

# **AUTOMATIC SEGMENTATION OF CARDIAC MAGNETIC RESONANCE IMAGES USING ACTIVE APPEARANCE MODELS AND HAUSDORFF DISTANCE**

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**Abstract/Résumé :** Active Appearance Models (AAM), have been introduced by Cootes et al. [IEEE Transactions on Pattern Analysis and Machine Intelligence, 2001], and are used to learn objects characteristics during a training phase by building a compact statistical model representing shape and texture variation of the object. This Model is used to find the object location and shape-appearance parameters, in a test set. The selection of the initial position of the construct model in a test image is a very important task in this context. The goal of this work is to propose an automatic segmentation method applied to cardiovascular MR images using an AAM based segmentation approach. The AAM model was constructed using 20 end-diastolic and end-systolic short axis cardiac magnetic resonance images (MRI). Once the model is constructed, we select the best position in order to start the search step manually in the test image. That is why; in this paper, the localization of the left ventricular cavity in the test image is used to select the initial position of the construct model developed from the training images. So we propose an automatic approach to detect this spatial position by using two methods: (1) the circular Hough transform (CHT) and (2) the evaluation of the Hausdorff distance.

**Keywords/Mots clés** : MRI image; active appearance models (AAM); segmentation; left ventricular cavity localization; Hausdorff distance

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