

Recursive Cascaded Networks for Unsupervised Medical Image Registration

Supplementary Material

Abstract

This supplementary material provides the visualization of some examples across all the evaluation datasets we use. Figure 1 presents an overview of the evaluation datasets. Figures 2, 3, 4, 5 show some examples on each of the liver datasets (SLIVER, LiTS, LSPIG) and the brain dataset (LPBA) respectively. We visualize these results by drawing the output flows, computing the warped images as well as the warped grids, and comparing the warped annotations with the fixed images.

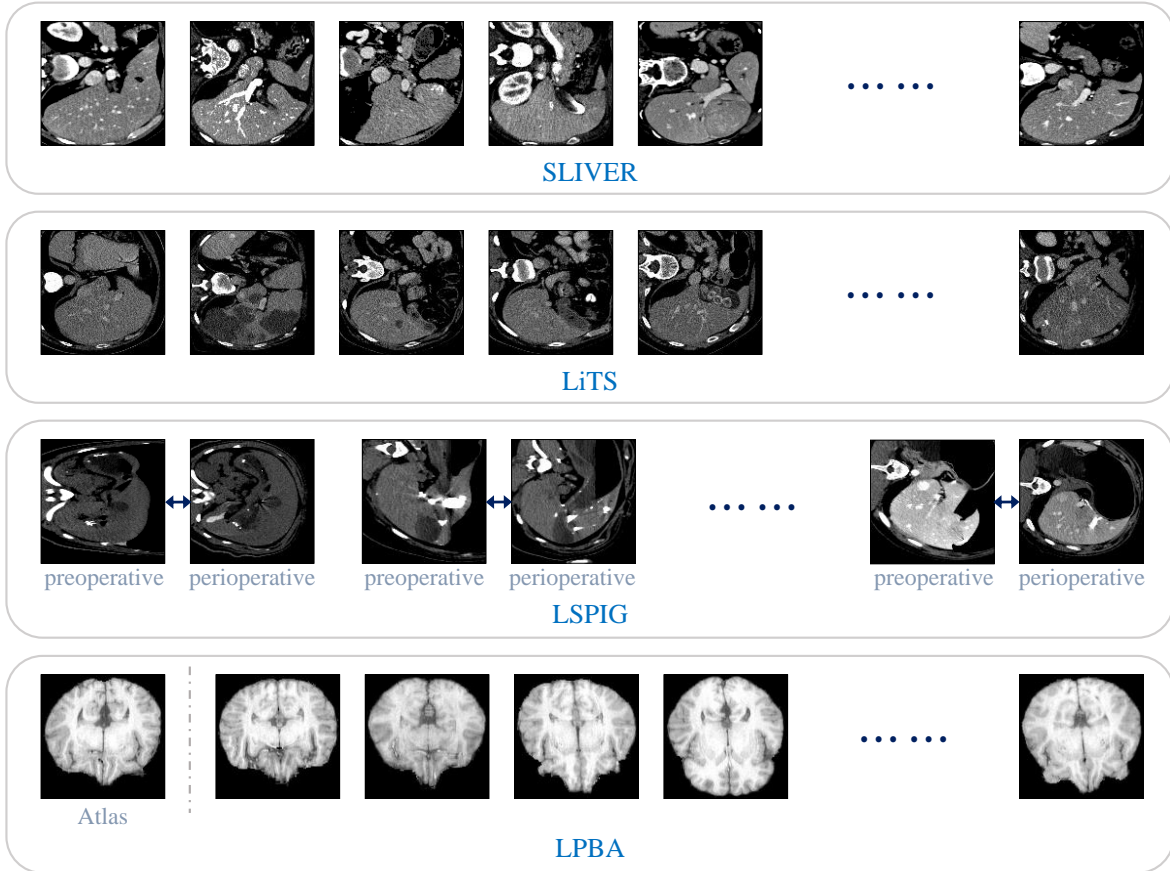


Figure 1. Samples of input images on each of the evaluation dataset. SLIVER, LiTS, LSPIG are for liver CT scans; LPBA is for brain MRIs. Median slices of those 3D images are shown. Every nonidentical image pair in SLIVER as well as LiTS is evaluated. Every image pair in LSPIG which comes from a same pig (preoperative to perioperative, or vice versa) is evaluated. Every image in LPBA registered to the fixed atlas is evaluated.

