

DES-SAM: Distillation-Enhanced Semantic SAM for Cervical Nuclear Segmentation with Box Annotation Supplementary Material

Lina Huang¹, Yixiong Liang¹ ✉[0000-0003-0407-5838], and Jianfeng Liu²

¹ School of Computer Science and Engineering,
Central South University, Changsha, China
yxliang@csu.edu.cn

² School of Automation, Central South University, Changsha, China

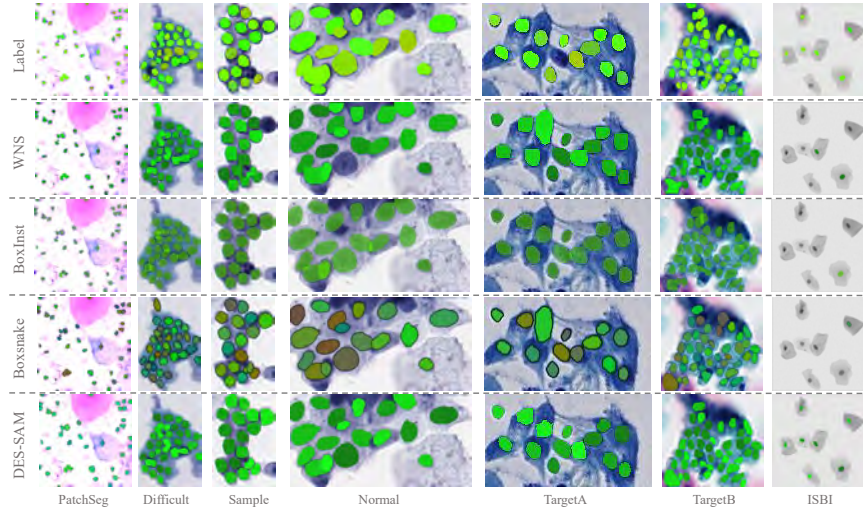


Fig. 1. Comparison visualization results on CNSeg and 2014ISBI datasets showcase segmentation outcomes from state-of-the-art methods. Different shades of green represent different instances.

Table 1. Generalization test of ablation study on the CNSeg dataset trained on PatchSeg.

prompt mask_loss pairwise_loss			TargetA			TargetB		
			DICE	AJI	PQ	DICE	AJI	PQ
			69.00	49.71	42.17	71.93	51.89	48.01
✓	✓		65.95	46.68	39.22	70.81	50.79	46.96
✓	✓	✓	69.89	51.47	45.46	72.47	52.57	49.44

Table 2. Generalization test on the ClusterSeg dataset trained on PatchSeg.

Model	Sup.	Sample			Normal			Difficult		
		DICE	AJI	PQ	DICE	AJI	PQ	DICE	AJI	PQ
WSPP	P	67.59	49.19	47.51	48.80	27.55	28.00	38.42	17.68	23.28
Scribble2Label	S	81.46	63.74	59.78	71.59	44.30	37.91	62.56	36.04	31.17
BoxInst	B	52.28	32.14	35.99	35.37	16.91	19.38	42.59	23.90	28.07
DiscoBox	B	56.35	38.36	14.59	46.65	29.02	9.58	49.70	31.70	10.87
WNS	B	56.46	36.33	39.38	40.35	22.03	23.67	53.40	34.69	36.45
BoxLevelSet	B	41.16	23.44	5.12	32.24	17.68	2.52	34.82	19.59	2.18
MAL	B	63.32	44.64	23.51	50.12	31.06	14.78	52.51	33.05	13.57
Boxsnake	B	64.64	44.58	50.57	51.76	30.20	31.87	56.10	31.93	34.08
SAM-Base	-	78.30	62.92	65.93	54.91	35.54	38.64	49.85	29.31	35.74
DES-SAM (ours)	B	84.68	72.45	64.78	66.45	47.62	41.90	64.21	43.65	40.69

Table 3. Generalization test on the DomainSeg and 2014ISBI Test dataset trained on PatchSeg.

Model	Sup.	TargetA			TargetB			2014ISBI		
		DICE	AJI	PQ	DICE	AJI	PQ	DICE	AJI	PQ
WSPP	P	30.38	12.96	12.18	42.75	20.70	20.06	71.72	54.41	55.94
Scribble2Label	S	59.37	27.12	22.88	64.45	39.92	34.28	73.56	57.23	33.10
BoxInst	B	48.05	27.80	30.45	56.75	34.75	38.39	91.64	84.59	84.15
DiscoBox	B	56.82	37.59	15.55	60.78	41.98	28.63	91.71	84.62	83.55
WNS	B	53.79	34.34	36.90	63.64	42.33	44.59	89.86	81.56	80.30
BoxLevelSet	B	38.89	21.04	3.12	47.22	28.95	12.46	87.92	78.27	73.59
MAL	B	58.76	38.45	18.69	59.59	39.63	27.15	87.34	77.31	74.53
Boxsnake	B	68.59	48.30	44.95	62.34	39.32	43.97	90.03	81.50	83.17
SAM-Base	-	50.66	32.67	33.46	54.88	33.41	42.61	30.67	8.43	25.86
DES-SAM (ours)	B	69.89	51.47	45.46	72.47	52.57	49.44	93.27	87.34	88.35