



HyperMan : Seamless integration of Maya® & RenderMan®

HyperMan User Documentation

System Requirements

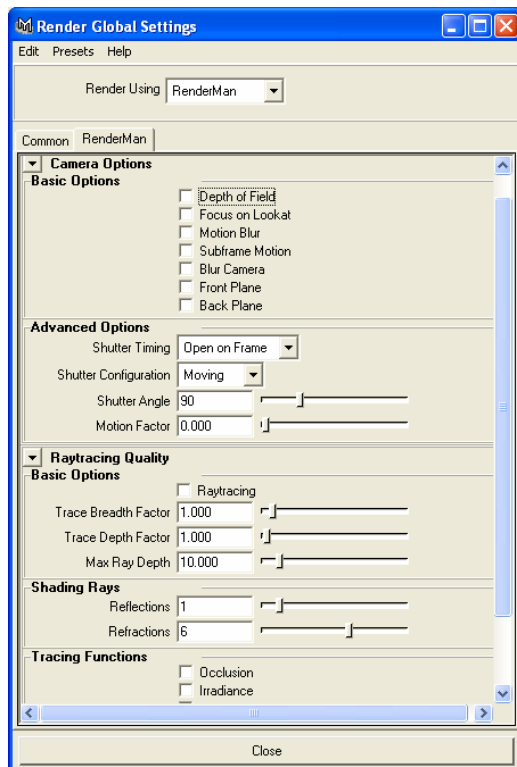
- Available for Windows (Linux still in Beta)
- Maya 6.0 (untested on previous versions)
- RAT 6.0 & PRMan v.11.5 and above (untested on previous versions)

Installation

Simply copy the entire folder “HyperMan” To your Maya scripts directory.

Quick Start Guide/ Tutorial

- After loading Maya and the MTOR plugin, simply select “RenderMan” from the render globals tab and press render



Render Globals Panel

Following is an explanation to each setting in the render globals tab for HyperMan.

Common Tab

Image file output

File Name Prefix - This is the filename setting, if not name is present “untitled” is used.

Frame/Animation Extension

Choices are “name,” this is for a single frame render and no extension is used. “name.ext” is the default setting that will take the file format that the user has specified and output it as the listed format. “name.#.ext” is for use in animation

Image Format

The image format controls the destination of final output pixels. In other words, this determines whether an image file will appear on disk and the type of format of that file, or whether the image will be displayed on the screen after rendering. You may choose among different image file disk formats such as TIFF, Kodak Cineon, and Maya IFF, as well as the interactive image tool *it* (for screen display).

Camera

Simply select from the list of cameras to render from that viewpoint.

Nb. if you find you can't render from a camera please check if the renderable flag in the Maya camera settings.

Image Channels

You can set RGB, RGBA, or Z to produce the respective channels as an image.

Resolution

The resolution of the output image in pixels. If you set these fields to 0, MTOR will use the size of the current window.

RenderMan Tab

Anti –Aliasing Quality

Each is a preset based on speed quality tradeoffs.

Reyes Settings

Shading Rate

A shading rate of 0.25 will shade ¼ pixel. So a high shading rate is required for optimising renders. Usually 1 will produce production quality images.

Pixel Samples

Aliasing is reduced in the renderer by some form of supersampling. This field gives you control over how many times supersampling is done per pixel in each dimension. A setting of 1 disables the anti-aliasing while 3 samples the geometry 9 times. Again this is a speed quality trade off values from 1- 4 are standard.

Shading Interpolation

This gives enables Gouraud shading, this useful for large shading rates, the smaller the shading rate the less effective this factor is.

Binary Dicing

This helps to reduce the cracks appearing in parametric patches by subdiving them. This is costly, especially when using displacement shaders.

Shadow Bias

This is a global shadow bias setting. This avoids self-shadowing artefacts. I.e. the inaccuracies in the rendering process.

Eyesplits

Eyesplits are a rendering artefact that is caused when geometry is very close to the camera and so we find that the renderer will use large amounts of memory to split the geometry down. The eyesplit field tells the renderer to stop splitting after a limit. A zero value gives the default of 10.

Bucket Size

The larger the bucket size the more efficient the process is however, we also find that for larger buckets we require more memory. Buckets are the amount of pixels that are being considered at one time.

Grid Size

Geometry is split into grids that are sets of micro-polygons that are shaded in parallel. Larger grids require larger buckets.

Motion Factor

The motion factor setting is used with motion blur. Shading detail is lost in motion blur calculations and so by raising the motion factor we raise the shading rate. This is useful in optimising an otherwise slow process.

Quantization

This field allows us to convert 32 bit floating point data into a smaller bit depth such as 8bit or 16bit, some display servers can't handle 32 bit data. The first field is a multiplier of the data whilst the second and third set limits to the range of data outputted.

