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(54) Title (EN): SHELL-CONSTRAINED LOCALIZATION OF VASCULATURE

(54) Title (FR): LOCALISATION À CONTRAINTE DE COQUE DE SYSTÈME VASCULAIRE

(57) Abstract:

(EN): Methods of and systems for reconstructing a vascular tree shape from vascular segments imaged in a single source 2-D projection image are described. A structuring shape comprising spatial positions of reference anatomical elements is defined, such as vascular segments in the definition of a 3-D surface model corresponding to a surface defined by an anatomical structure such as a body organ (e.g., heart). The 3-D surface model is used to create a 3-D model of anatomical elements (e.g., additional vascular segments of a cardiac vasculature) imaged in a source 2-D projection image, by back-projection to the 3-D surface model. The 3-D surface model is optionally aligned by first aligning the source 2-D projection image to the structuring shape. In some embodiments, the source 2-D projection image is registered to the 3-D surface model through the structuring shape by the source image's initial use in defining the structuring shape.

(FR): L'invention concerne des procédés et des systèmes permettant de reconstruire une forme d'arbre vasculaire à partir de segments vasculaires imagés dans une image unique de projection 2D source. Une forme de structuration comprenant les positions spatiales d'éléments anatomiques de référence est définie, telle que des segments vasculaires dans la définition d'un modèle de surface 3D correspondant à une surface définie par une structure anatomique telle qu'un organe corporel (par exemple, le cœur). Le modèle de surface 3D est utilisé pour créer un modèle 3D d'éléments anatomiques (par exemple, des segments vasculaires supplémentaires d'un système vasculaire cardiaque) imagé dans une image de projection 2D source, par rétroprojection sur le modèle de surface 3D. Le modèle de surface 3D est éventuellement aligné par un premier alignement de l'image de projection 2D source sur la forme de structuration. Selon certains modes de réalisation, l'image de projection 2D source est enregistrée sur le modèle de surface 3D par l'intermédiaire de la forme de structuration par l'utilisation initiale de l'image source dans la définition de la forme de structuration.

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