Illumination Browser

## Finding the Right Environment Map

Allowing artists to find the ideal HDR environment map for their renders. 360° panoramic images are commonly used as environment maps by VFX studios to provide high quality lighting (image-based lighting) and/or distant backdrops to scenes (skybox).

They are used most regularly by artists in the look-development department, who want to quickly visualize assets with different lighting conditions or backdrop environments.

VFX studios often have massive collections of panoramic images to choose from, but they are rarely well organised. Confusing file names and generalised folder structures do a poor job describing the image, meaning the ideal file either takes too long to find, or is overlooked completely!
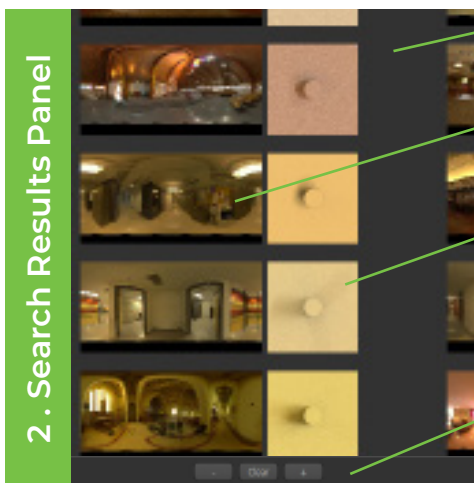
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To address this, we built "Illumination Browser", a software tool for artists to quickly browse large databases of environment maps, narrowing down a set of artist-directed choices efficiently.

The Interface

1. The Navigation Panel
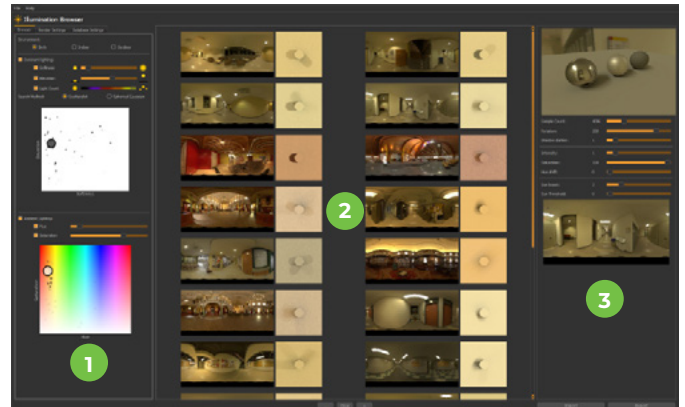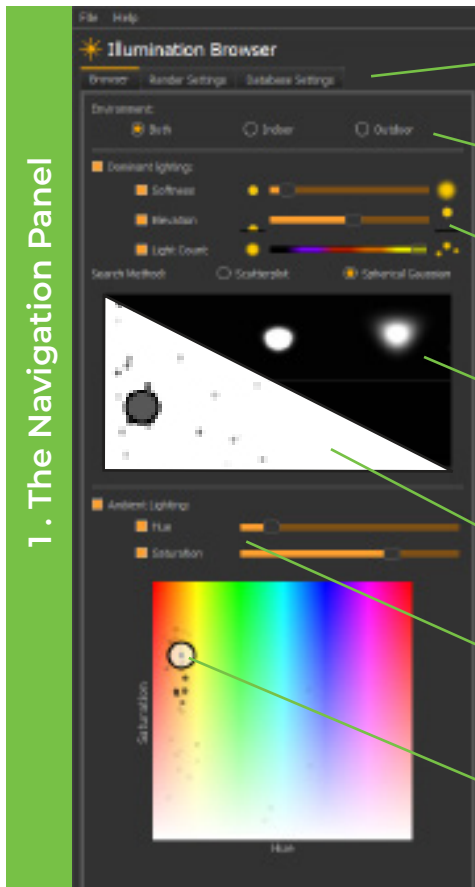
Toggle between Browser Window (shown here), and Database Settings (for database management, such as file locations and caching).

Filter results based on tags such as "indoor", "outdoor", "beach", "sunset", etc.

Filter by quality of a file's dominant lights: Number of salient lights, elevation, area, and spread.

Use the Drawing Mode method to draw the salient lights you want on a canvas - Illumination browser will return the images that, when used as an environment map, have lighting qualities that best match your drawing!

Alternatively, visualise and browse the complete database in a scatterplot of dominant light elevation vs. light softness.

Filtering database by ambient hue and saturation values.

The entire database is presented on a scatterplot of ambient hue and saturation values so artists can instantly see how many images fall within an area of interest and quickly select clusters for viewing.

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2. Search Results Panel

Environment maps that match the search filters are displayed in this panel.

Actual 360° environment map displayed on rectangular canvas.

The Pre-Rendered Preview panel displays a top-down render of a cylinder on a flat plane, quickly demonstrating the shadows and diffuse tone created by the environment maps.

Increase/Decrease size of displayed environment maps, and button to clear filtered results.

3. The Render Preview Panel

Preview Window:
Test the Image Based Lighting of your selected image on mirror, glossy, and diffuse spheres on a plane. Window updates automatically on image selection, and view can be manipulated with camera rotation, pan, and zoom functions.

Render Settings for Preview Window:
- Adjust rendering quality to improve performance
- Rotate radiance map around y-axis
- Darken or lighten shadows cast by spheres
- Change brightness and hue of radiance map
- Set luminance threshold for 'bright lights' (e.g. sun)
- Light boost increases intensity of bright lights for brighter highlights and darker shadows

Selected image being used as radiance map.

Import a background image and/or other scene properties such as 3D models or virtual camera positions.
Once you're happy with radiance map performance, export the modified image for use in your projects.

❯ Next Steps

We welcome look-dev artists and lighting technical directors to test this software solution and provide feedback.
Please go to this link to try a demo:

univentures.nz/ib

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About The Computational Media Innovation Centre

The Computational Media Innovation Centre (CMIC) is a unique, technology transfer focused academic research organisation at Victoria University of Wellington. We collaborate with well known international comapanies to develop cutting edge user-oriented solutions for digital media industries including film, animation, special effects, gaming, and mixed reality.

About Wellington UniVentures

Knowledge is most powerful when it translates into a force for change and growth - and that's exactly what we do at Wellington UniVentures, the technology transfer office of Victoria University of Wellington. Working side by side with researchers to advance ground-breaking ideas and inventions, testing them, protecting them, and shaping them into real-life applications to take to the world.