

Execution of Queries on nD PointClouds using Convex Polytopes

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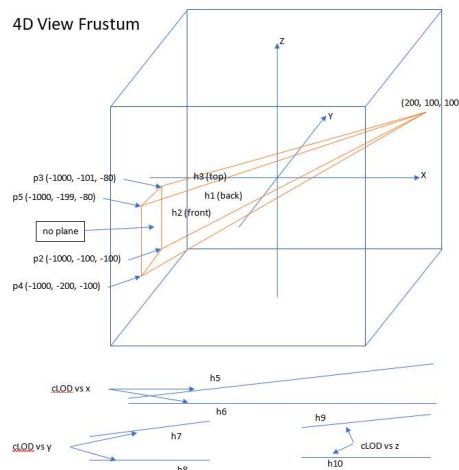
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Demo: no

Abstract:

Point cloud data raises unique data storage and retrieval issues. It typically contains a large or very large number of objects which are quite simple in terms of the individual point attributes.

Most of the attributes of a point can productively be considered to be dimensions – e.g. x, y, z, time, level of detail ... , and these are not independent. For example, in defining a selection of points for a view frustum, the level of detail needed will depend on distance from the observer.



This creates the difficulty of defining a selection geometry in more than 3 dimensions, requiring a method of specifying and visualising (or at least understanding) these geometries.

A possible solution is suggested by the convex polytope – a convex region defined by hyper-planar “half spaces”, which are relatively easy to define in multiple dimensions, and supports various fast search techniques where the point cloud is indexed in hyper-rectangular “boxes”.