

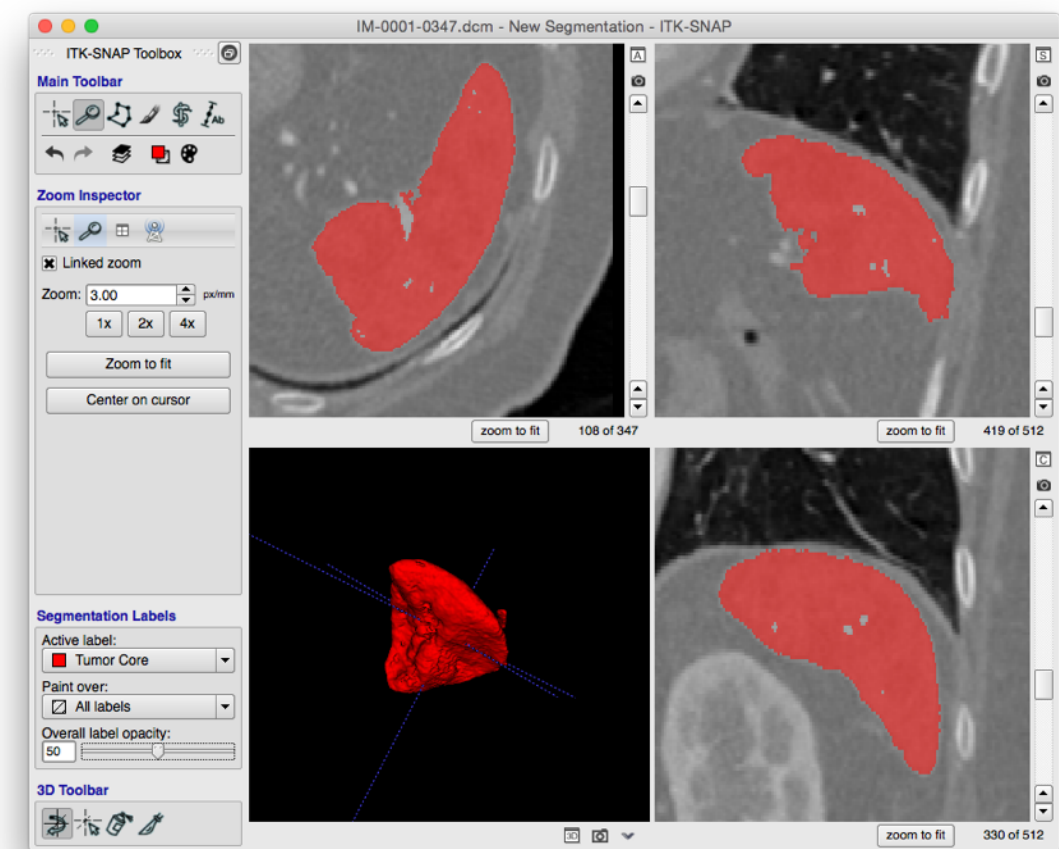
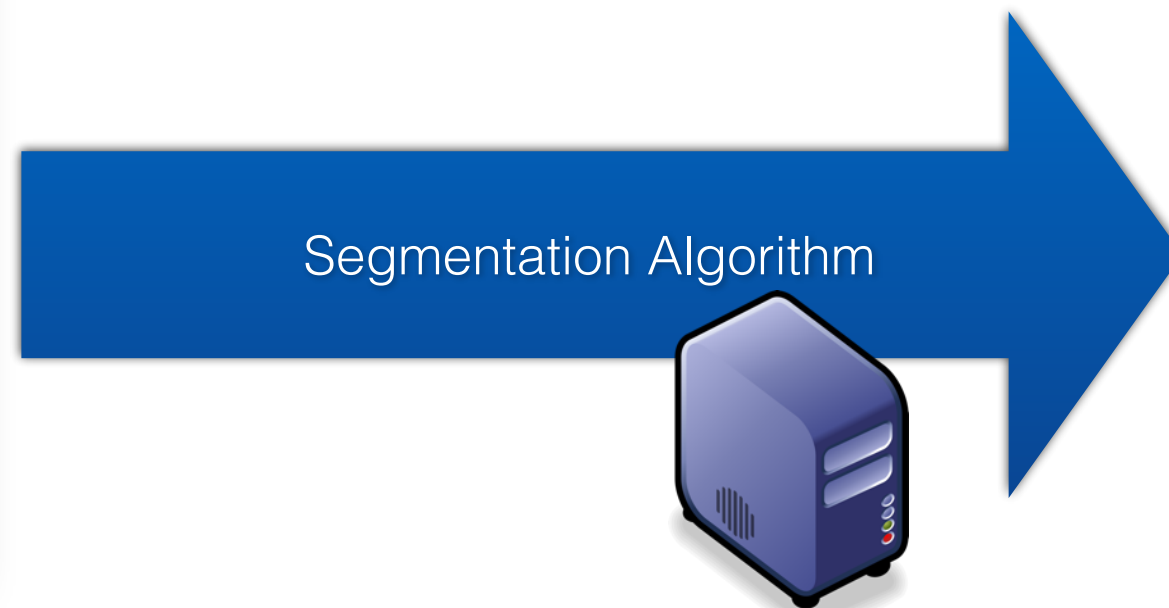
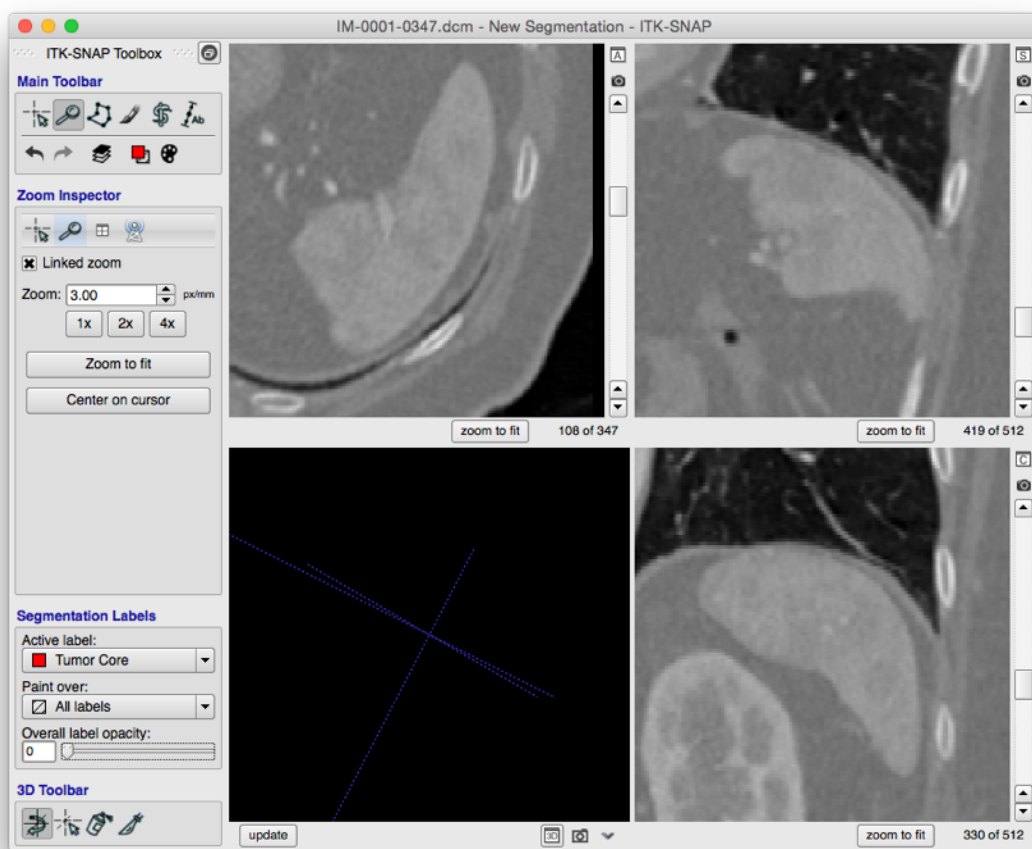
MODULE II

