

fP-CMC: Fast Patch-based Continuous Min-Cut segmentation

1. Summary : This software presents a **semi-supervised segmentation framework for B-mode ultrasound imaging**. It is applicable to any kind of target and imaging settings. Our methodology uses **a graph of image patches** to represent the ultrasound image and **user-assisted initialization with labels**, which acts as soft priors. The segmentation problem is formulated as a **continuous minimum cut problem** and solved with an efficient optimization algorithm.

2. Works using fP-CMC should cite :

Anca Ciurte, Xavier Bresson, Olivier Cuisenaire, Nawal Houhou, Sergiu Nedevschi, Jean-Philippe Thiran, Meritxell Bach Cuadra, **Semi-Supervised Segmentation of Ultrasound Images based on Patch Representation and Continuous Min Cut**. *Plos One*, 9(7), p. e100972, 2014.

3. How to use:

3.1 Launch main.m

3.2 Select the image (2D B-mode ultrasound) that you want to segment (USImages folder contains some examples of eye tumor, fetal head and liver tumors).

3.3 Proceed to the label definition:

3.3.1. Foreground object to be segmented: draw the label with the polygonal tool of Matlab. Define some area inside the object by different lines (one click) and followed by a double click to close the polygon.

3.3.2. Background area: draw the label as an ellipse outside the object (thus including the object as less background area as possible. This is done by the click and drag tool of Matlab, select an upper/left corner for instance and enlarge the ellipse, finish by one (any) key pressed.

3.4 The evolving contour through iterations is presented in magenta in figure 100.

4. Code Copyright :

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