

Facebreaker XBOX360/PS3

I was CG supervisor for the game team, working with a team of artists and software engineers to build environments, characters and effects for this arcade boxing game. This involved coordinating with software engineers to meet performance requirements and the art director for the visual target. To these ends, I established geometric and shading level of detail limits, millisecond budgets for graphics elements, a test and evaluation harness to artists, adding debug shaders to the test environment for eg mipmap-level visualization, modified art assets to fit budgets, and for artists to iterate as rapidly as possible, put a build-and-preview-in-game in place. Quality control for revised art assets was a daily task.

FIFA 2007 – Stadium Environments

As art department CG supervisor I set up production workflow, handled daily integration of art into game, and troubleshoot. I altered the environment lighting process for 2007 to include full lightmapping of all stadium surfaces and introduced the concept of lightmap compositing into the authoring process. In this approach lighters would offline render key, fill and bounce passes and mix them within an extension of Mayalight, the studio's in-house texture baking tool. This allowed rapid rebalancing of ratios, or recoloring, or light repo or insertion, at only a fraction of the previous offline rendering times. Subsequent game productions adopted this approach.

Open Season – Shaders and Look Tool Development

As part of the prop and environment look development team, I provided tools and support for other artists using and creating shading solutions for various applications. This required extension and optimization of ShaderMachine, a system which allowed Renderman SL shaders to be created using Maya's shading networks. Artists could use and reuse base shaders and specific modular shading node extensions directly, which sped up developing looks for the multitude of props, buildings and flora required for the film. I maintained the base shaders and built shading components in Renderman SL, and worked on looks for specific props.

Spiderman 2 - Train Fight

I lit and rendered various character and foreground elements for specific shots in this train fight sequence. Ambient occlusion, reflection, diffuse, specular and holdout passes, among others, were built with Imageworks' proprietary lighting tools and rendered with RenderMan. In some cases lighting was very close to single pass, as was the case with Spidey and Doc Oc's tentacles as shown here. I collaborated with compositors to devise specific passes; for instance, a group of lighting passes for the subway car close-up (the train car itself is fully virtual), which were balanced in 2D to maximize realism and match to the practical train.

Matrix Revolutions - Super Burly Brawl

The lighting scenario for this sequence was challenging: nighttime, very wet, very stormy, with lightning. For street-level shots, I started with IBL extractions from the set for timing and direction matching and then balanced lights and shaders in order to get proper wet looks for different situations, to bring out dark clothing against dark backgrounds, and to achieve a good response for very bright lightning frames. We reused the Burly Brawl rendering pipeline to render characters, making modifications for new needs and workflows.

I assembled the composite for the huge mid-air energy bubble effect by combining cityscape with depth passes, multiple lighting passes of volumetric clouds, ground fog and water spray passes, sky and lightning backgrounds, falling and dissipating curtains of rain, and tiny characters.

Matrix Reloaded - Trinity Falls

Nearly all CG elements were transparent and refractive in this sequence, so we needed to successively render elements background to foreground inserted layers behind into each element render for refraction. I placed bullet wake and glass lighting from street level – not so important for glass, whose color came from light bouncing and bending, but important for highlights on wakes so they would read better. The characters were holdout cards that I inserted into the glass and muzzle flash passes for occlusion while using them for refraction simultaneously.

Matrix Reloaded - Burly Brawl

These are four excerpted shots from the full sequence, of which I was sequence lead; I lit and directly TDED half of the shots. It began with building a rendering pipeline which joined animation, character rigs, cloth simulations and IBL light rigs by exporting numerous scene fragments to mental images .mi format and using a scene description modification and assembly program and a spreadsheet driven control system to control parameters and select combinations of agents to render in a given pass/layer.

Minimizing dependencies in ray-traced shadowing was essential, so we optimized groupings using an analysis pre-computation which determined which agents contributed to shadowing for other agents. The resulting shadowing table was coalesced into rendering groups using a simulated annealing algorithm. The choreography precluded foreground/background layer plans, so I implemented a workflow that took advantage of a samples-caching rendering system which saves every sample of rendering data for each rendered group of agents in order to be depth composited with higher quality. To add detail to cloth simulations, I designed a skeletally-based extension to the character rigs that drove a displacement shader that would apply appropriate maps for key poses.

We rendered ground shadow, prop holdout, matte light passes. We added additional key diffusers to the IBL in the scene and rendered those as separate lighting passes.