Mots clés :
- Directeur de thèse : titus ZAHARIA
- Co-encadrant(s) :
- Unité de recherche : Advanced Research TEchniques for Multidimensional Imaging Systems
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- Domaine scientifique principal: Divers

Résumé du projet de recherche (Langue 1)

The objective of this thesis is to elaborate, develop and experimentally validate a morphing methodology for static and dynamic 3D meshes with arbitrary topologies. The issue of 3D mesh morphing represents today an open field of research, with important challenges to be addressed and solved at both methodological and algorithmic levels. While in the case of 2D images mature morphing techniques have known a world-wide success and are currently extensively used in commercial applications (e.g. advertisement, video clips and film industries…), in the 3D case numerous open problems still remain. Solving them by providing efficient morphing methods could have a strong economical impact on the graphics industry, specifically within the framework of content/special effects production. The requirements related to the morphing algorithms specifically concern the quality of the obtained transition sequence, which should be as smooth and gradual as possible, consistent with respect to both geometry and topology, and visually pleasant. From a methodological point of view, the main difficulty that has to be addressed and solved relates to the topological aspects. Thus, existing 2D image morphing methods cannot be extended in a straightforward manner to 3D meshes. The main problem that has to be overcome is the transition from a fixed, regular topology, which perfectly describes 2D images, to arbitrary and most often highly irregular connectivity, which are specific to 3D meshes.