3D Model Completion Based on Similarity Search with Slim-Tree

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Abstract : With the advancement of technology it is now possible to scan entire objects and obtain their digital representation by using point clouds or polygon meshes. However, some objects may be broken or have missing parts; thus, several methods focused on this problem have been proposed based on Geometric Deep Learning, such as GCNN, ACNN, PointNet, among others. In this article an approach from a different paradigm is proposed, using metric data structures to index global descriptors in the spectral domain and allow the recovery of a set of similar models in polynomial time; to later use the Iterative Close Point algorithm and recover the parts of the incomplete model using the geometry and topology of the model with less Hausdorff distance.

Keywords : 3D reconstruction method, point cloud completion, shape completion, similarity search **Conference Title :** ICCGV 2020 : International Conference on Computer Graphics and Visualization **Conference Location :** Berlin, Germany **Conference Dates :** July 23-24, 2020