

A Blind Three-Dimensional Meshes Watermarking Using the Interquartile Range

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Abstract : We introduce a robust three-dimensional watermarking algorithm for copyright protection and indexing. The basic idea behind our technique is to measure the interquartile range or the spread of the 3D model vertices. The algorithm starts by converting all the vertices to spherical coordinate followed by partitioning them into small groups. The proposed algorithm is slightly altering the interquartile range distribution of the small groups based on predefined watermark. The experimental results on several 3D meshes prove perceptual invisibility and the robustness of the proposed technique against the most common attacks including compression, noise, smoothing, scaling, rotation as well as combinations of these attacks.

Keywords : watermarking, three-dimensional models, perceptual invisibility, interquartile range, 3D attacks

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