

TOPOLOGICAL DIGITAL IMAGE PROCESSING

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ABSTRACT

In this paper an automatic method applicable to the segmentation of mediastinum Computerized Axial Tomography (CAT) images with tumors, by means of Alternating Sequential Filters (ASFs) of Mathematical Morphology and connected components extraction based on continuous topology concepts are described. Digital images can be related to topological space structures and then general topology principles can be straightforwardly implemented. This method allows not only to accurately determine the area and external boundary of the segmented structures but also to obtain their precise location.

KEYWORDS: CAT, ASF, Segmentation, Topological Spaces, Connected Components