Complete features list

Mechanical humming bird by Dave Davidson.

Below is a rather comprehensive list of the technical features and system requirements of Arion 2, the Arion stand-alone, and its plug-ins:

Technology and performance

- Hybrid acceleration (GPU+CPU).
- Optional CUDA-based Multi-GPU sub-core.
- Optional Multi-processor / multi-core / multi-thread CPU sub-core.
- Based on highly optimized and elegantly crafted code.
- CPU SSE/SIMD support.

Spectral unbiased rendering

- Unbiased and accurate physically-based light simulation.
- The renderer explores all light paths, converging to the final image progressively.
- Automatic Full Global Illumination.
- Path tracing core.
- Metropolis Light Transport core.
- Physical atmosphere (sun and sky).
- Image-Based Lighting (HDRI).
- Mesh emitters.
- Automatic camera optics and full motion blur.
- Finite sampling per component.
- BSDF output clamp.

Physical camera simulation

- True optics and reflex camera simulation.
- Focal length.
- Diaphragm aperture (f-stop).
- Shutter speed.
- ISO film.
- Focal distance.
- Film shift.
- Barrel and pincushion lens distortion.
- Panoramic cameras.
- Orthogonal cameras.

Physical materials

- Advanced multi-layered material creation system.
- Opacity mapping.
- Global or mapped roughness.
- Fresnel and falloff controls.
- Colored dielectric absorption.
- Dielectric dispersion (chromatic aberration).
- Bump/Normal mapping.
- Per-map UVW and RGB modifiers.
- Plastic coatings.
- Sub-Surface Scattering.
- Micro-Polygon Displacement Mapping.
- Local exit color.

Micro-Polygon Displacement Mapping

- No warm-up overhead implementation.
- Memory-less render-time implementation.
- Configurable micro-polygon density.
- Waterlevel height (compatible with opacity mapping).
- Configurable mid-point for compatibility with the most popular digital sculpting packages.
- Optimized parallel (2D) displacement for flat surfaces.
- Curved (3D) displacement for generic curved surfaces.

Sub-Surface Scattering

- Physically-based participating media simulation.
- Configurable scattering distribution (supporting forward, isotropic, and backward scattering).
- Configurable media density to simulate a wide range of media, from thin fog to skin or hard rubber.
- Optimized Single-Sheet SSS (S5) for thin surfaces such as curtains or tree leaves.

Physical atmosphere

- Physically-based sun and sky simulation.
- Accurate geo-location and celestial body positioning simulation.
- Customizable sun color temperature
- Customizable sun power intensity
- Customizable sun diameter

Image-Based Lighting

- Easy-to-use and highly efficient IBL support.
- High-Dynamic Range input.
- Image warping (i.e., latitude/longitude, light probes, etc...).
- Background mapping.
- Importance sampling
- HDR Light Studio© support

Mesh emitters

- Support for colored and mapped RGB and Kelvin emitters.
- Efficient render-time spotlights with control over the emission shape.
- Projection maps.
- IES photometric profiles.

Full motion blur

- Automatic efficient 3D motion blur.
- Camera motion blur.
- Object motion blur.
- Global and per-object sub-framing control.
- All features are compatible with motion blur (even emitters, MPDM, and instancing).

Geometry instancing

- No warm-up overhead implementation.
- Memory-less render-time implementation.
- Support for point clouds for particle rendering and object scattering.
- Supported natively by the Arion plug-ins.

Supported image I/O formats

- RGB output (8-bpp or 16-bpp).
- Raw High-Dynamic Range (HDR) formats.
- .jpg, .bmp, .png, .tga, .tif, .hdr, .exr.
- OpenEXR support for multi-channel HDR output.

Interactive tonemapping

- Exposure control.
- Gamma control.
- Real Camera Response tonemapping operators.
- Brightness control.
- Contrast control.
- Saturation control.

Compositing channels

- Unbiased render (Main)
- Background
- Lights
- Direct (default/raw/filter)
- Indirect (default/raw/filter)
- Shadows (default/raw/filter)
- Glossy (default/raw/filter)
- Diffuse (default/raw/filter)
- Refraction (default/raw/filter)
- SSS
- Volumetric
- LightMixer channels (Ambient, sun and 8 custom layers)
- Normals (World and camera space)
- Velocity (World and camera space)
- Material ID (random or custom colors)
- Object ID (random or custom colors)
- Alpha (Opaque or transparent modes)
- Depth
- Roughness
- Fresnel
- Coverage
- Ambient occlusion
- Matte floor

Licensing system

- Floating file-based (.lic) software licensing.
- The .lic file is assigned to a user and is transportable (not node-locked).
- The Arion plug-ins unlock an unlimited number of render slaves with just one master license.

Hardware acceleration support

- Support for all CUDA-enabled nVidia graphics cards.
- CUDA acceleration in Arion is optional, and can be turned off if necessary.
- Arion reverts to the CPU sub-core if no CUDA-enabled devices are found.

System requirements

- Windows XP, 2000, Vista, 7 and newer (32-bit and 64-bit).
- A CUDA-enabled device is necessary in order to benefit from GPU hardware acceleration.
- A 64-bit system with 4GB of RAM or more is recommended.
- A modern CPU (Core i7 or newer) is recommended for optimal performance.
- A modern GPU (Fermi or newer) is recommended for optimal GPU rendering performance.
- Multiple GPUs are recommended for optimal GPU rendering performance and smoother UI response.

Products featuring Arion 2

- Arion stand-alone.
- RandomControl Arion for 3ds Max (Autodesk 3ds Max).

Features specific to Arion stand-alone

- Powerful yet simple and intuitive GUI.
- Interactive WYSIWYG framebuffer.
- Import/Open/Save scenes.
- Interactive atmosphere controls.
- Interactive environment controls.
- Interactive Material Editor.
- Interactive Map Editor.
- Interactive tonemapping controls.
- Drag'n'Drop material library.
- Supported scene I/O formats: .obj, .fry, and .rcs.
- Ability to export panoramic renders as QuickTime VR 360 panoramas.

Features specific to Arion fo 3ds Max

- All Arion 2 features are fully embedded in 3ds Max.
- No need to export or render externally (exporting to .rcs to use the Arion stand-alone is optional).
- Interactive rendering while the user edits the scene (provided through ActiveShade).
- Native still image or animation rendering embedded in the 3ds Max framebuffer directly.
- Native support for network rendering through Backburner with an unlimited number of render slaves.
- Native support for 3ds Max instanced copies.
- Particle system rendering and object scattering (supported through Particle Flow).
- Fully automatic support for 3D motion blur with per-object sub-framing controls.
- All the Arion 2 properties are exposed through MAXScript.

RandomControl SDK

- The RandomControl SDK is available for licensing (http://www.rcsdk.com).