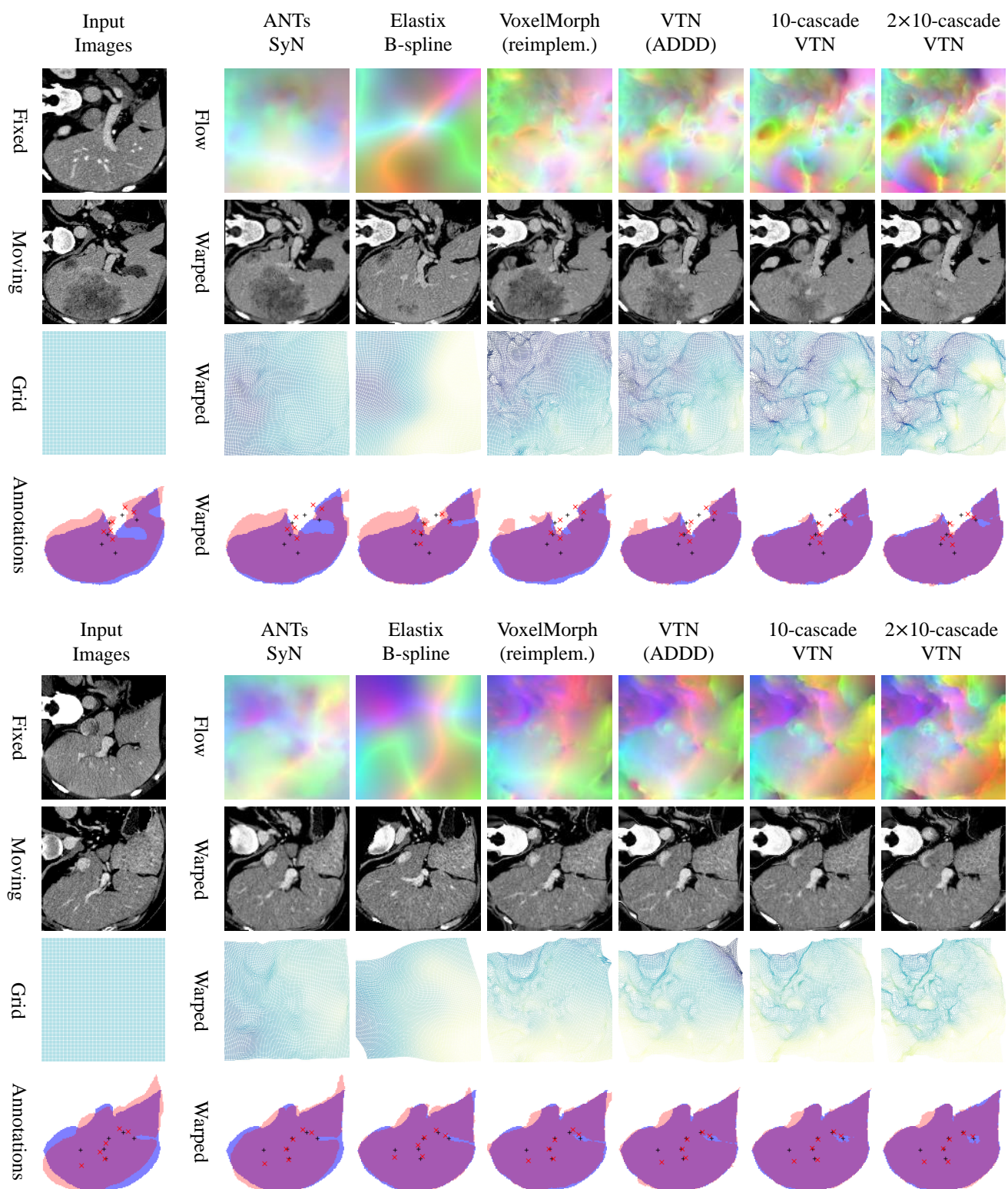


Figure 2. Examples across different methods on the liver dataset SLIVER. Flow fields are drawn by mapping the absolute value of the three components (x, y, z) of flow displacements into color channels (R, G, B) respectively. Grids of deeper color represent lower height. Landmarks are projected onto the plane. Black plusses represent the landmarks of the fixed image, and red crosses represent the landmarks of the moving image or the warped images. Segmentations are sliced. Blue areas represent the segmentations of the fixed image, and red areas represent the segmentations of the moving image or the warped images. Coincident areas are in purple.

