SURFACE RECONSTRUCTION FROM POINT CLOUD USING LEVEL SET METHOD AND ADAPTIVE GRID

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ABSTRACT

In this paper, we propose a very efficient method which reconstructs the high resolution surface from a set of unorganized points. Our method is based on the level set method using adaptive grid. We start with the surface reconstruction model in [3] as the basic model. In [3], they introduced very fast and efficient method which is different from the previous methods using the level set method. Most existing methods\([4][5]\) employed the time evolving process from an initial surface to point cloud. But in [3] they considered the surface reconstruction process as an elliptic problem in the narrow band including point cloud. So they could obtain very speedy method because they didn’t have to limit the time evolution step by CFL condition. However, they still have the weakness in the reconstruction of some concave shapes e.g. narrow opening because the result depends on how close the initial band and point data are. So they need enough resolution of computational domain to avoid that problem in the uniform grid. We resolve it using the adaptive grid\([1][2]\) and implement more efficient redistancing algorithm than the existing one\([6]\).

REFERENCES