Semi-Automatic Segmentation

RSNA 2016 ITK-SNAP Course

Semi-Automatic Segmentation

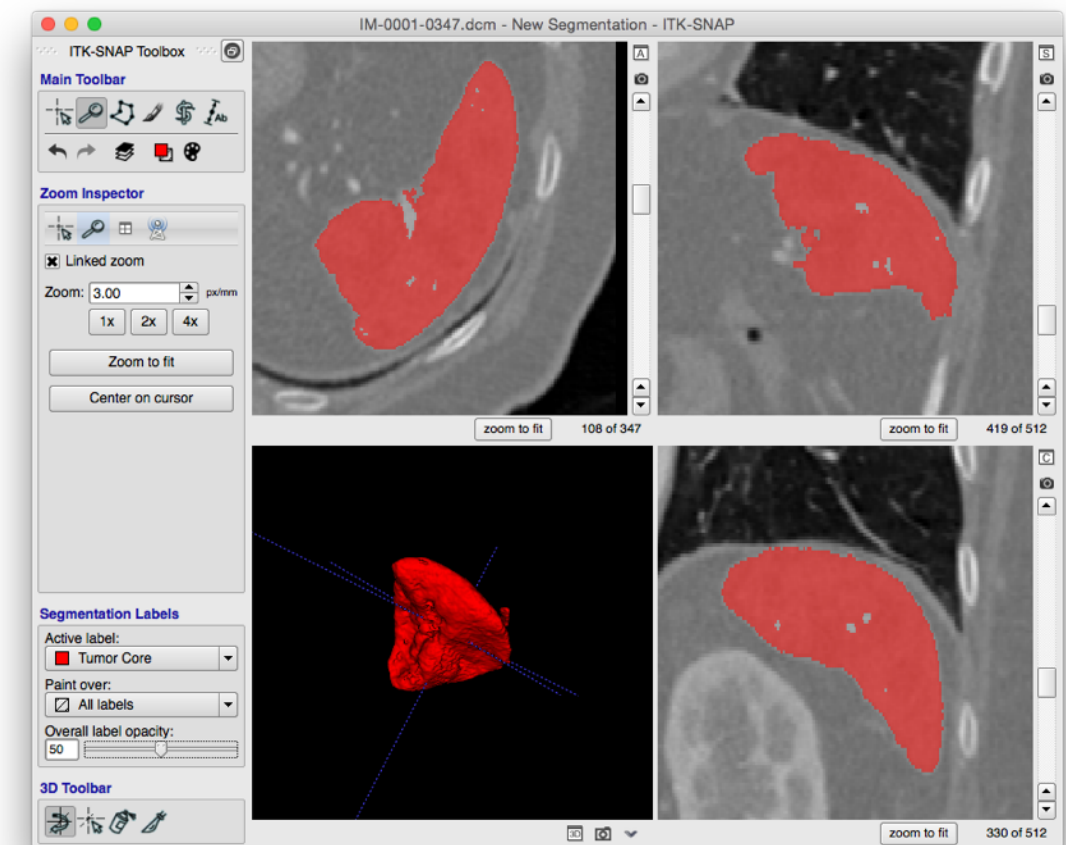
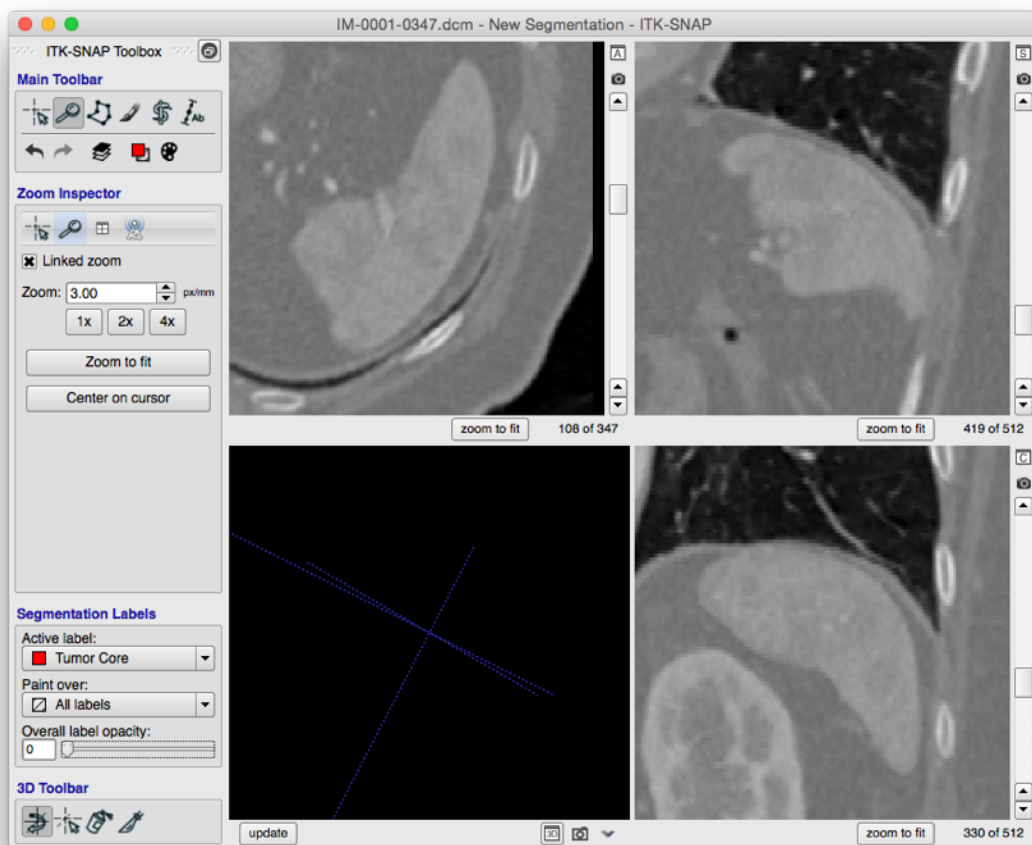
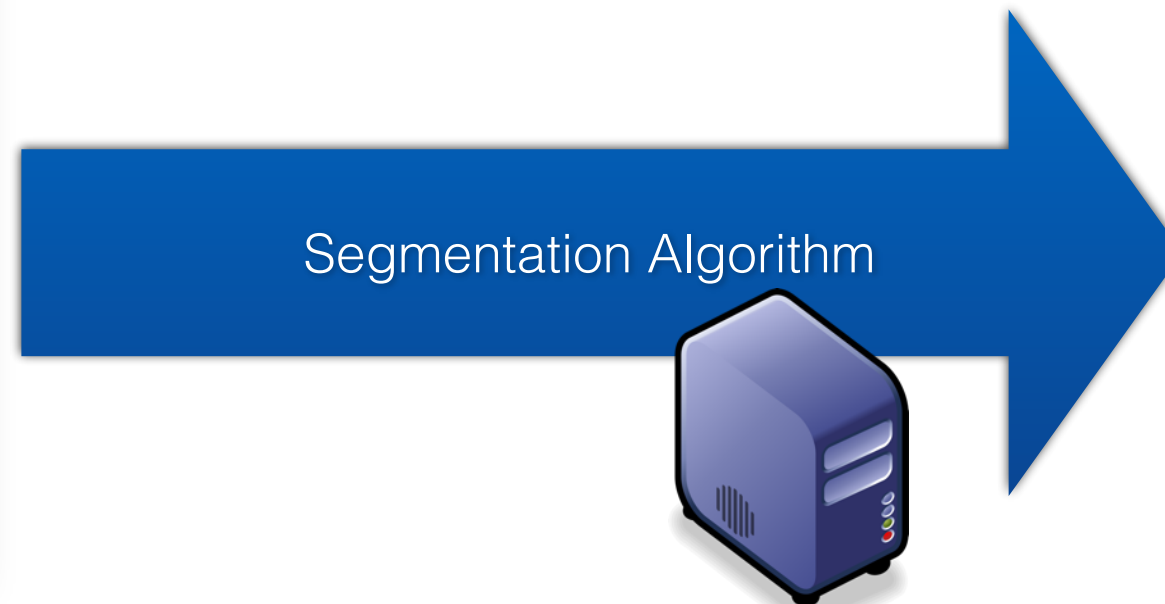
User: quickly identifies structure of interest and sets parameters



Semi-Automatic Segmentation



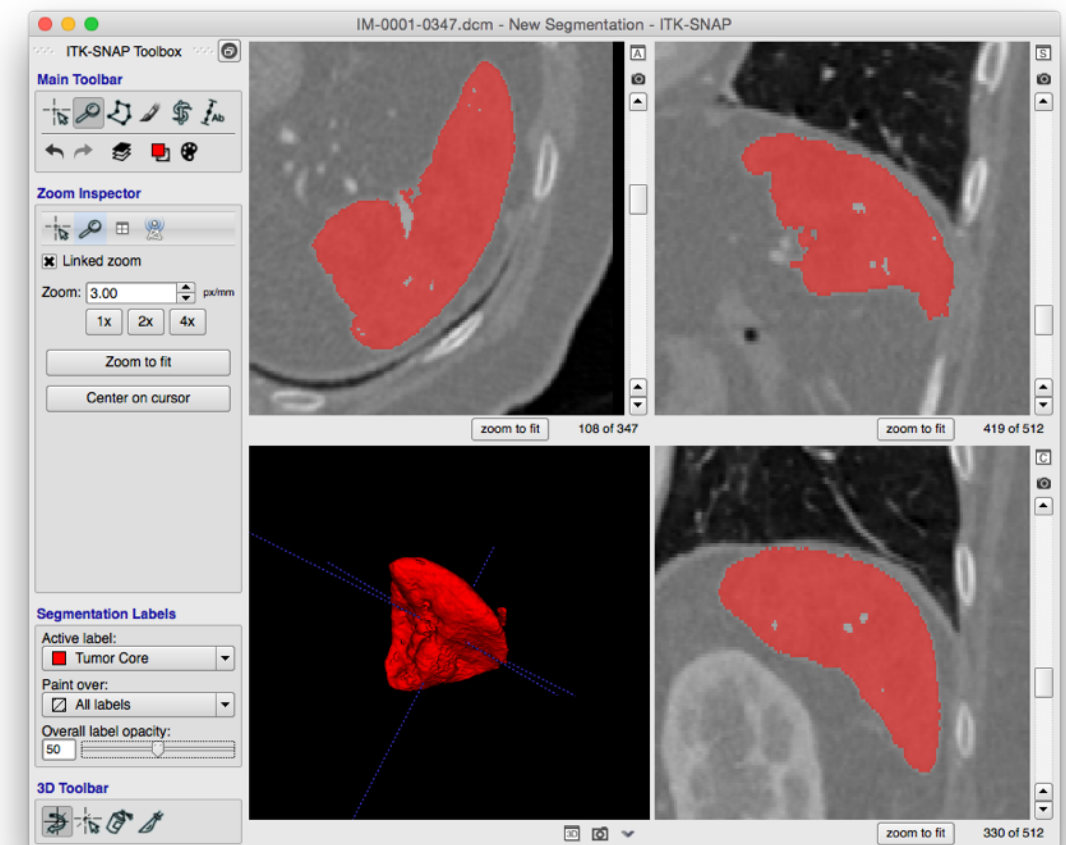
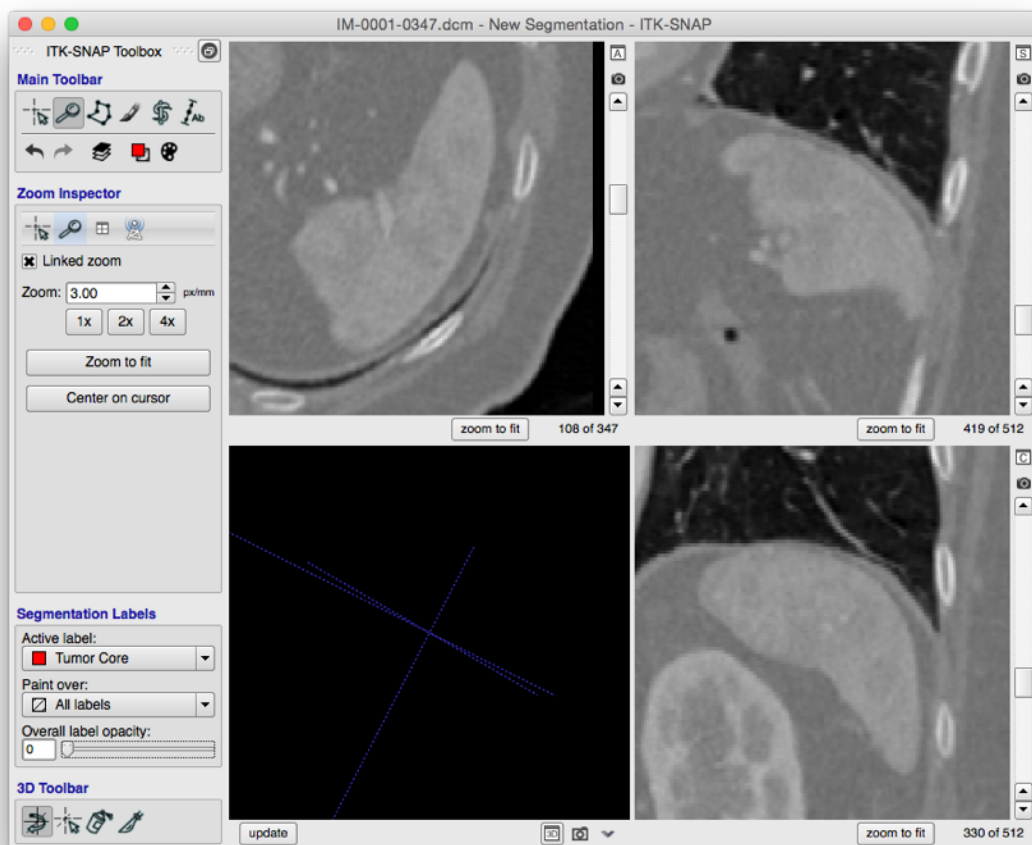
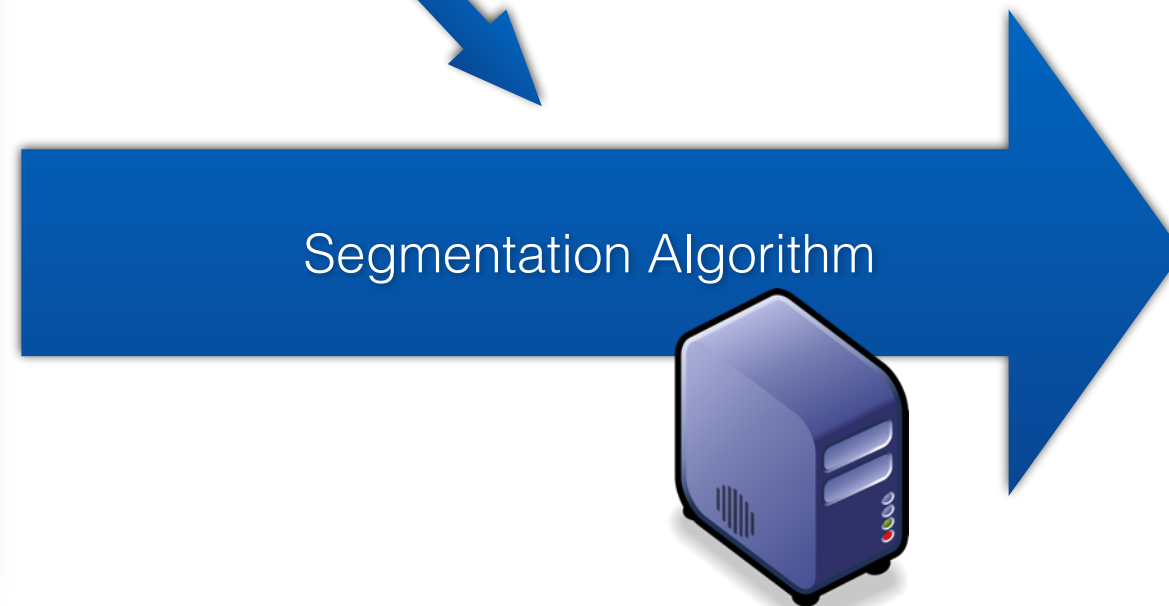
User: quickly identifies structure of interest and sets parameters