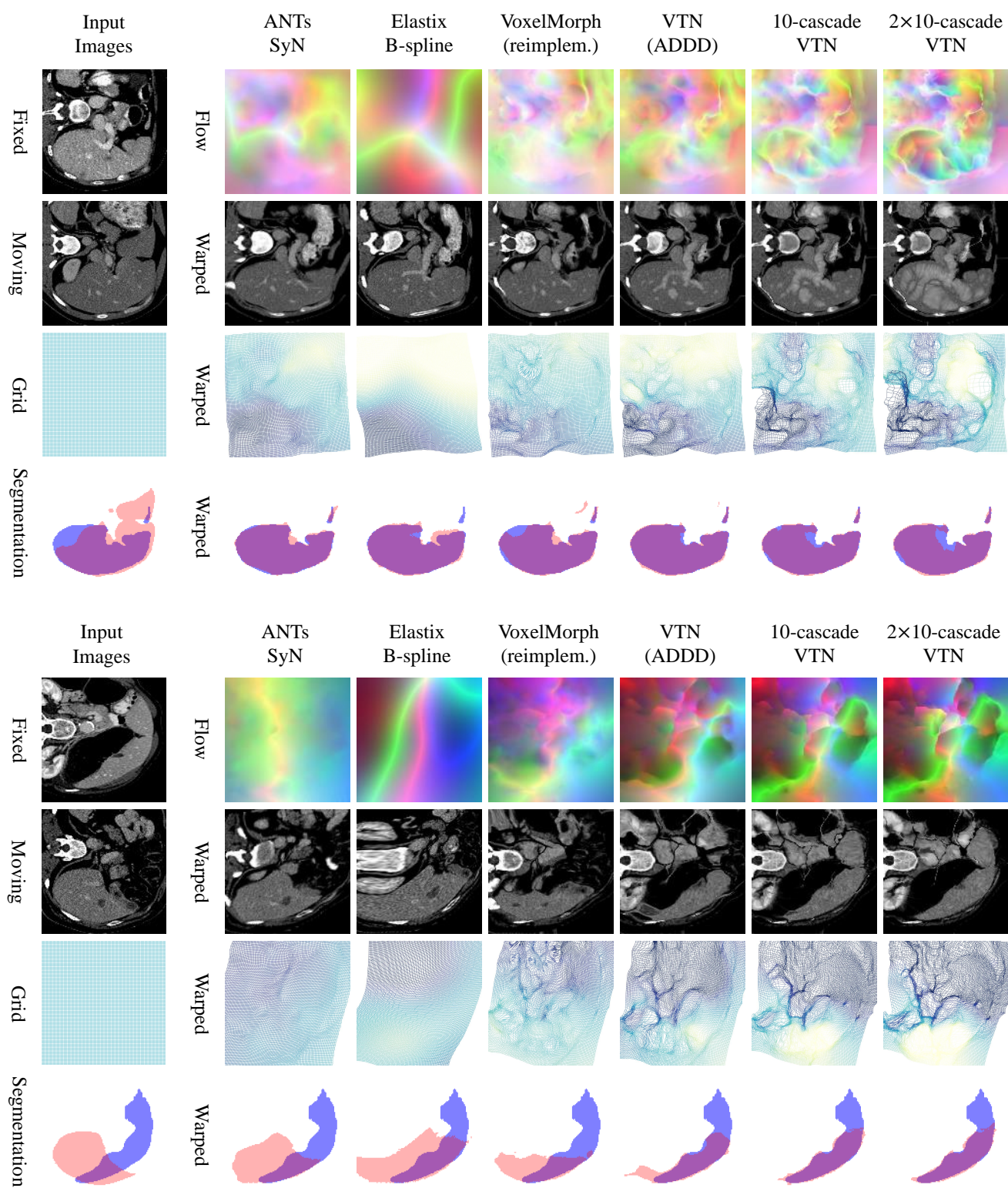


Figure 3. Examples across different methods on the liver dataset LiTS. Median slices of images, flows, and segmentations are shown.

