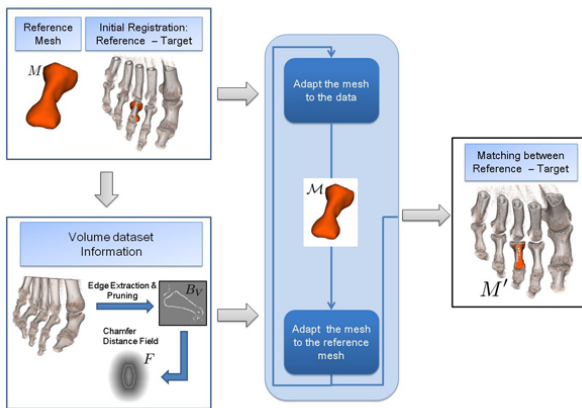


Example-guided segmentation

Chica, Antoni; Monclus, Eva; Brunet, Pere; Navazo, Isabel; Vinacua, Alvar



In this paper, we propose a novel strategy to automatically segment volume data using a high-quality mesh segmentation of an "example" model as a guiding example. The example mesh is deformed until it matches the relevant volume features. The algorithm starts from a medical volume model (scalar field of densities)

to be segmented, together with an already existing segmentation

(polygonal mesh) of the same organ, usually from a different

person. The pre-process step computes a suitable attracting scalar field in the volume model. After an approximate 3D registration between the example mesh and the volume (this is the only step requiring user intervention), the algorithm works by minimizing an energy and adapts the shape of the polygonal mesh to the volume features in order to segment the target organ. The resulting mesh adapts to the volume features in the areas which can be unambiguously segmented, while taking the shape of the example mesh in regions which lack relevant volume information. The paper discusses several examples involving human foot bones, with results that clearly outperform present segmentation schemes.