Semi-Automatic Segmentation



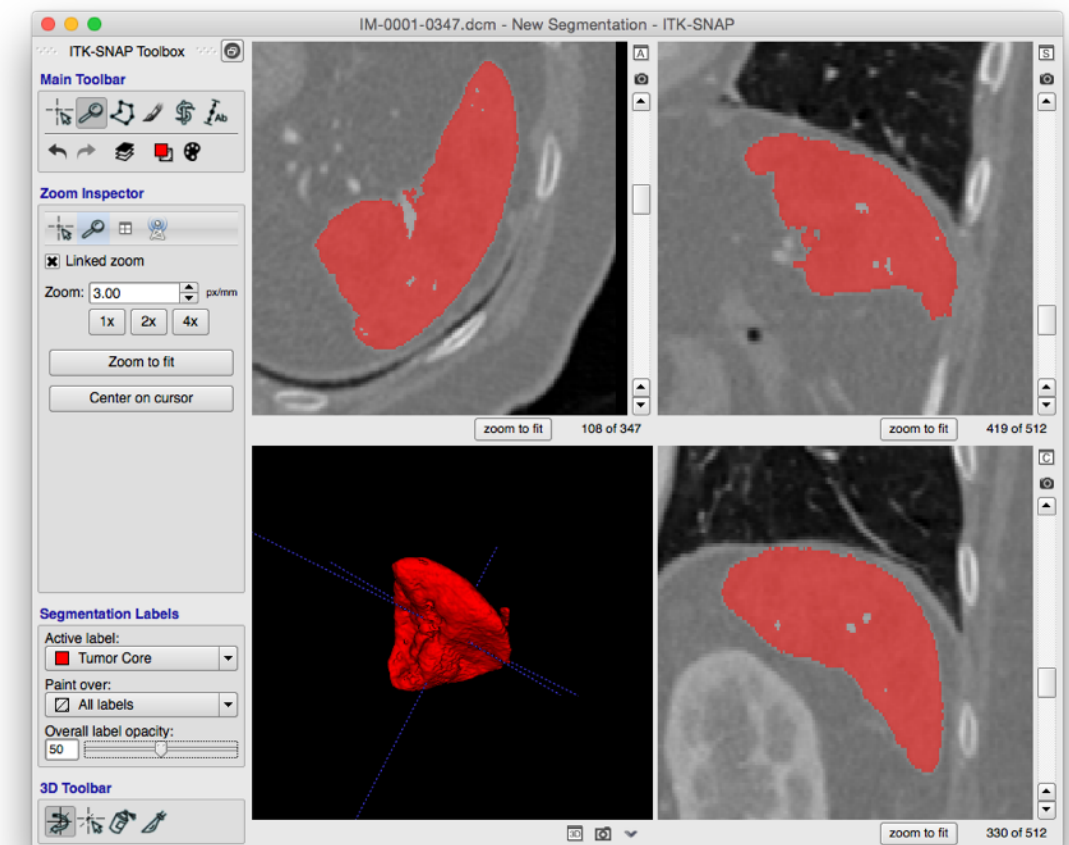
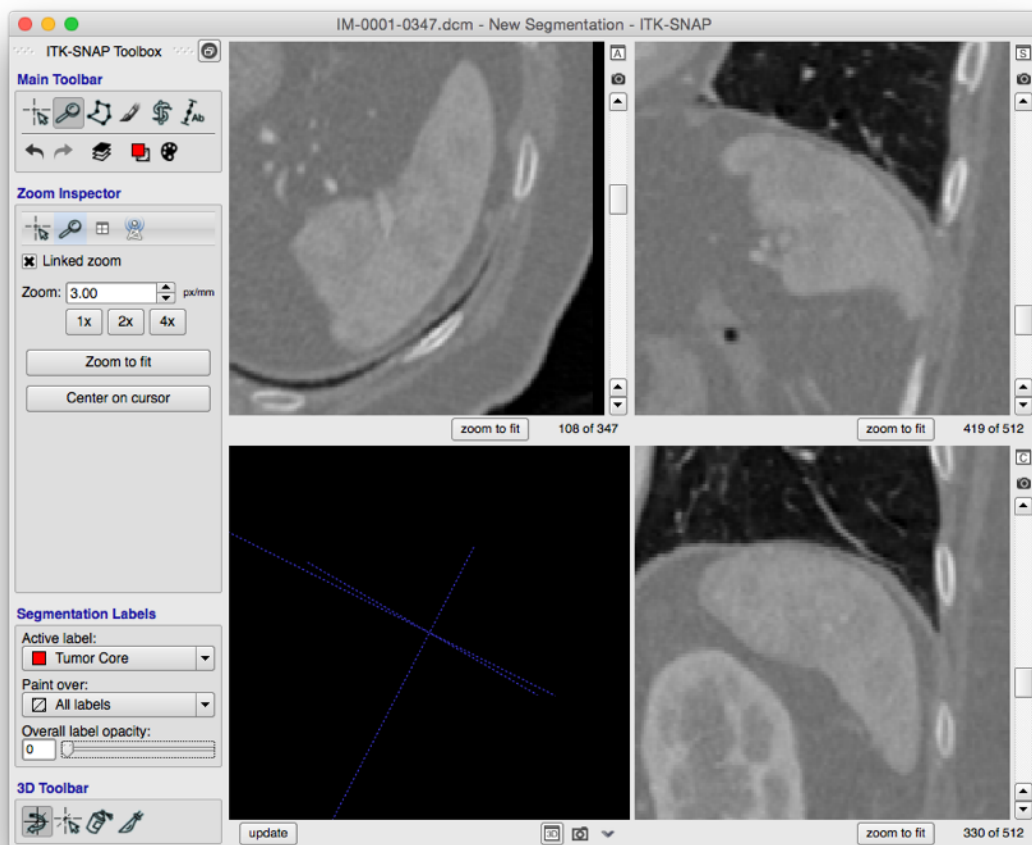
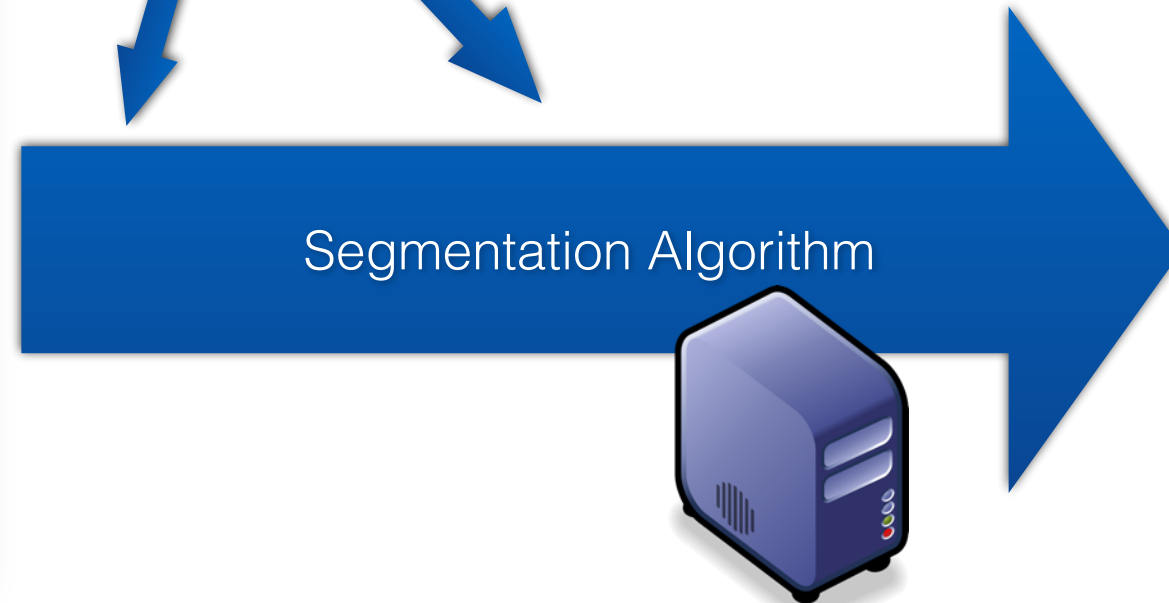
User: quickly identifies structure of interest and sets parameters



