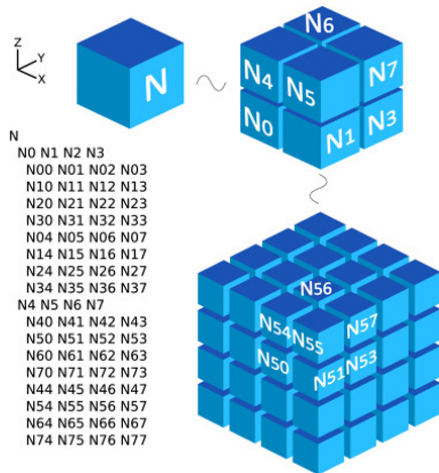


Sweep Encoding: Serializing Space Subdivision Schemes for Optimal Slicing

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Slicing a model (computing thin slices of a geometric or volumetric model with a sweeping plane) is necessary for several applications ranging from 3D printing to medical imaging. This paper introduces a technique designed to compute these slices efficiently, even for huge and complex models. We voxelize the volume of the model at a required resolution and show how to encode this voxelization in an out-of-core octree using a novel Sweep Encoding linearization. This approach allows for efficient slicing with bounded cost per slice. We discuss specific applications, including 3D printing, and compare these

octrees $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$ performance against the standard representations in the literature.