We presented a statistical finite element shape model-guided method to segment pulmonary lobes from CT images. Results show that the method can perform well to detect the location of the fissures over most of the fissure surfaces on CT images from normal subjects, and provides a relatively accurate result for IPF (abnormal) subjects although manual interaction is still needed for a few subjects. This new procedure does not depend on prior segmentation of anatomical structures (airway lobar classification), and has promising potential as a clinically useful semi-automatic lobe segmentation procedure.