Semi-Automatic Segmentation



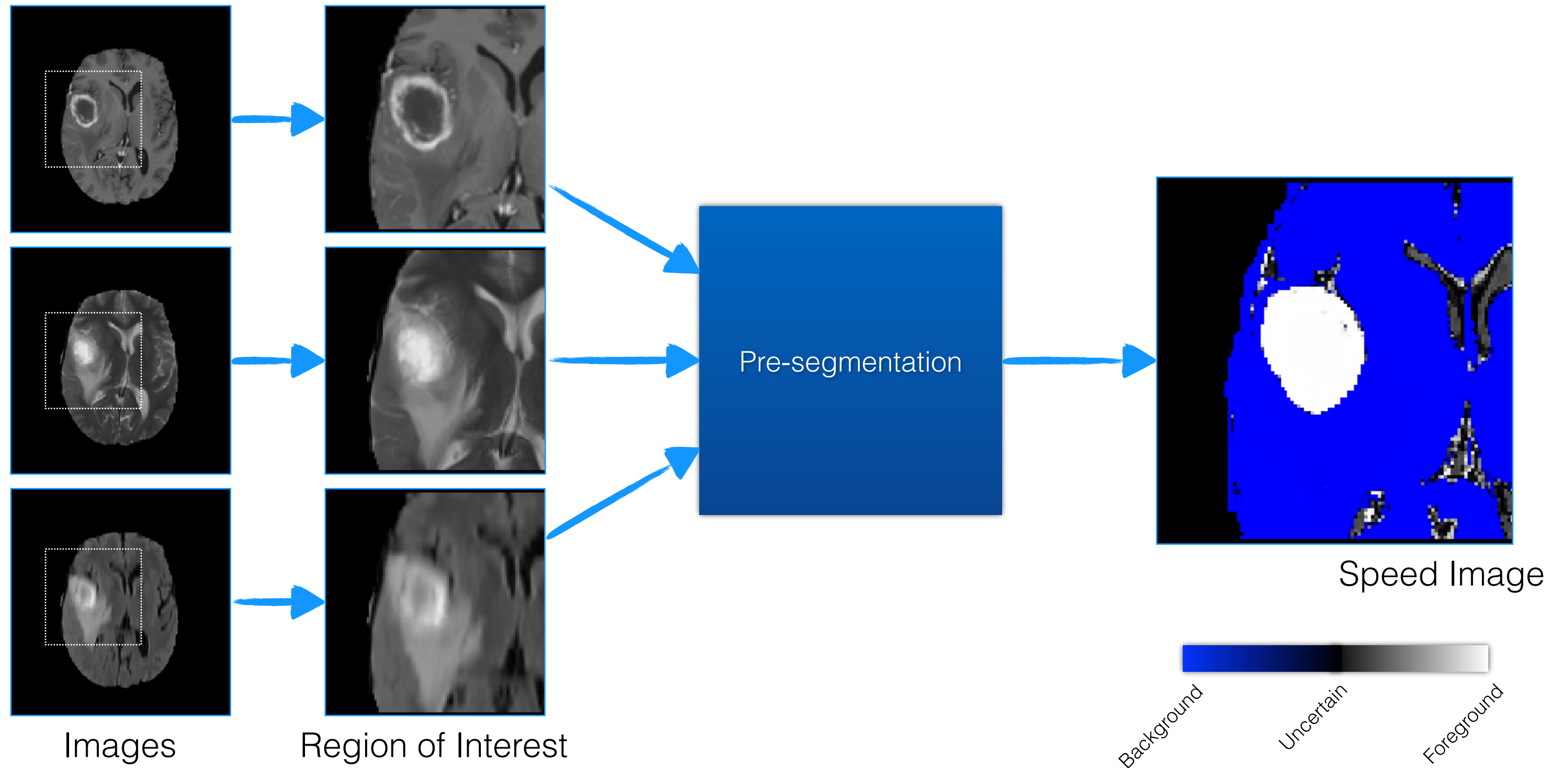
User: quickly identifies structure of interest and sets parameters



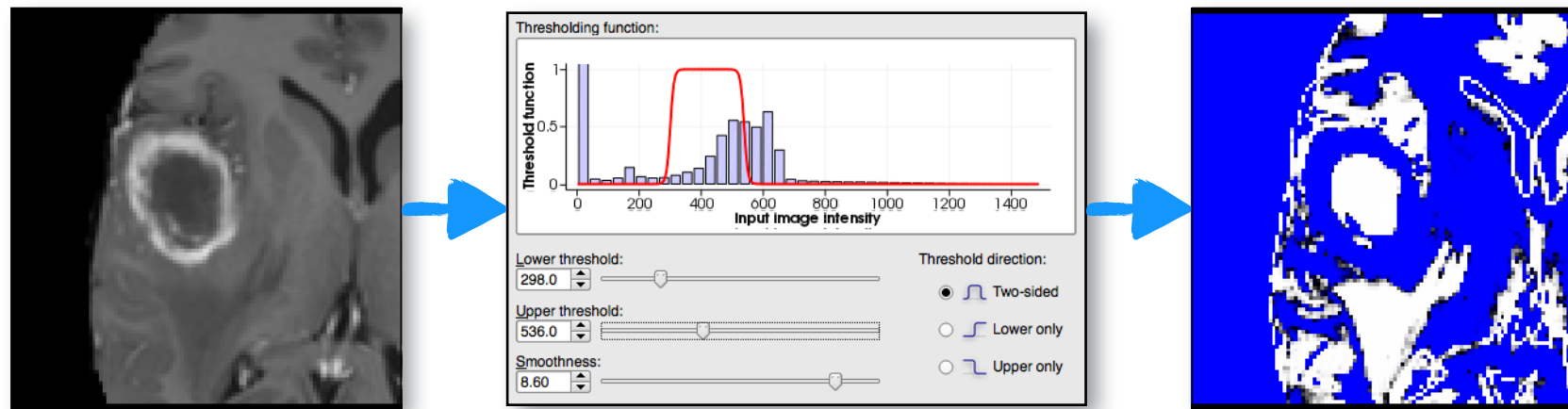
How does it work?

- Pre-segmentation Phase
 - Identify parts of image as foreground and background
- Active Contour Phase
 - Place seeds inside the structure of interest
 - Grow the seeds to fill the structure of interest

