

Stormfront Studios Technology Overview:

PAGFAST

Over the past few years, 3D graphics in games have developed from merely rendering simple triangles to multipass polygons with numerous effects. The days of throwing a simple diffuse texture on a wire frame mesh are over. Today, shaders like bump mapping, gloss mapping, and normal mapping have dramatically increased the detail and depth CG artists can put into their 3D models and worlds.

Another way graphic artists in other industries are pushing to increase the level of realism and depth in 3D rendering is in the area of global filtering. Instead of only affecting the raw polygons, global filtering processes the entire scene that the viewer sees. Tools like *After Effects*, *Combustion*, and *Final Cut Pro* allow television and film artists to subtly and dramatically push the feel of computer generated imagery by layering in 2D effects like color grading (tinting and color balancing), smoke, and focus filters. Films like *The Lord of the Rings* use color grading to focus the viewer to specific location in a frame and shift tint and luminosity to give the film an other-worldly feel. Perhaps even more dramatic was *O Brother, Where Art Thou's* use of post-production tools to turn lush green fields of spring into golden, dry vistas of autumn. 2D filtering is one of the most effective tools filmmakers have to push visual presentation of their film closer to their vision.

At Stormfront Studios, we have developed a real-time technique that gives artists many of the same powerful 2D filtering tools that film makers have used so successfully in recent years. Our Proprietary Ambient Glow and Focus Adjustment Shader Technology (PAGFAST) is a system designed to give the artist the flexibility to add color grading and focus functionality to a real-time rendered scene. With the system, artists can quickly and easily make global adjustments to tint, hue, and saturation, in addition to making delicate adjustments such as adding warm glows and subtle focus shifts to change the mood and atmospheric quality of a videogame. Instead of simply doing an RGB color shift, PAGFAST analyzes the color balance of the scene and dynamically renders the view: for example, creating more intense highlights on metal surfaces. The technique also helps to eliminate the aliasing and pixelization which occurs in many of today's games by softening the edges of the triangle geometry.

Today's sophisticated gamer expects as much from a game as they do from a Hollywood blockbuster. PAGFAST is one of the tools that ensures that Stormfront Studios delivers.