8 bit images are 255, 0, 255

16 bit images are 65535, 0, 65535

Multi Pixel Filtering

Choices of filter also effect render times and are able to produce a wide variety of looks. A simple box filter is cheaper than sinc, with Catmull-Rom somewhere in the middle. Hard edges can be produces using a sinc filter while a Gaussian filter produces a softer look.

Camera Settings

Depth of Field

Enabling this feature will turn on depth of field calculations. The focus settings are inherited from the rendering camera, Objects out of focus will appear blurred.

Focus on Lookat

This is used to compute depth of field, using Maya's camera setting "Centre of Interest," we can automate the depth of field, for more flexibility use Focus Distance, Focal Length, and F Stop.

Motion Blur

Objects that move generate a blurring effect in their part of movement. Increase the number of pixel samples to produce better results. This is computationally expensive.

Subframe Motion

This is a faster method of calculating motion blur. Object position calculations are only made at frame boundary times, the renderer will then interpolate between the object positions.

Blur Camera

When this feature is on we ask for every viewable object to undergo motion blur calculations. This is very expensive.

Shutter Angle

This is only effective when motion blur is enabled. It controls how long the shutter is open for in a frame. A setting of 360 will open the shutter for the entire frame. The larger the angle the greater the blur and the more expensive it is.

Shutter Timing

This setting is only effective when motion blur is turned on. The open on frame setting causes the shutter to be open from *frame to frame + angle*. If you choose Centre on Frame, the shutter will be open from *frame - shutterAngle/2 to frame + shutterAngle/2*.

Shutter Config

Shaders that use the standard RI "time" variable can be adapted using this field.

Front Plane & Back plane

These settings will insert an additional piece of geometry in front or behind the near or far clipping planes.

Ray Tracing

Turn this on to make each object visible to the ray tracing subsystem.

Trace Breadth Factor

This multiplies the entire ray tracing sampling operations. Larger values means more rays are cast which mean that

renders slow down. Small values increase rendering times.

Trace Depth Factor

This is a global multiplier for all multi-sampling ray tracing operations that varies the requested ray sample count according to the current ray depth. Lower values result in a coarser result. Higher values produce slow rendering times.

Max Ray Depth

This sets a limit to the number of bounces a ray can travel regardless of its type.

Acceleration

Maps

Using this setting we can either allow maps to be computed and used or completely ignore them.

Lazy Compute

Using the Maps option we can re-use existing maps or off allows us to re-compute a map on a per frame basis.

Selected Objects Only

Only currently selected objects will be rendered.

Selected Lights

Only currently selected lights are used in the lighting calculations.

Select by Set

An option to allow a Maya selection set to determine the current selection. Enter the name of the set in this field. This only works with selected lights or objects on.

Zealous Caching

We can use this to cache the entire scene when using selected objects only. For fastest results, you should disable zealous caching. In certain cases, selected objects can require the presence of non-selected objects in the ribgen cache. Only in these cases should you enable zealous caching.

Crop Window

Enabling this feature will only allow a subrectangle to rendered. The range of co-ordinates goes from zero to one.

Render Layer/Pass Options

Passes

Each pass has a check box associated with it. Click on these for your desired pass. Using RenderMan's arbitrary output variable we can output various parameters. The built-in passes are diffuse, specular, reflection, shadow, and occlusion. There are also several presets available. We also allow the use of custom shaders. To use this feature create a MEL string array in the following format.

string \$(arrayname)[] = "path to shader"

Each element has to hold an absolute path to the shader. The array name is entered into the Shader Name field. The user must also create another string array in the same format that holds a list of corresponding selection sets. E.g.

```
String $shadername[];
```

```
$shadername[0] = "myNewShader.slo";
```

```
string $setname[];
```

```
$setname [0] = "NewShaderObjects";
```

Type

Similar to the primary display

Display Server

Similar to primary display

Pixel Filter

Similar to multi – pixel-filtering type

Filter Width

Similar to pixel filtering

Quantization

As with primary display

Ray Tracing

The HyperMan system includes many preset features in order to make advanced features easy and simple to use.

Occlusion

This is an accurate representation of ambient light in the real world. Light is emitted from each surface point and bounces around collecting a greyscale colour as it goes.

Irradiance

Irradiance uses a similar method of occlusion to calculate the environment's lighting. It is often used to produce colour-bleeding effects.

Image Based Illumination

To use this feature enter a filename (.tx) in the Illuminating Image field. This image is then used as an environment map to add to the scene's lighting focal point.

Global Illumination

Currently Unsupported.

Caching Data

The previous functions are computationally expensive. To solve this problem we allow data to be stored into a file, which is then used, later in the rendering process. This is called caching. To write to a cache file set the (function) cache to 1, to read from the cache set it to 2. Always make that a filename is provided for the cache. Setting the cache mode to will calculate the function on every frame.

Troubleshooting

Please refer to the technical documentation for the trouble-shooting guide.