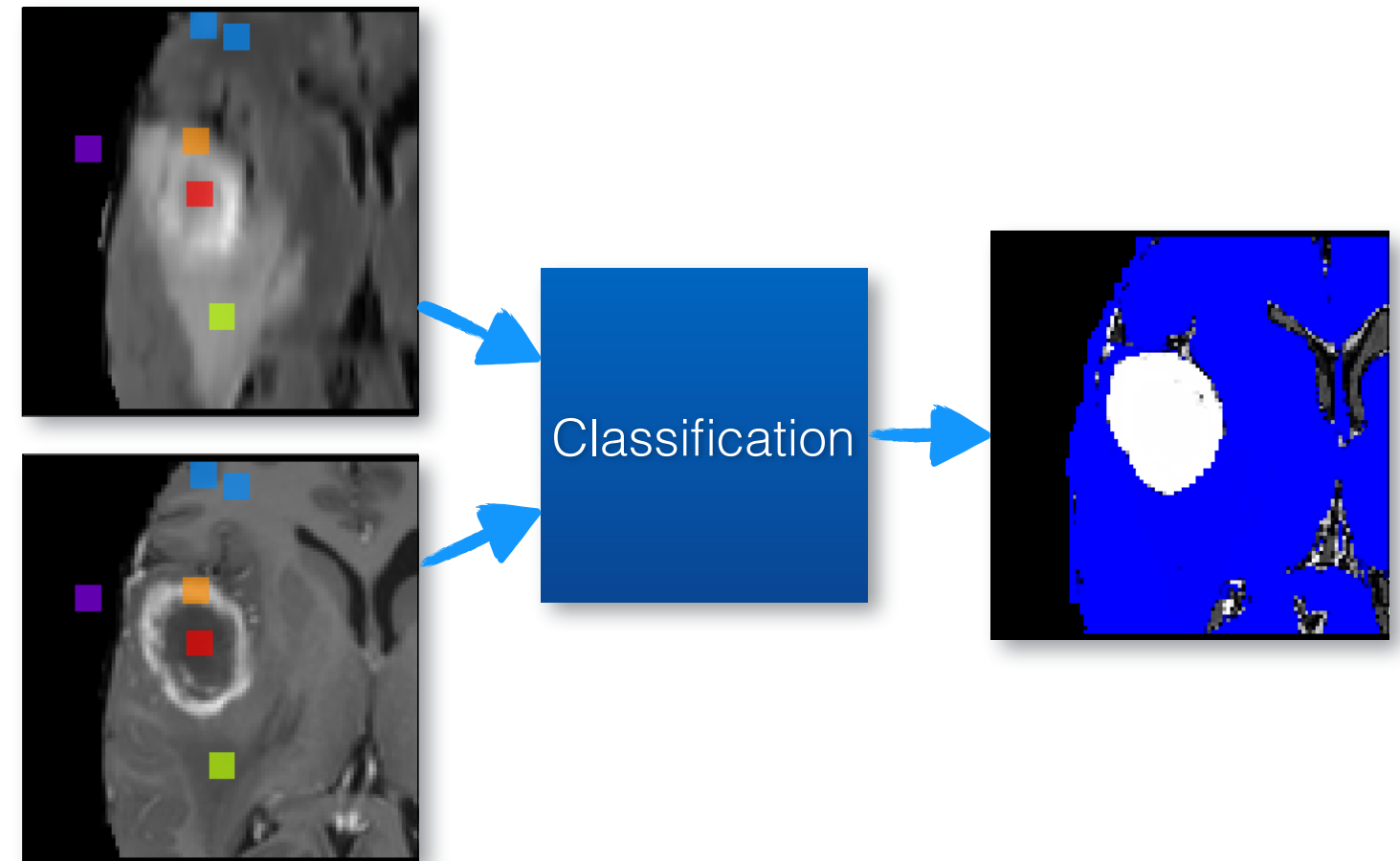
Pre-segmentation Phase



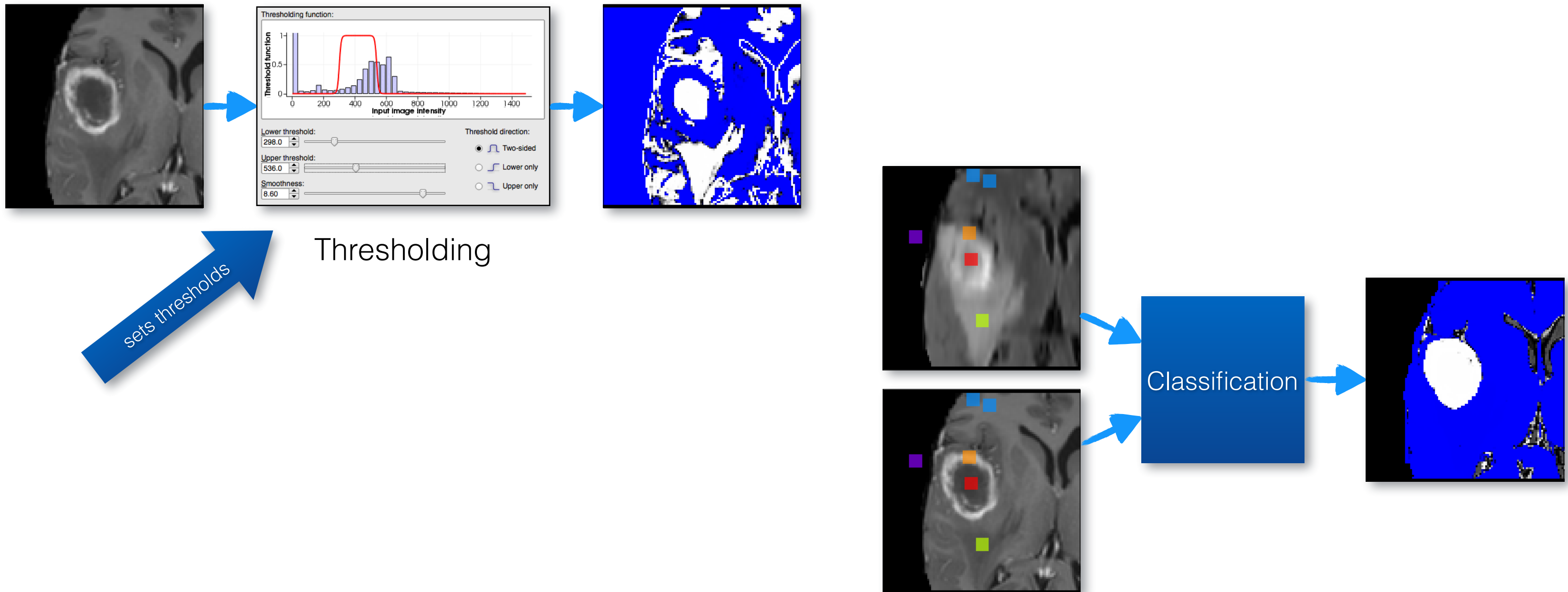
Pre-segmentation Modes



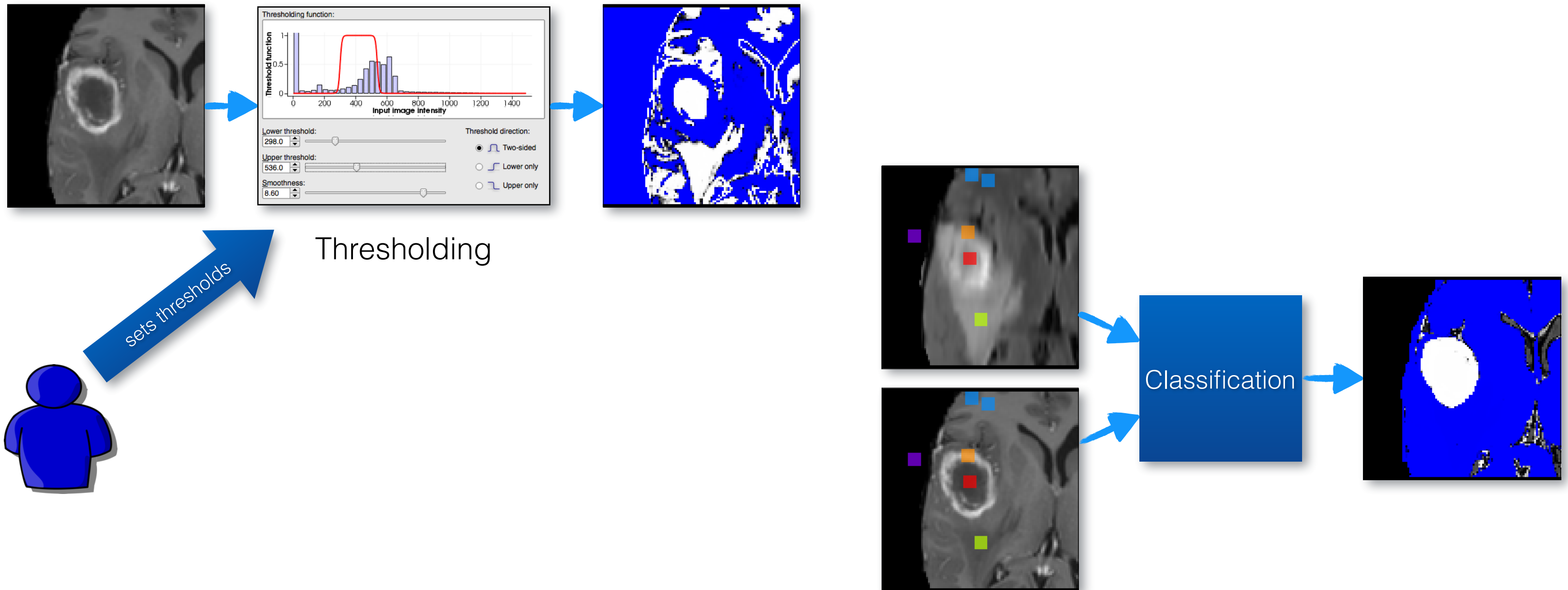
Thresholding



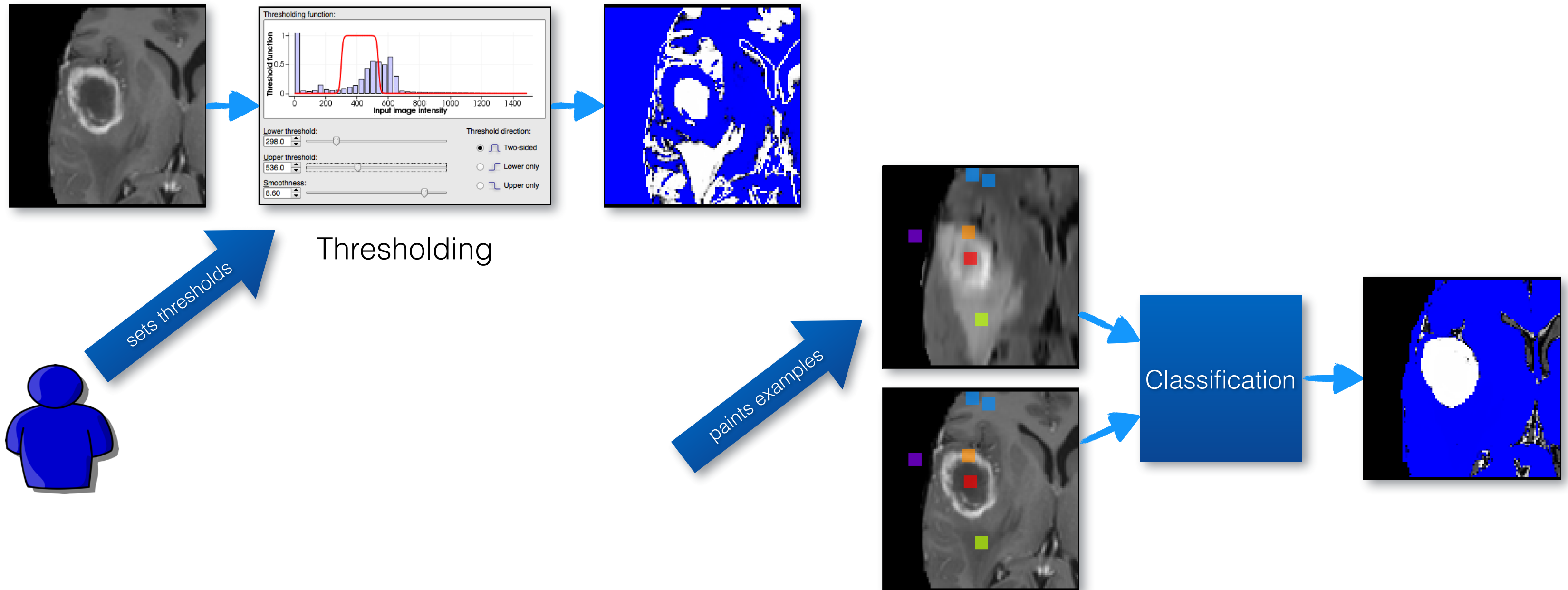
Pre-segmentation Modes



