

Filling simple holes of triangular mesh by using Enhanced Advancing Front Mesh (EAFM) method

ABSTRACT

Triangular meshes are extensively used to represent 3D models. Some surfaces cannot be digitised due to various reasons such as inadequacy of the scanner, and this generally occurs for glossy, hollow surfaces and dark-coloured surfaces. This cause triangular meshes to contain holes and it becomes difficult for numerous successive operations such as model prototyping, model rebuilding, and finite element analysis. Hence, it is necessary to fill these holes in a practical manner. In this paper, the Enhanced Advancing Front Mesh (EAFM) method was introduced for recovering missing simple holes in an object. The first step in this research was to extract the feature vertices around a hole on a 3D test data function. Then the Advancing Front Mesh (AFM) method was used to fill the holes. When conflicts occurred during construction of the triangle, the EAFM method was introduced to enhance the method. The results of the study show that the enhanced method is simple, efficient and suitable for dealing with simple hole problems.

Keyword: Triangular; Hollow; Holes; Mesh; Surfaces