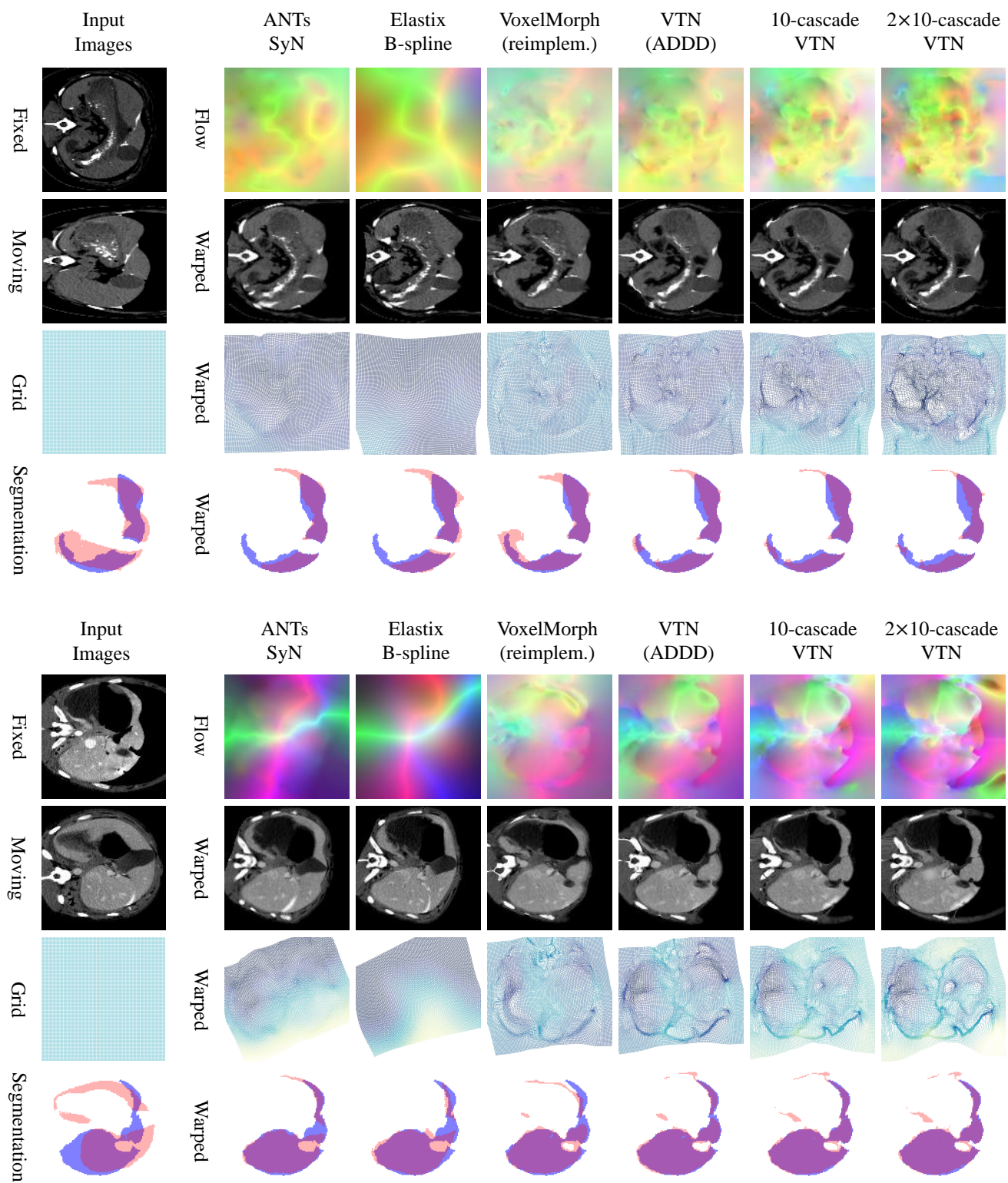


Figure 4. Examples across different methods on LSPIG, the liver dataset of pigs. Median slices of images, flows, and segmentations are shown.