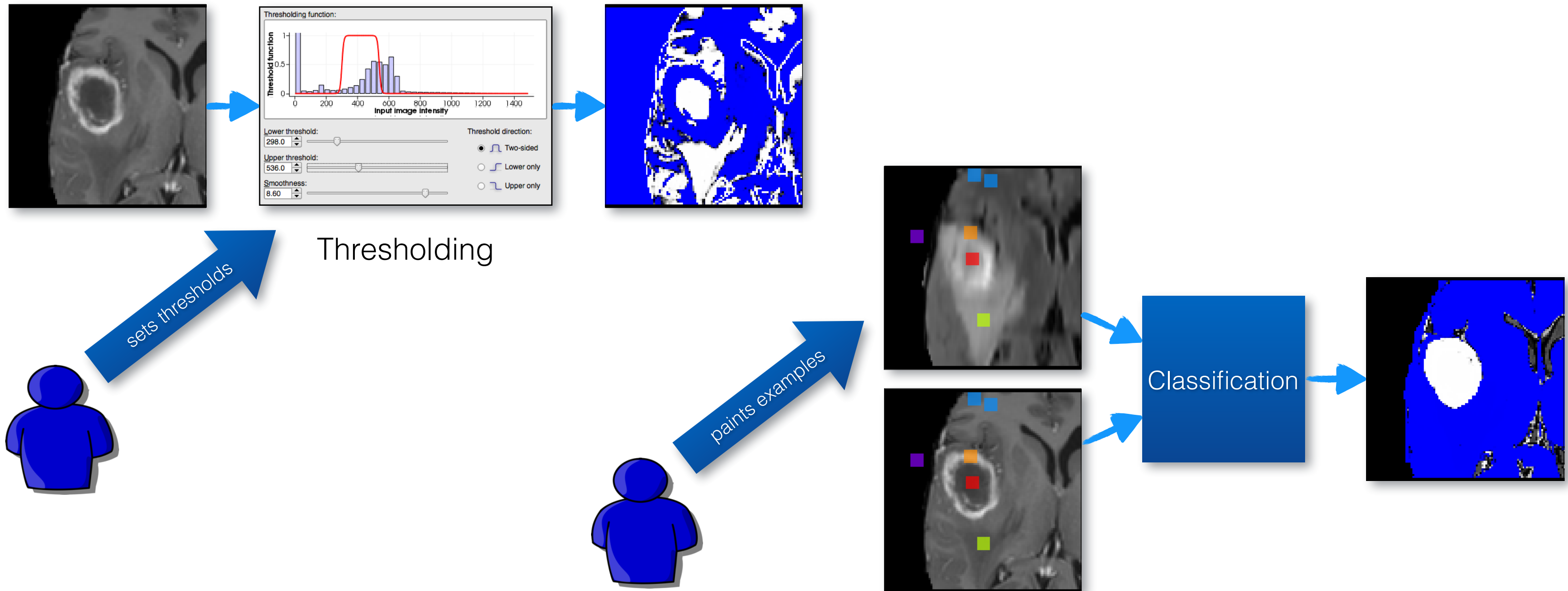
Pre-segmentation Modes



Pre-segmentation Modes



Pre-segmentation Modes



Active Contour Evolution driven by Forces

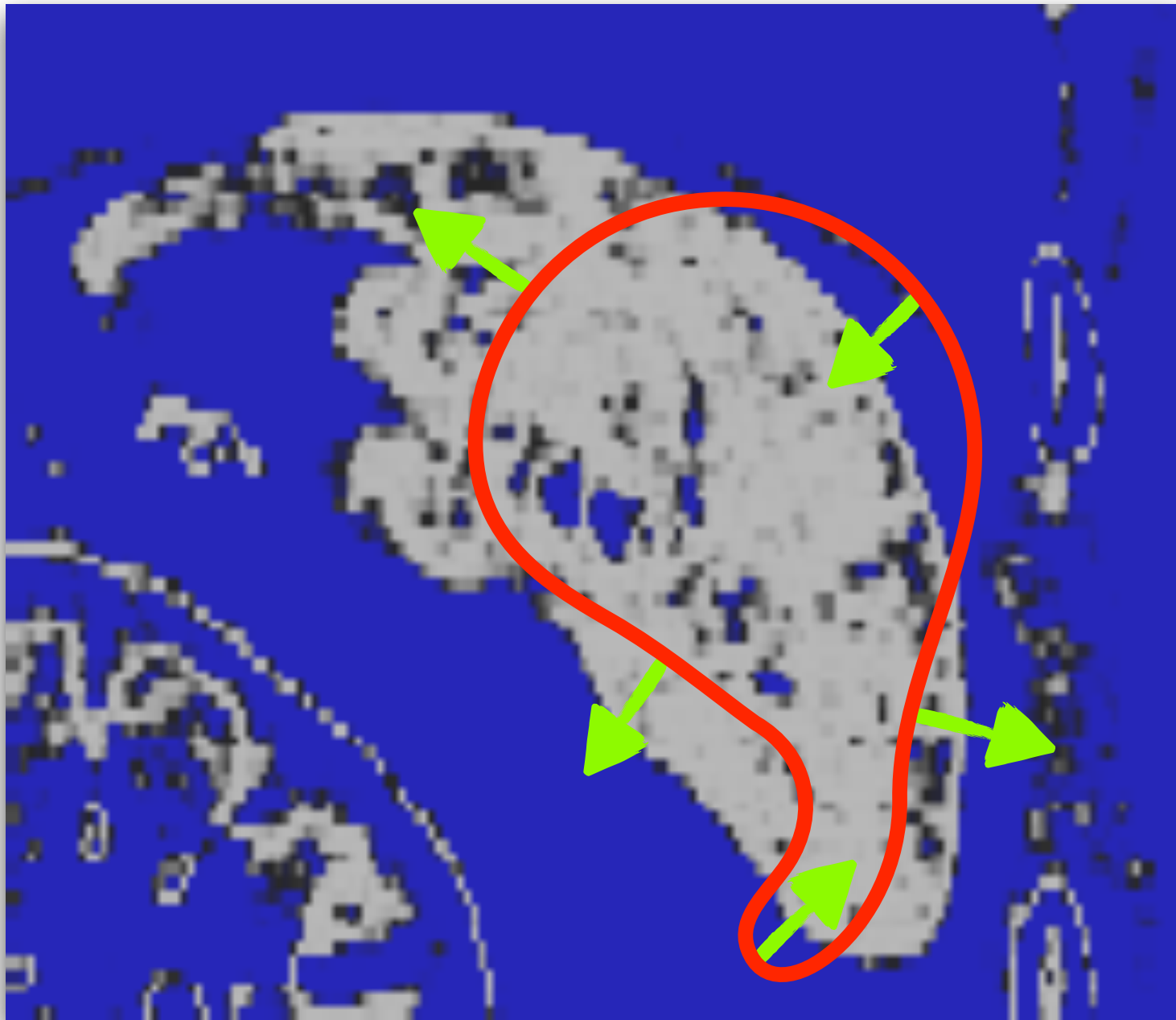
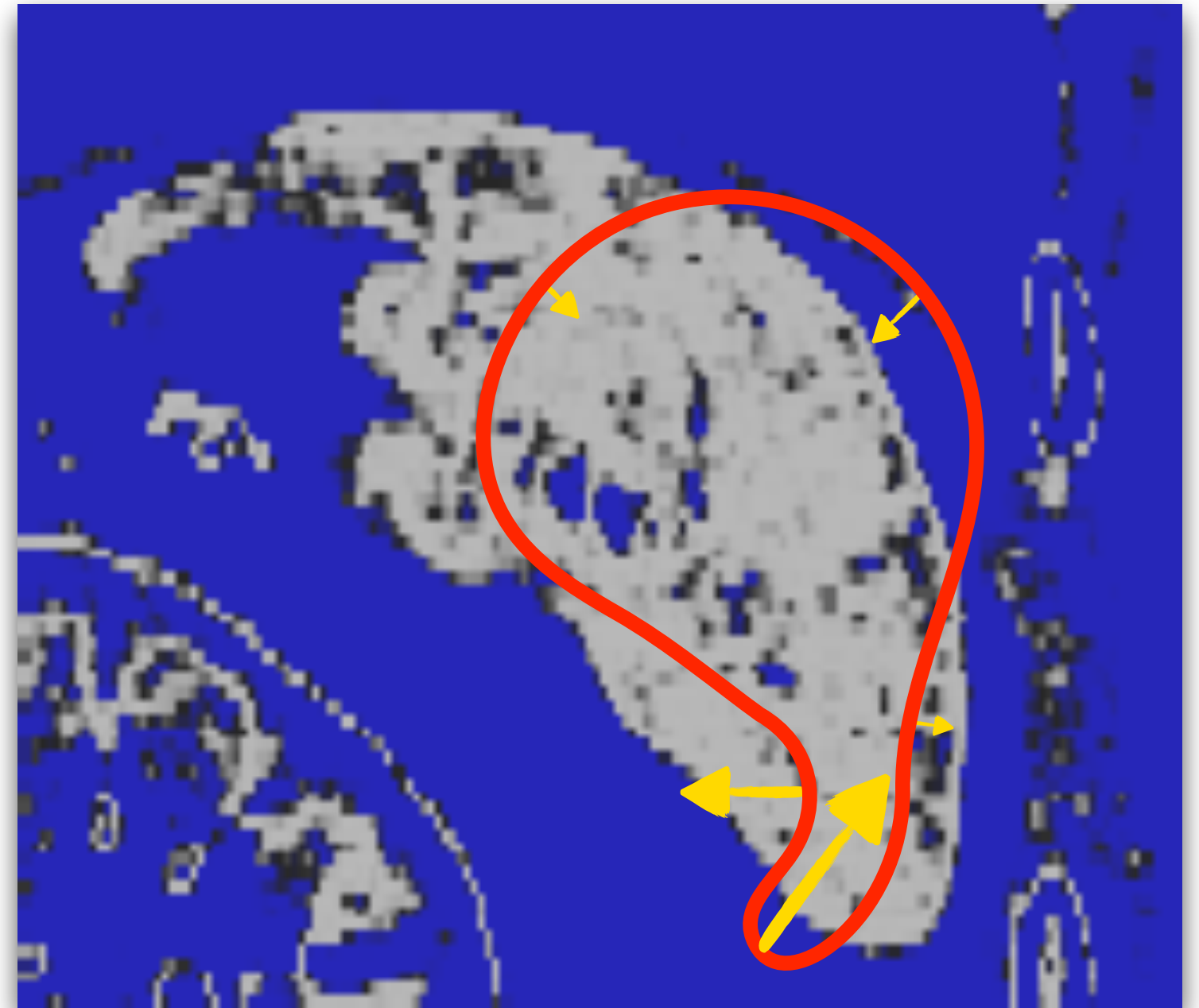
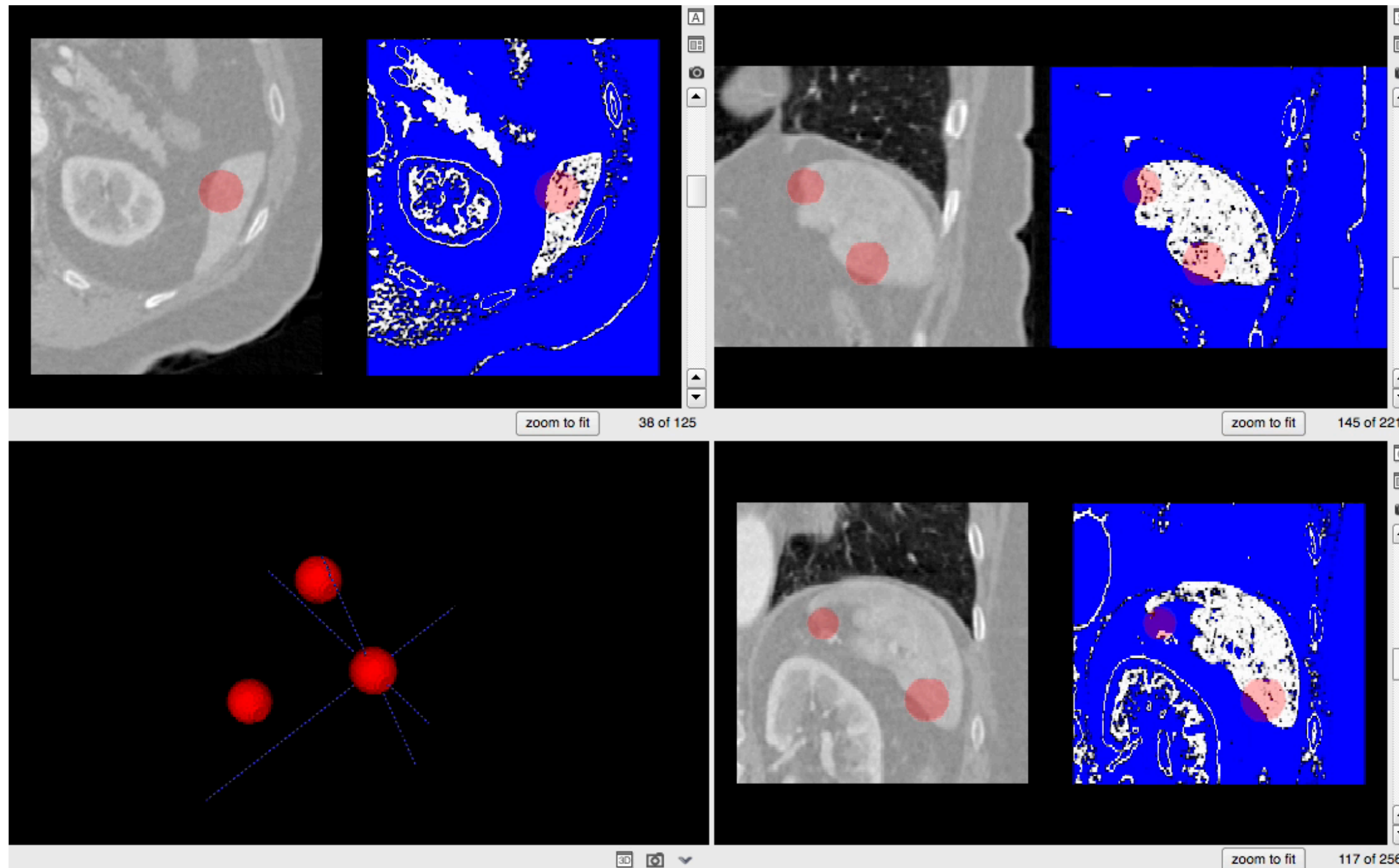


