Getting Started with iray in 3ds Max 2014

Iray is an intuitive, interactive, physically based, progressive, path tracing 3D renderer

Iray balances ease of use and interactivity with high quality photorealistic rendering....
iray 3 in 3ds Max 2014

Start Fresh!

Start thinking like a *photographer* with a new digital camera !!!

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iray 3 in 3ds Max 2014

Starting Fresh?
1. Open 3dsMAX 2014, open Render Setup, Assign Renderer, choose “Nvidia Iray”
2. Choose Iray for Production and ActiveShade.
3. Choose Mental Ray for Material Editor
4. If you have GPUs you can choose Iray for Material Editor
5. Start thinking like a photographer with a new digital camera !!!

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Starting Fresh?
- Only the shaders compatible with Iray appear in the Material Editor.
- Use the MIA shader (Arch & Design) for most things.
- Autodesk Materials will work but are not as well optimized

OR

Converting an old scene to Iray?
1. Convert materials to Iray compatible shaders - MIA Arch & Design
2. Replace Standard lights with Photometric lights
3. Add MR Physical Exposure (tone mapper) control to environment

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Arch & Design Materials - the MIA shader

Don’t Confuse with Autodesk “Architectural” materials !!

Choose a template to get started

- Pull-down above red “arch & design” banner
- Appearance
  - Matte, Pearl, Glossy.
- Finishes
  - Wood, Concrete, Plastic, Rubber, Leather, Ceramic, etc.
- Transparent Materials
  - Glass, Plastic, Frosted Glass, etc.
- Metals
  - Chrome, Copper, brushed metal, etc.

Convert material to Arch & Design

1. Select material in the Material/Map browser
2. In Compact editor select button to the right of the name
3. In Slate Editor create a new A&D material
4. Plug maps from old material into it
   1. For “Transparency” mapping use “Cutout” channel!
   2. Noise and procedural maps not yet supported.

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iray 3 in 3ds Max 2014 - Convert materials

Switch to MIA using this button. MIA Material has the red flag.

MIA has “Cutout” channel for “Opacity”
A & D Material - MIA shader features

MIA is a physically based BRDF material shader

Available controls and channels

- **Diffuse**: this is the base color of the object
  - Roughness gives a more powdery look beyond lambert
- **Reflection**: controls color and fuzziness of reflected light
  - Glossiness of 1.0 means “shiny” specular
  - Glossy Sample controls quality
- **Refraction**: controls transparency
  - IOR
  - Glossy
  - Translucency
- **Anisotropy**: controls eccentricity of highlights for brushed metal type effects
- **BRDF**: controls reflectivity by angle of the surface
  - Fresnel for most things like glass
  - Custom for some real-world materials
- **Self-illumination**: controls light emitting materials, similar to light controls

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Lighting - Environment Maps

Environment Map Lighting
1. Drag and drop an HDR image to a viewport background
2. Add an ‘MR Physical Exposure Control’
3. Material Editor -> Map node -> Output and boost “Output Amount”

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Lighting - Sky

Physical Sky and Physical Sun

1. Create a Daylight system, answer “yes” to add ‘MR Photographic Exposure Control’
2. Daylight Parameters, select MR Sun and MR Sky, answer “yes” to connect ‘MR Physical Sky’
3. Change time of day with “Setup” dialogue

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Lighting - Environments and Lights

Photometric Lights
1. Choose Photometric from pull-down, create spot or target
2. Choose a template or select an IES file from Light Distribution Type -> Photometric Web
3. Illuminating Engineering society: www.ies.org
4. Download IES files for light bulbs, LEDs, light luminaires, etc. from manufacturers

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Lighting - Environments and Lights

Self illumination
- Controls are similar to a Photometric Light

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Render Settings

Iray has settings for quality and performance

Time or Iterations (or forever.....)
1. Fixed time per frame : use for test animations
2. Number of iterations : use to ensure a known quality

Hardware Resources
1. CPU cores (turn them to zero for best interactivity)
2. GPU (CUDA devices) : assign them all for render speed
3. GPU (CUDA devices) : reserve the Windows one for interactivity

Advanced Parameters
1. Physically correct : Unlimited bounces
2. Trace/Bounce limits : speed up complicated scenes
3. Displacement, Motion Blur

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New Shader Features for iray 3

Matte/Shadow/Reflection - Combine Iray CG with photography

- Allows objects to render only reflection of objects and environment images
- Allows objects to “catch” shadows while remaining invisible
- Allows roto-ed objects to generate a matte while invisible
- Allows roto-ed objects to render only refraction
- Makes it possible to use Iray rendered elements in a tradition film pipeline
New Sampler Features for iray 3

Iray has new performance features and new shaders

Architectural Sampler
1. Employs Metropolis Sampling
2. Makes interiors and dark scenes converge faster. Useful for:
   1. Interior scenes lit by exterior light through small windows
   2. Light passing through Translucent or Glossy surfaces
   3. Bright light reflected from Glossy and Specular surfaces
   4. Sub-surface Scattering

Caustic Sampler
3. Adds caustic reflections coming off of specular and glossy surfaces
4. Works well with the Architectural Sampler

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New Sampler Features for Iray 3

Architectural Sampler

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New Sampler Features for Iray 3

Caustic Sampler

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New Shader Features for Iray 3

Iray Layered Material - Three layer physical material for new material effects.....

- Base layer + Metal Flakes layer + Reflective Coating layer
- Comes with a selection of presets for car paints, fabrics, anodized metal, wax, etc.
- Has capabilities of MIA plus:
  - Backscattering
  - Spectral Dispersion (chromatic aberration)
  - Thin Film on each layer
  - Procedural textures - noise

Iray Layered Material - presets

Left: diffuse, Center: red metal flake, Right: white clear coating
Iray Layered Material - presets

Left: car paint, Center: anodized aluminum, Right: silk
Iray Layered Material - diffuse weight

Left: diffuse, Center: 50% diffuse + 50% glossy, Right: glossy
Iray Layered Material - translucence weight

Left: translucency 0, Center: 50% glossy, Right: 100%
Iray Layered Material - Back Scattering

Left: backscatter 0%, Center: 50%, Right: 100%
Iray Layered Material - volume absorption

Left: absorption 0, Center: some, Right: high
Iray Layered Material - SSS (with absorption)

Left: scattering 0, Center: 0.3, Right: 0.99
Iray Layered Material - Spectral Dispersion

Left: enabled, Right: disabled
Iray Layered Material - Thin Film

Left: 300nm+IOR 25, Center: 225nm+IOR2.5, Right: Noise Thickness
Using Iray in Maya 2013

Iray can be run by exporting a Maya scene to a mental ray .mi file and rendering that scene using the iray rendering option.

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Iray in Maya 2013

What is required?

1. Maya 2013
2. mental ray standalone
   1. Look in mental ray Application Specific - Maya forum under sticky post, Python scripts for mental ray advanced production

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Iray in Maya 2013

Use same light, material recommendations as 3ds Max, although the names and terminology slightly different

- Use the mia_material/mia_material_x shader for most things.
  - Don’t use mia_material_x_passes, as it doesn’t translate effectively
- Use physically-based lights with falloff, like mia_photometric
  Or mia_physicsun/sky
- Any environment should work ok for environment lighting, so basic use of Maya IBL is fine

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