

GMM-CoRegNet: A Multimodal Groupwise Registration Framework Based on Gaussian Mixture Model

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Table 1: Results on the BrainWeb dataset evaluated by DSC (%). The bolded numbers denote the highest scores.

Methods	BrainWeb dataset			
	Reg DSC (%)			
	Avg	CSF	GM	WM
None	54.47	41.19	51.26	70.96
Ants-SyN	74.65	67.39	72.46	84.09
APE	75.28	67.73	72.77	85.39
VoxelMorph	74.05	63.81	70.39	87.96
\mathcal{X} -CoReg	75.15	66.55	71.29	87.60
Ours	76.02	67.89	72.96	87.21

Table 2: Ablation study of loss functions of our method on carotid simulation dataset.

Methods	Reg DSC (%)					
	Average	VL	VM	Cal	Lip	Hem
w/o $\mathcal{L}_{dispersion}$	78.23	88.04	78.52	57.80	65.34	83.15
w/o \mathcal{L}_{label}	78.45	87.40	78.81	58.19	66.02	83.03
Ours	79.41	88.06	80.20	60.29	67.52	85.45

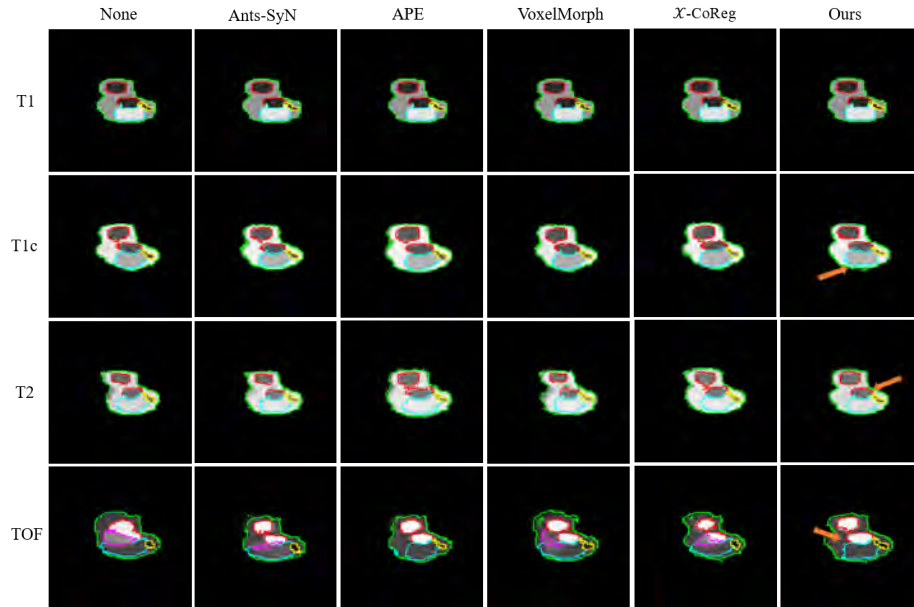


Fig. 1: Example image groups (with segmentation contours of T1 overlaid) before and after registration by compared methods on the carotid simulation dataset. Orange arrows indicate some regions where our method outperforms the baseline methods.

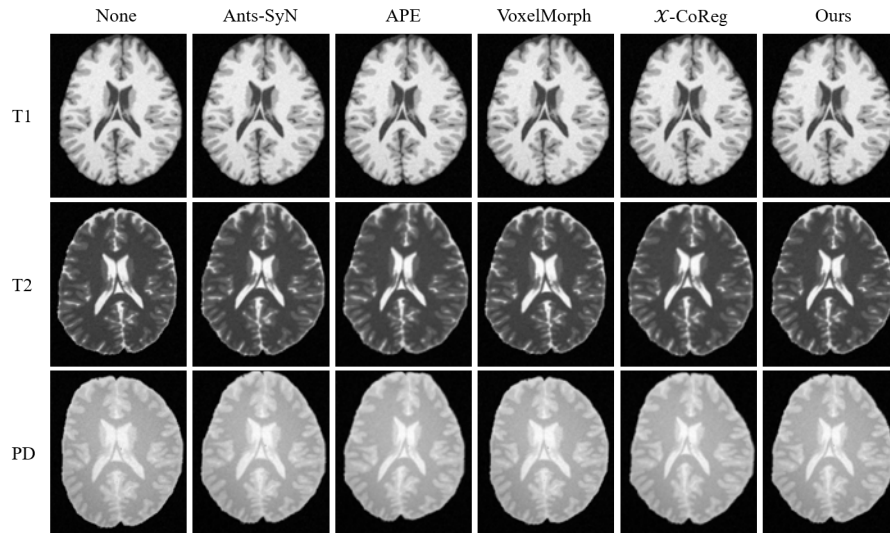


Fig. 2: Example image groups before and after registration by compared methods on the BrainWeb dataset.