PxrOcclusion



Using the PxrOcclusion Integrator. Scene courtesy of Christina Faraj, Mike Altman, and Rosie Cole.

PxrOcclusion is a non-photorealistic integrator that can be used to render ambient occlusion, among other effects.

When rendering with physical based integrators it's important to note that occlusion is naturally part of the lighting calculation. This is an effect of indirect or "ambient" light being reflected away or darkened in corners, crevices, cracks, and more. However, in final images it might be desirable to add more of this affect for art direction. You can use this to "knock back" or "deepen" details in your image artificially. This pass is typically applied as an image multiplication or "mult" in a compositing application.

⚠ Diffuse and specular ray depth have no effect for this integrator.

Sample Distribution

Different samples distributions can be used to create different occlusion effects.

Distribution Uniform
Distribution Cosine
Distribution Reflection

	Description
Uniform	Rays are not weighted in any particular direction in the hemisphere above the shading point.
Cosine	Cosine distribution is a commonly used to render ambient occlusion.
Reflection	Generate samples based on the the reflection lobe of the assigned material. Materials with only a diffuse BRDF will have a result similar to the **cosine** setting above.

Cosine Spread

Sample spread of rays when using cosine distribution. A value of 1.0 gives a perfect Lambertian distribution.

Cosine Spread = 0.5
Cosine Spread = 1.0
Cosine Spread = 2.0

Max Distance

As each point is shaded, rays reach into the scene to strike nearby objects. In some cases, like an interior, this may produce a dark or black result. You can reduce that distance using this control. Note this is measured in scene units. The default is 0 or infinite.

Max Distance = 0.0 (infinite)
Max Distance = 10.0
Max Distance = 100.0

Falloff

Falloff can be used to control the softness of the occlusion effect.

Without **Max Distance**, falloff is calculated as an exponential falloff. Values are scene dependent with larger values creating a softer look.

Falloff = 0.0 (no falloff)
Falloff = 0.001
Falloff = 0.01

When combined with **Max Distance**, falloff is calculated as a normalized power function.

Falloff = 0.5
Falloff = 2.0

Use Albedo

When on, this setting applies the diffuse color to the resulting image. This may be a simple color or pattern attached to the material.

Use Albedo Enabled

Num Samples

This option generates fixed samples at each shaded point. More samples may help resolve noise in fewer camera samples, but may reduce performance at higher numbers.

Num Samples = 1
Num Samples = 16