As far as this project is concerned, segmentation is a critical step. The segmentation can be carried out at both 2D and 3D levels.

2D segmentation is essential for 3D reconstruction. This segmentation step is usually performed for feature extraction in order to reconstruct a 3D surface. Once in 2D every image has many pixels. Each pixel corresponds to a numerical value. All these numerical values when collected together serve as a look up table for 3D reconstruction. There are many ways to represent a 2D image as a 3D structure. One of them is binary label map. In binary label map each point in 3D is assigned a binary value using the look up table in the 2D image.

The first step in conversion of 2D image to binary label map is the identification of boundary for each structure. Boundary is what separates the background from the foreground or the region of interest. In binary label map the background is assigned a value 0 whereas the region of interest is assigned value 1. This is one of the most effective methods for 3D reconstruction.

However, binary label map also has some drawbacks since this method is unable to account for the points lying on the boundary. This induces some errors in the reconstructed 3D structure. To overcome this problem binary label map representation should be converted to some other representation.