A blind 3D watermarking technique using spherical coordinates and skewness measure

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Abstract: Three-dimensional watermarking is very useful for copyright protection, verification, and indexing. In this paper we propose a robust computationally inexpensive 3D polygonal mesh watermarking methodology. The new algorithm is based on vertex distribution and skewness measure. The core idea behind our algorithm is to modify the skewness measure based on a predefined secret message. The proposed algorithm is slightly altering the skewness distribution of several intervals extracted from a 3D model. The main attractive features of this approach is the improved performance of the data embedding system, perceptual invisibility and it is resistant to a variety of the most common attacks.

Keywords: watermarking; three-dimensional models; perceptual invisibility; spherical coordinates; skew; 3D attacks.