

Automatic Interacting Hole Suppression from CAD Mesh Models

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Abstract

This paper reports an algorithm to recognize and suppress interacting holes from CAD mesh models. The method includes hybrid mesh segmentation and template matching. The algorithm involves three steps, viz., preprocessing, hybrid mesh segmentation, and hole recognition and suppression. The hybrid approach is leveraged for interacting hole detection and parameterization along with hole chain. Finally, interacting holes are suppressed by the hole-filling algorithm. This algorithm has been implemented in VC++ and has been extensively tested on test cases extracted from various benchmarks, demonstrating the ability of the proposed algorithm to recognize and suppressed interactive holes, and it is found to be robust and consistent. The innovation lies in the automatic volumetric and nested interactions, multiple planer hole recognition and suppression without estimating curvature, and feature edge detection. The proposed technique is more effective than the existing approaches. Feature suppression finds application in mesh simplification.

Keywords