REGION SELECTIVE SUBDIVISION OF INTRINSIC MESHES

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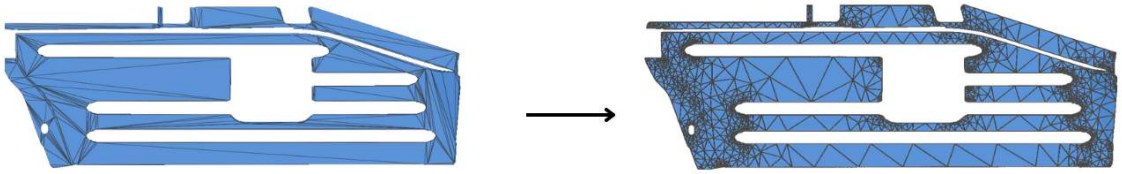
ABSTRACT

Intrinsic triangulations have gained significant attention in the past couple of years due to their ability to represent surface meshes in terms of edge lengths rather than vertex positions [1, 2]. This property allows intrinsic mesh data structures to maintain the relationship between the intrinsic mesh and its underlying extrinsic mesh, ensuring that solution fields are transferred between the two as efficiently as possible [3]. While the use of intrinsic triangulations has been shown to offer numerous benefits, the common subdivision process has often resulted in a loss of quality. In this paper, we propose a modified version of the common subdivision that performs selective edge-edge intersections, leading to a more useful mesh in two and three dimensions when compared to the simple common subdivision previously proposed in the literature. Through this constrained subdivision method, we demonstrate the potential to retain the quality gains from intrinsic triangulations in an extrinsic setting along with some useful applications.



Keywords: intrinsic triangulations, constrained subdivision

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