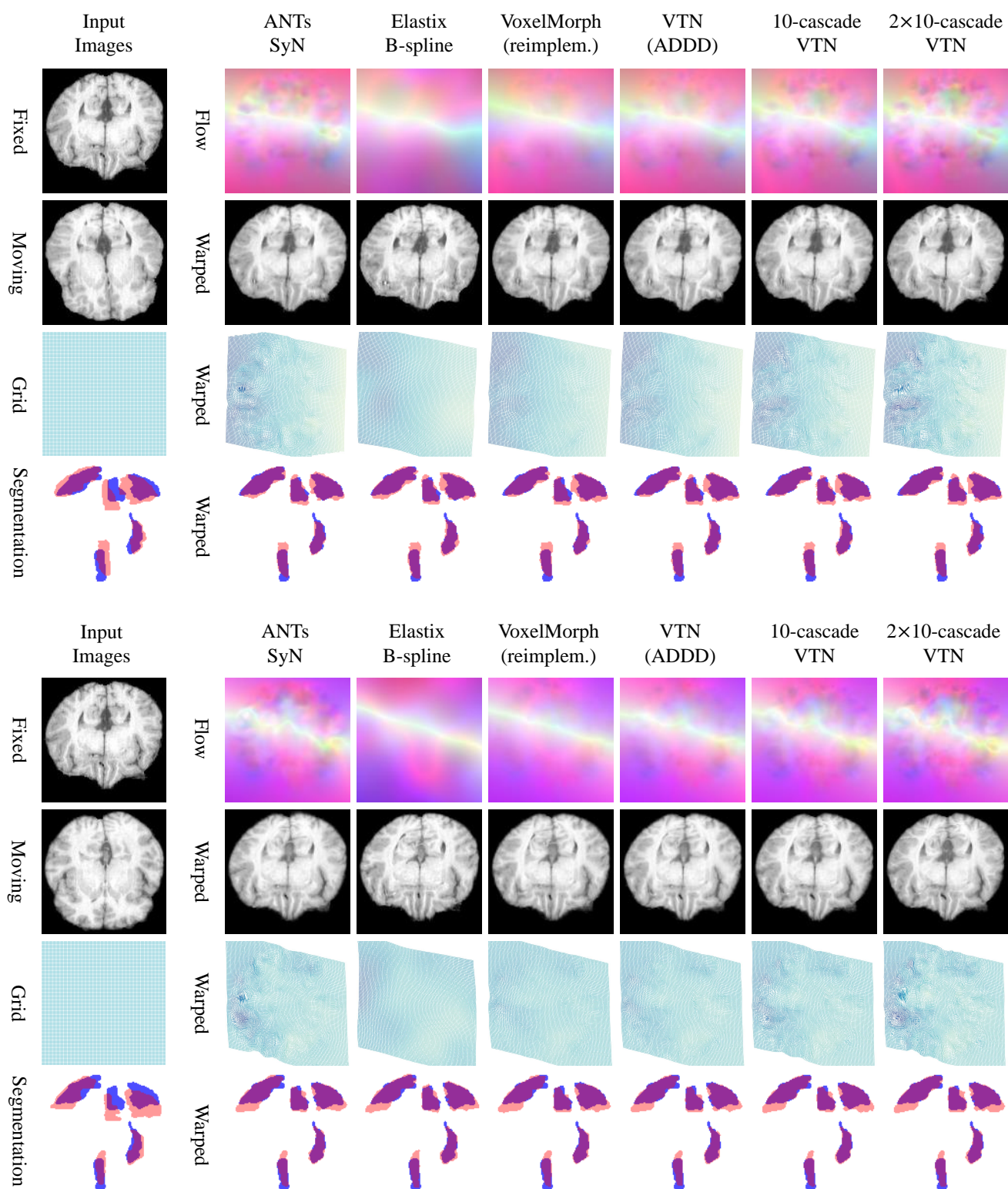


Figure 5. Examples across different methods on the brain dataset LPBA. Median slices of images and flows are shown. Segmentations of 5 chosen anatomical structures are projected onto the plane.