Vicinity Occlusion Maps: Enhanced Depth Perception of Volumetric Models

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Volume models often show high depth complexity. This poses difficulties to the observer in judging the spatial relationships accurately. Illustrators usually use certain techniques such as halos or edge darkening in order to enhance depth perception of certain structures. Halos may be dark or light, and even colored. Halo construction on a volumetric basis impacts rendering performance due to the complexity of the construction process.

In this paper we present Vicinity Occlusion Maps: a simple and fast method to compute the light occlusion due to neighboring voxels. Vicinity Occlusion Maps may be used to generate flexible halos around objects or selected structures in order to enhance depth perception or accentuate the presence of some structures in volumetric models at a low cost. The user may freely select the structure that requires the halos to be generated, its color and size, and our proposed application generates those in real-time. They may also be used to perform vicinity shading in real-time, or even to combine both effects.

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