Image Force:
outward over foreground, inward over background

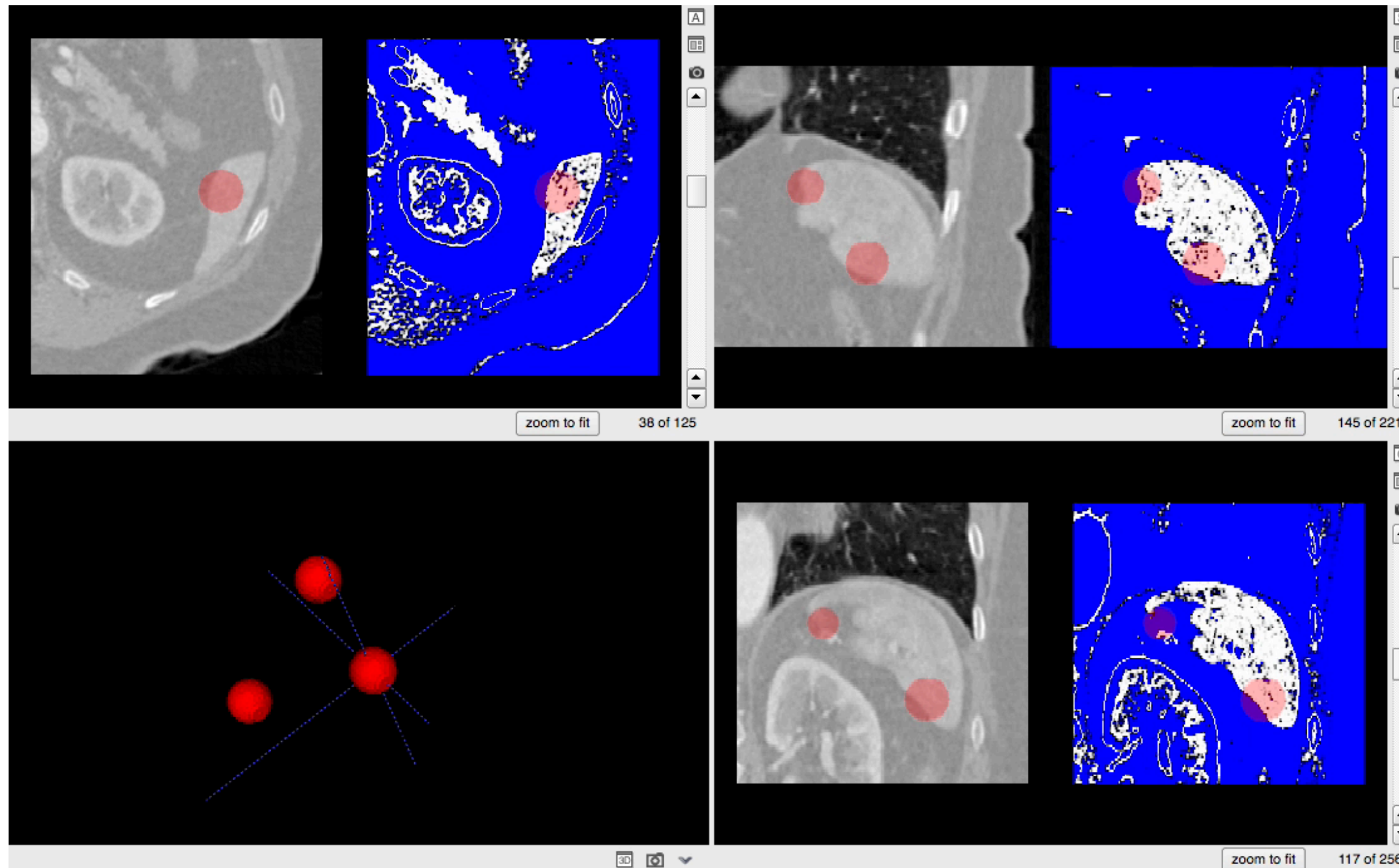


Smoothing Force:
strongest in places of high curvature

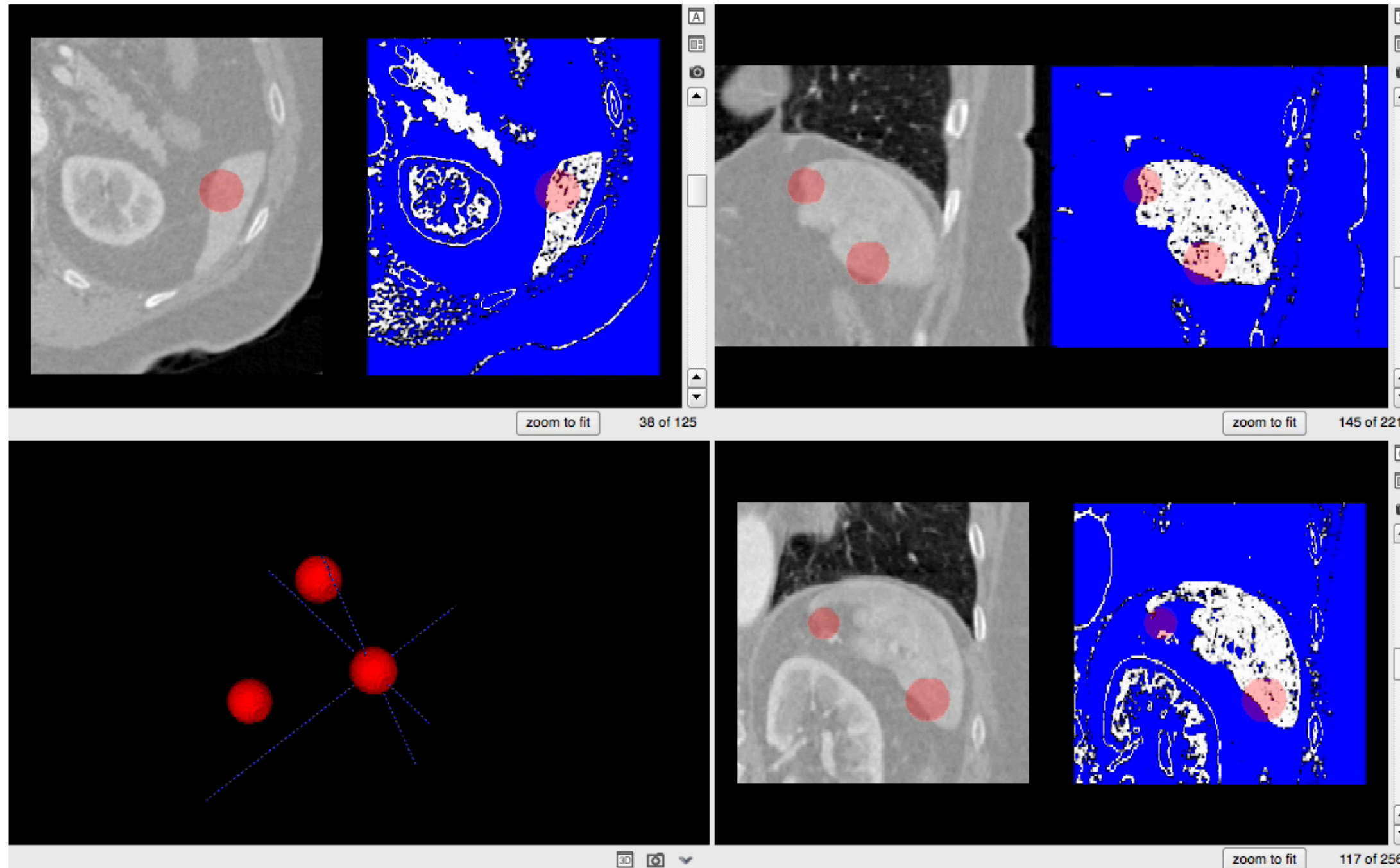
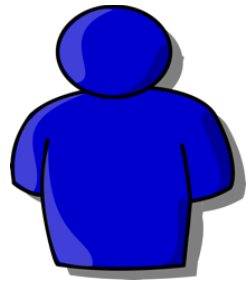
Active Contour Evolution



