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IGT: Inverse Geometric Textures

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Preserving details from a high resolution reference model onto lower resolution models is a complex, and sometimes daunting, task as manual intervention is required to correct texture misplacements. Inverse Geometric Textures (IGT) is a parameterization independent texturing technique that allows preservation of texture details from a high resolution reference model onto lower resolutions, generated with a given simplification method. IGT uses a parameterization defined on the reference model to generate an inversely parameterized texture that stores, for each texel, a list of all triangles that mapped onto it. This way, for any valid texture coordinate, IGT can know the point and the triangle of the detailed model that was projected, allowing application of details from the reference model onto the fragment from the low-resolution model. IGT is encoded in compact data structures and can be evaluated quickly. Furthermore, the high resolution model can have its own independent, secondary parameterization, so that no additional effort is required to directly use artist-designed content.

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