

Tackling Long-Tailed Category Distribution Under Domain Shifts

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Problem Statement



 Open-Door
 VS
 Repair-Door
 Common Diseases VS Rare Diseases

 Domain Shifts
 Subject Behavior Differences
 Different Hospitals

 Image: Common Disease VS
 Image: Common Diseases
 Image: Common Diseases

Theoretical Analysis

We estimate the empirical loss on the testing domain under LT-DS problem.





How to Augment the Feature Representation of Tail Classes? Augment the diversity of tail classes by head classes^b





LT-DS Benchmarks



Experimental Results

Quantitative Results

		Original			Hayao			Shinkai			Vangogh			Ukiyoe		
Method		Acc-U	Acc	н	Acc-U	Acc	н	Acc-U	Acc	н	Acc-U	Acc	н	Acc-U	Acc	н
	Agg	29.4	27.0	34.5	20.4	29.9	36.2	30.8	33.5	38.6	27.1	34.2	41.0	25.5	34.2	38.6
LT	cRT[14]	30.4	29.1	34.8	23.5	33.6	38.9	34.7	35.8	39.6	28.6	35.8	43.0	28.4	36.7	35.7
	BSCE[27]	41.8	35.9	41.7	24.7	36.1	41.7	30.2	35.8	40.7	29.0	37.7	43.2	25.9	33.6	35.1
	Equal[31]	34.1	32.9	36.6	24.3	35.3	42.7	33.5	36.2	40.5	28.8	35.8	42.4	27.3	34.7	34.0
	Remix[3]	32.7	30.3	35.9	16.9	30.7	33.3	27.6	32.0	37.5	26.9	31.8	41.2	26.5	32.0	34.9
_	Epi-FCR[16]	34.0	33.1	40.5	23.3	34.0	40.6	29.7	35.5	39.1	27.5	36.1	42.0	27.0	35.7	38.0
	MixStyle[44]	36.7	34.0	41.2	27.1	36.2	41.7	32.0	36.2	40.6	28.4	36.0	41.9	28.8	36.2	38.3
DG	CuMix 22	36.1	33.8	38.6	24.7	35.3	41.0	30.2	35.1	41.4	28.2	35.1	40.9	26.5	34.7	34.6
	DAML 29	13.9	10.7	16.2	14.7	22.5	29.8	17.3	24.9	30.4	14.3	19.5	25.6	22.9	28.9	36.0
	DAML 29-Warmup	42.2	35.3	42.5	25.7	35.2	39.5	31.2	36.8	44.0	29.4	37.5	45.3	28.6	36.0	41.4
	MixStyle+BSCE	40.0	36.8	41.8	28.8	39.7	43.5	32.4	38.3	44.2	30.8	38.2	43.3	29.8	38.9	<u>39.3</u>
	Epi-FCR+BSCE	41.3	36.9	42.0	24.0	35.9	41.2	32.0	39.2	42.5	30.1	$\underline{38.5}$	41.7	26.6	35.9	38.7
_	Ours	49.4	42.1	45.8	29.8	42.4	46.3	34.3	42.6	45.3	32.7	40.3	46.3	32.9	42.4	<u>39.3</u>