Active Contour Evolution



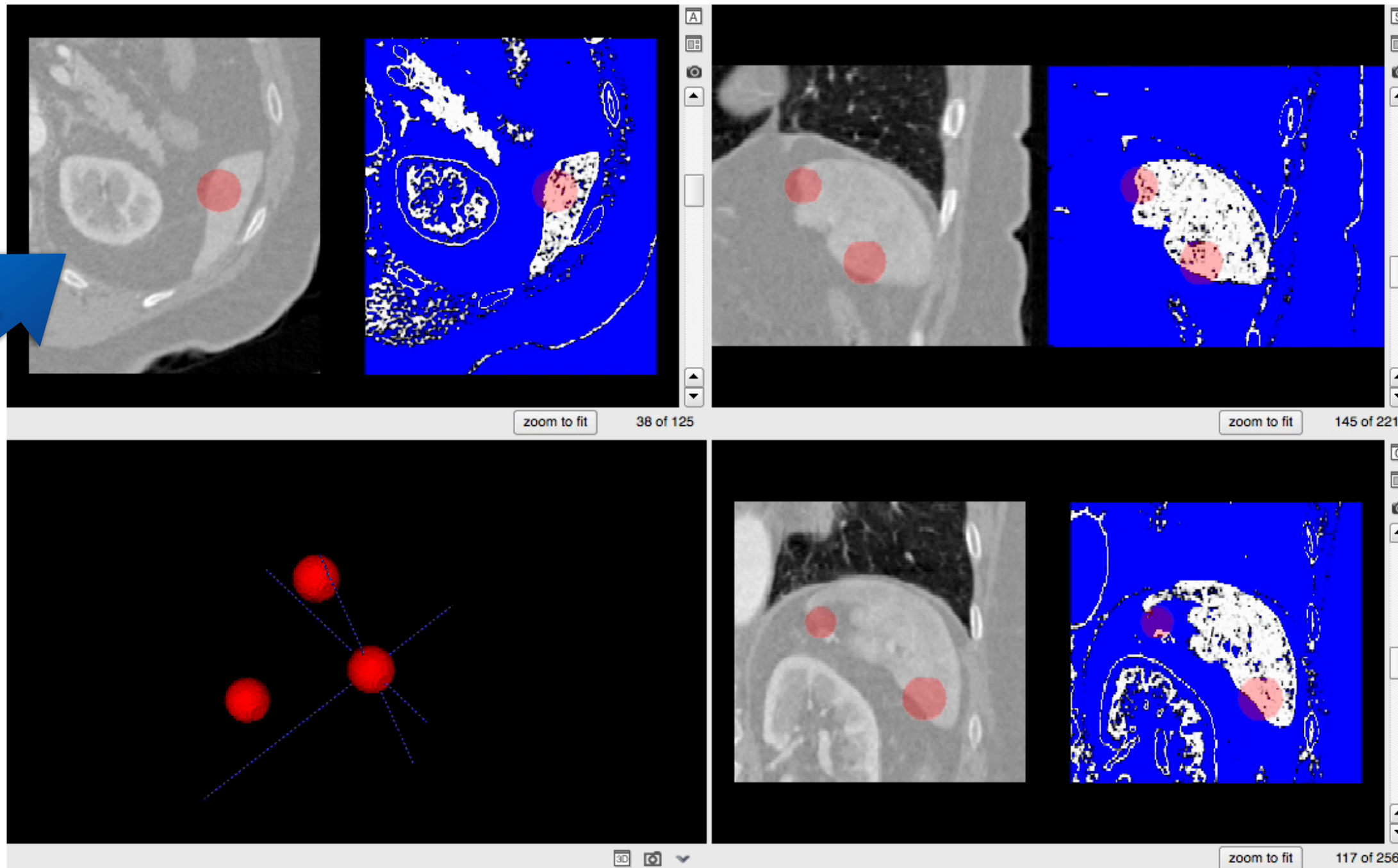
Active Contour Evolution



Active Contour Evolution

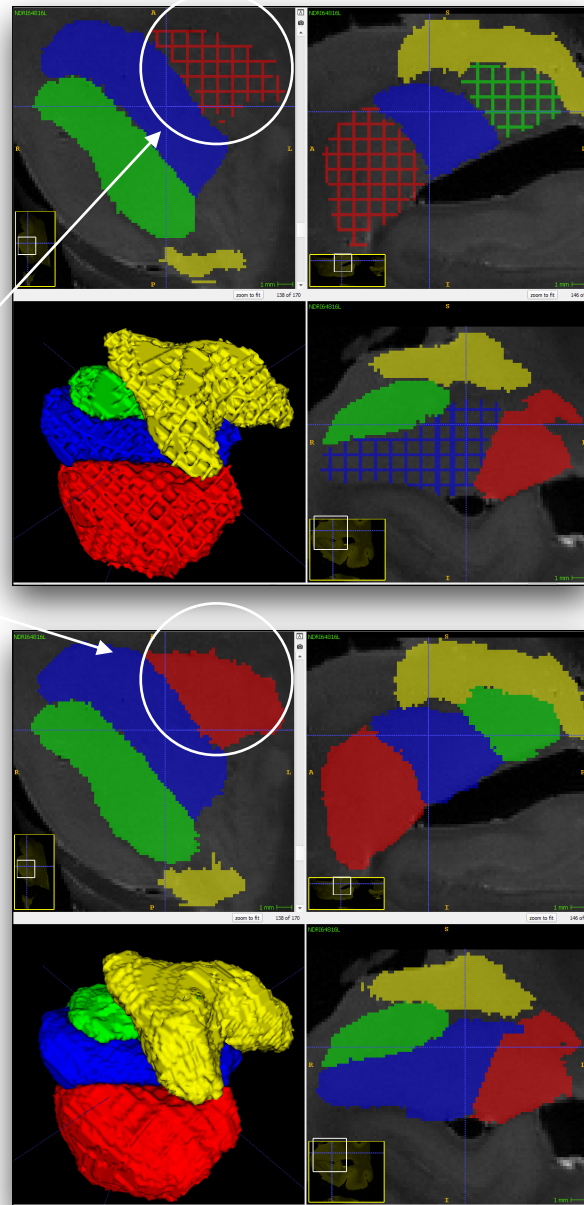


places seeds

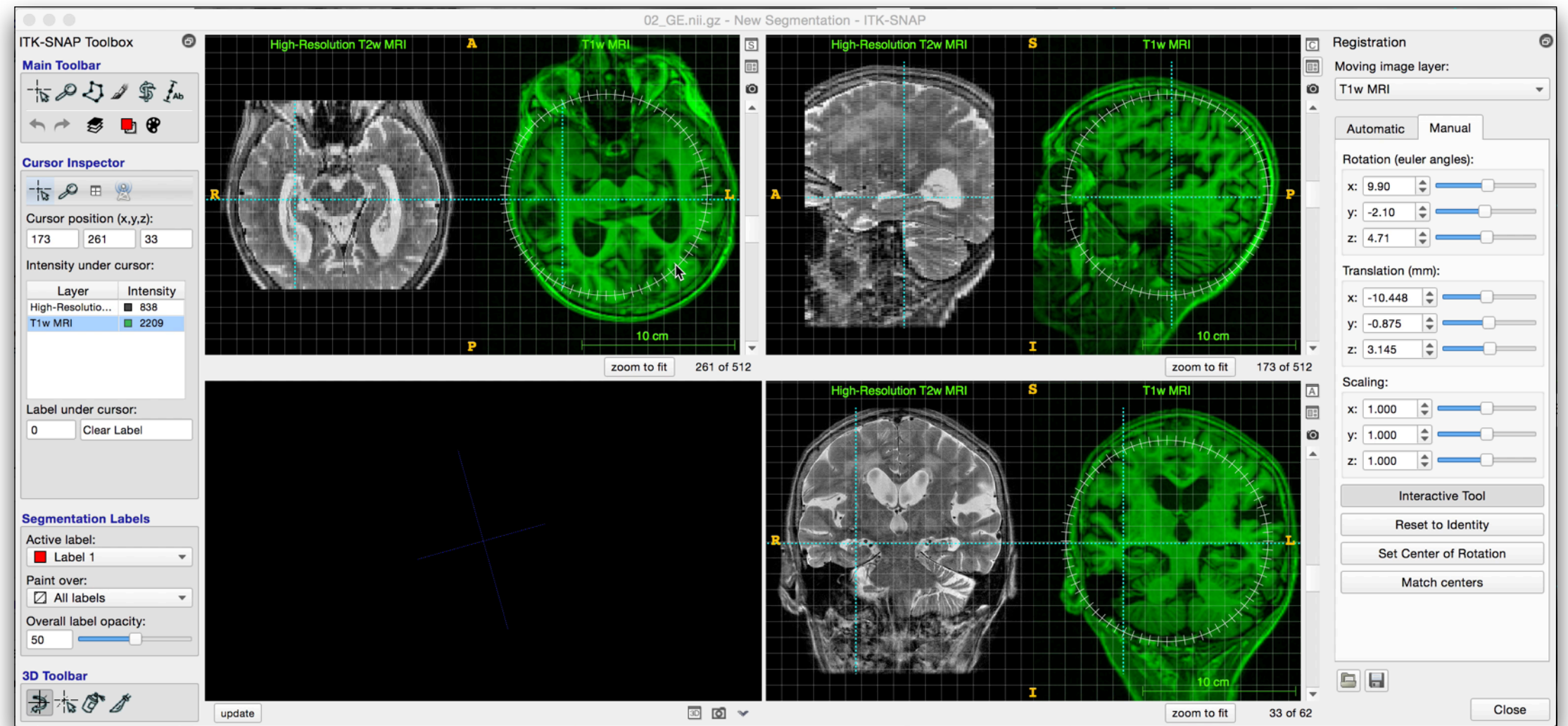


Live demo of
semi-automatic segmentation

Newest ITK-SNAP Functionality (late 2016)

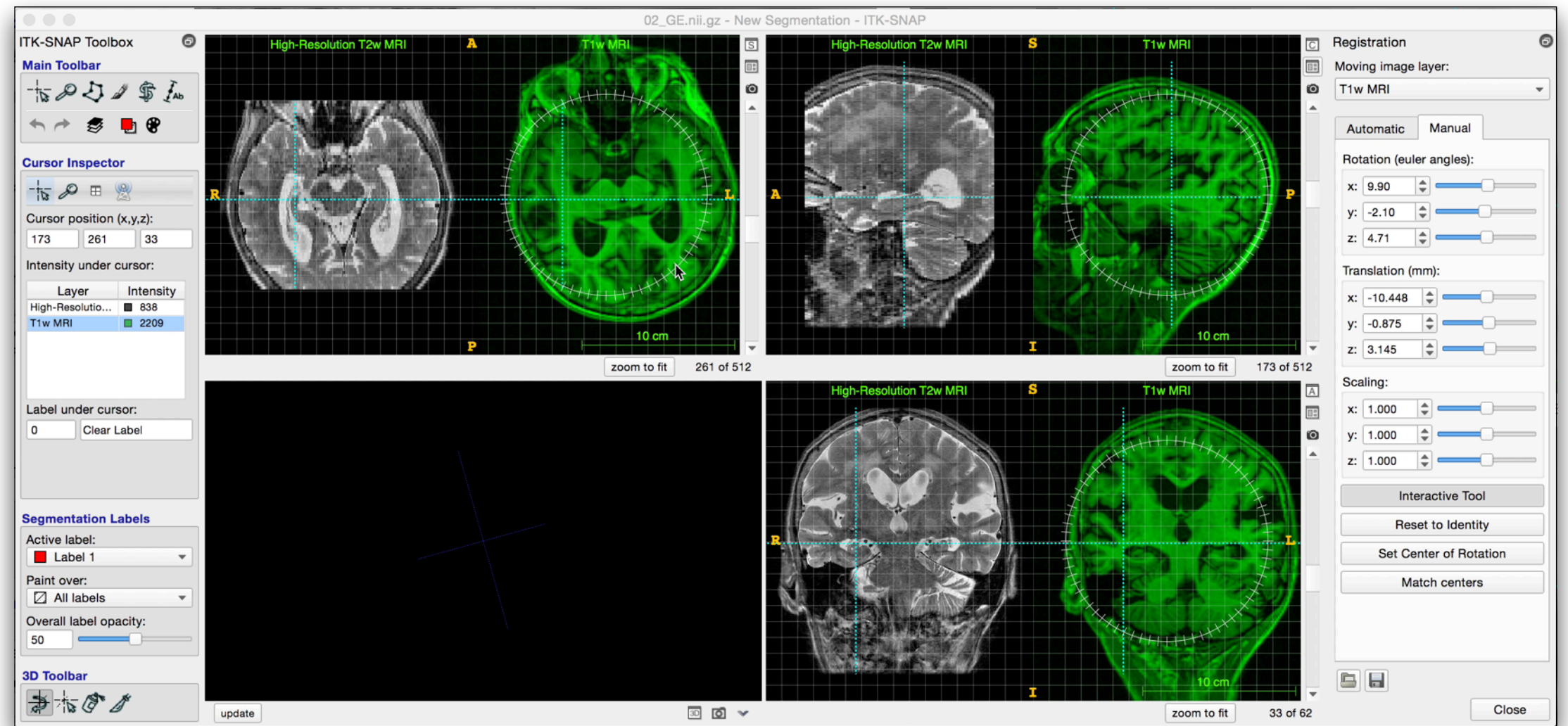
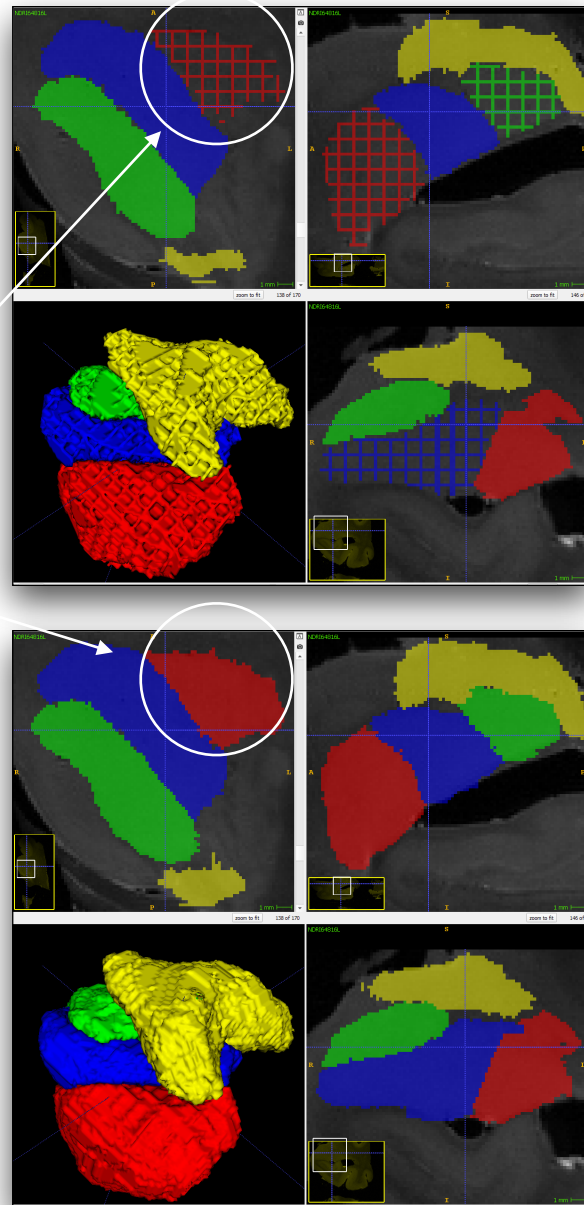


Morphological interpolation



Manual and automatic registration

Newest ITK-SNAP Functionality (late 2016)



Morphological interpolation

Manual and automatic registration

Please work on
exercises 3 and 4

itksnap.org/rsna2016