

Connected Threshold Segmentation Using ITK

Release 0.01

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Abstract

This document describes an example of Connected Threshold Segmentation using the Insight Toolkit www.itk.org.

This paper is accompanied with the source code, input data, parameters and output data that the author used for validating the algorithm described in this paper. This adheres to the fundamental principle that scientific publications must facilitate reproducibility of the reported results.

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Method

Using filters from the Insight Toolkit, a 3D segmentation of the ventricles of a brain was generated. Taking a seed point to generate the segmentation, the segmentation program uses a user-given contrast in order to determine the entirety of the location that is to be focused upon and ignores all values that fail to fall within the upper and lower bounds. The input chosen for this program was a scan from Kitware's MIDAS collection: Normal-066-T2.

Software Requirements

You need to have the following software installed:

- Insight Toolkit 3.4.
- CMake 2.4

Note that other versions of the Insight Toolkit are also available in the testing framework of the Insight Journal. Please refer to the following page for details

<http://www.insightsoftwareconsortium.org/wiki/index.php/IJ-Testing-Environment>

Instructions

To recreate the implementation, simply run CMake on the source code accounting for the location of ITK and the image to be segmented. (Ensure that you have obtained Normal-066-T2 from MIDAS as well and that it's located within the same folder.) Then simply run:
Segmentation

This should adequately recreate the effect.

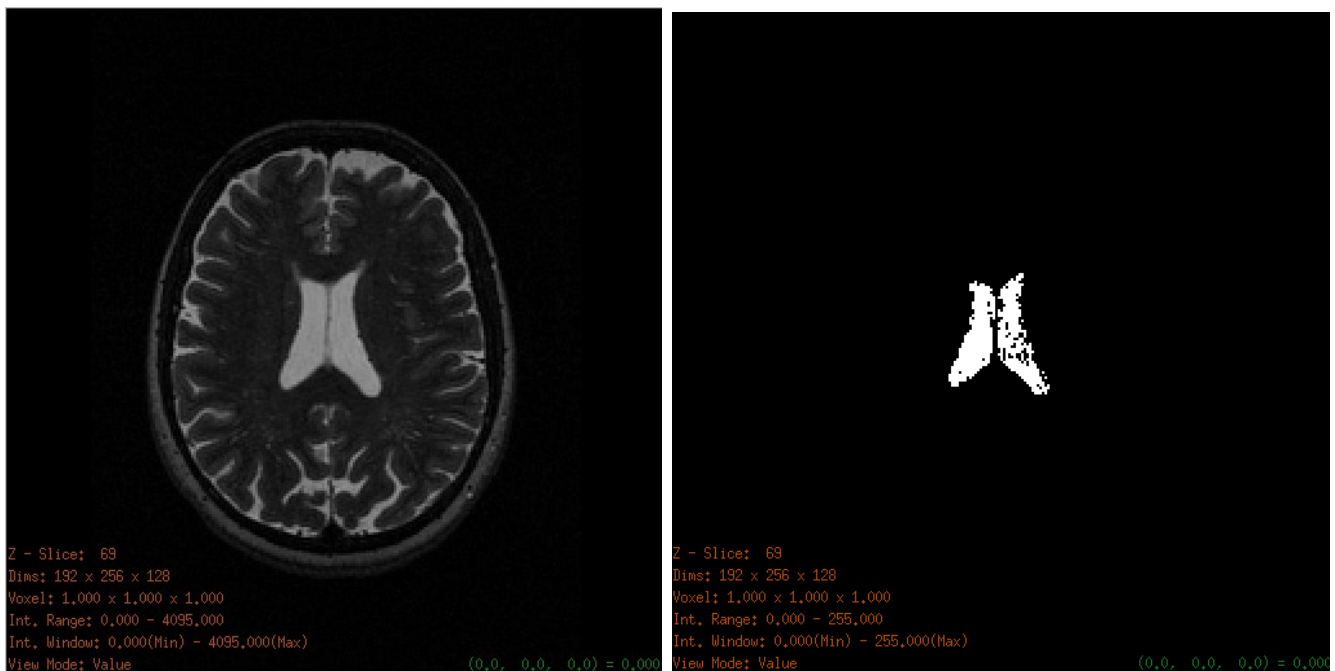


Figure 1: Normal-066-T2 before and after Segmentation at Z=69.