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- Friday, July 14, 2006
The Sonel Mapping Acoustical Modeling Method

This work investigates the application of image synthesis and optics-based techniques (in particular, photon mapping the Huygens-Fresnel principle) to model environmental acoustics. The resulting acoustic Sonel Mapping technique is a Monte-Carlo based approach that can be used to model acoustic environments while accounting for diffuse and specular acoustic reflections as well as diffraction effects. This modeling is performed in an efficient manner in contrast to the many available deterministic techniques. The Sonel Mapping approach models many of the subtle interaction effects required for realistic acoustical modeling.

Bill Kapralos
CVR