:

Time

Position at different Frames

Projection on plane

Non-Overlapping animation

Higher framerates or usage of Subframes results in overlapping history images for the Paint Shader

How this situation of overlapping color values is being handled, can be adjusted in the Mix Effect section. Available settings are:

Effect – Maximum Value:
The color value with the highest color value of each of the overlapping images will be the result of the Paint Shader.

Per Component:
When activated, "Maximum Value" gets evaluated for color components separately, i.e. Paint Shader will then expose a new color value consisting of the maximum values for red, green and blue of all overlapping values separately. Otherwise the overall color value (which is the sum, its brightness) would be the chosen one.

Effect – Add:
Overlapping values will be added. If there are many overlapping images, this can go to complete white quickly. Scaling can reduce this:

Scaling:
A scaling factor to reduce the accumulation value for the "Add" Effect.

Timeline Effect

This effect can be used to control how the "Paint" behaves over time. "No Effect" simply means that once Paint Shader outputs its color, it will not change in the future (true permanent paint). Real surfaces often absorb paint or water though so that it will spread out (=Dilate) over time and/or will dry and fade away (=Fade Out). You can control those in two modes:

Effect - Fade out and Dilate:

Frames:
Determines how much frames it should take from the beginning of the Fade out / Dilate Effect until its completion.

Fade Out and Dilate Graphs:
With the Graph views you can draw the curve of how the Fade-Out and Dilation should progress over time. The default is a linear Fade-Out from full opacity to zero opacity to generate a linear "dry" of e.g. a liquid. For the dilation the default is a linear progress from zero to full spreading-out to e.g. simulate the absorbtion of a liquid by some cloth.

Effect - Fast Fade-Out Dilate:
If you don't like Graphs, this option gives a quick setting for color Fade Out and Dilation. Just specify factor of each effect to control the amount of them:

Dilate Factor: a value between 1 and 0 specifing the dilation strength.

Fadeout Factor: 0 will result in no Fade Out, a positive value will enable Fade Out where the number will increase the strength exponentially, negative values will do the opposite, i.e. instead of a Fade Out it will _increase_ the intensity.

Baking / Caching

To generate reasonable results, the Happy Little Paint Shader of course needs to know the animation progress of a given object. Thus without any Caching it could only render fine a whole sequence.
To be able to render Single Frames anyways, select "Pre-Bake Cache" and Paint Shader will bake all relevant animation data in the framerange given by the render settings.

With "Use Cached Effects" and "Use Cached Samples" you can turn the usage of baked information on and off separately for effects and pure image data.

Before the Bake-Process starts, you are asked to enter optional Subframes for interpolation. A higher number will result in a smoother sampling rate by adding intermediate frames to the animation. On the back side this of course also increases the baking time.
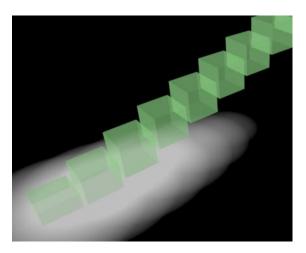
The Proximal Centauri Shader

Happy Little Paint Shader comes with a helper Shader, the Proximal Centauri Shader. It can be accessed in the Paint Shader submenu as seen on the right.
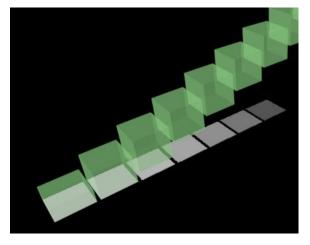
As you can guess from its name, it achieves something related to the common Proximal Shader in Cinema 4D but differs from it in some critical aspects which are interesting especially in combination with Paint Shader but also for itself.

Whereas standard C4D's Proximal Shader displays the distance to either the Vertices, the Edges or the Polygons of an object, it does not yield the actual distance from an object as a

volume body. Proximal Centauri determines exactly that, always in the direction of the surface normal:
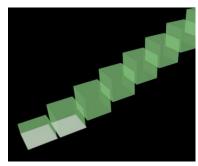

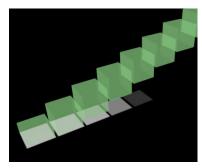Standard C4D Proximal Shader   Blackstar Proximal Centauri Shader

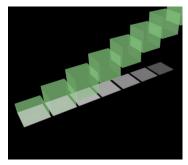It comes with the following settings:

Threshold:
The maximal distance for an object still to "be seen" by the Proximal Centauri Shader. By adjusting this value you can specify whether only objects really intersecting or having contact with your shaded object should generate an output (which is reasonable when used in combination with Paint Shader since real contact is needed for painting) or how far away they can be.
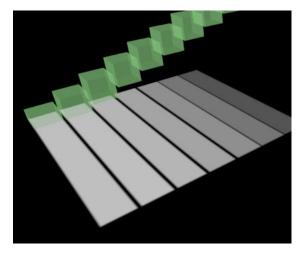

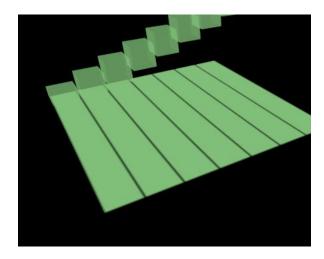Threshold value of 5cm   Threshold 50cm   Threshold 100cm

Greyscale:
Using "Greyscale" you can switch between the two modes of the Proximal Centauri Shader. If activated, it results in a greyscale "distance map" with linear falloff to the given objects, similar to C4D's Proximal. An intersection will result in complete whiteness.
If deactivated, it returns the color of the given object, regardless of it's distance if it's visible for the current threshold level.
"Greyscale" is deactivated by default as this is the best fitting behavior in combination for the Paint Shader.

Greyscale ON   Greyscale OFF

Objects:
This list of objects which will be considered by the Proximal Centauri Shader. If none is given there, it will take ALL objects into account (except for the current object the shader is applied to, of course).