

alibabaAnswer

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March 2020

1 Introduction

$$P(M_1, M_2, \dots, M_k) = \frac{(\prod_{i=1}^k p_i)^{\frac{2}{n}}}{\frac{1}{n} \sum_{i=1}^k p_i} \quad (1)$$

Data set	Random Forest					
	Co-training			Self-training		
	Initial	Final	Improve	Initial	Final	Improve
Vegetation	0.899	0.921	2.4%	0.883	0.881	-0.0%
Shadow	0.770	0.865	12.3%	0.769	0.772	0.0%
Water	0.801	0.907	13.2%	0.821	0.850	3.5%
Road	0.649	0.656	1.1%	0.645	0.639	-0.8%
Building	0.423	0.563	33.0%	0.438	0.482	10.2%
Ave.	0.709	0.783	10.4%	0.711	0.725	2.0%

Table 1: Performances of co-training and self-training (labeled data size=1,unlabeled data size=5)

Data set	Random Forest					
	Co-training			Self-training		
	Initial	Final	Improve	Initial	Final	Improve
Vegetation	0.850	0.904	6.3%	0.893	0.886	-1.0%
Shadow	0.802	0.851	6.1%	0.778	0.806	3.5%
Water	0.875	0.898	2.6%	0.840	0.881	4.8%
Road	0.647	0.631	-2.5%	0.651	0.621	-4.6%
Building	0.424	0.484	14.0%	0.429	0.454	5.7%
Ave.	0.720	0.754	4.6%	0.718	0.730	1.6%

Table 2: Performances of co-training and self-training (labeled data size=1,unlabeled data size=10)

Data set	Random Forest					
	Co-training			Self-training		
	Initial	Final	Improve	Initial	Final	Improve
Vegetation	0.855	0.893	4.4%	0.867	0.886	2.1%
Shadow	0.769	0.869	13.1%	0.761	0.815	7.0%
Water	0.837	0.901	7.7%	0.843	0.878	4.2%
Road	0.666	0.689	3.5%	0.657	0.670	2.0%
Building	0.410	0.498	21.4%	0.437	0.506	15.8%
Ave.	0.707	0.770	8.9%	0.713	0.751	5.3%

Table 3: Performances of co-training and self-training (labeled data size=1,unlabeled data size=15)

Data set	Random Forest					
	Co-training			Self-training		
	Initial	Final	Improve	Initial	Final	Improve
Vegetation	0.891	0.926	4.0%	0.845	0.861	1.9%
Shadow	0.790	0.856	8.3%	0.772	0.796	3.1%
Water	0.801	0.883	10.2%	0.812	0.850	4.6%
Road	0.635	0.682	7.5%	0.641	0.659	2.8%
Building	0.453	0.532	17.4%	0.449	0.485	8.0%
Ave.	0.714	0.776	8.7%	0.704	0.730	3.7%

Table 4: Performances of co-training and self-training (labeled data size=1,unlabeled data size=20)

Data set	Random Forest								
	Multi-training			Co-training			Self-training		
	Initial	Final	Improve	Initial	Final	Improve	Initial	Final	Improve
Vegetation	0.888	0.933	5.0%	0.906	0.903	-0.4%	0.886	0.876	-1.1%
Shadow	0.766	0.842	10.0%	0.736	0.651	-11.6%	0.763	0.786	3.1%
Water	0.797	0.888	11.5%	0.786	0.752	-4.3%	0.806	0.829	2.9%
Road	0.677	0.721	6.5%	0.667	0.642	-3.8%	0.667	0.656	-1.7%
Building	0.453	0.578	27.6%	0.476	0.521	9.3%	0.468	0.506	8.1%
Ave.	0.716	0.792	10.6%	0.715	0.694	-2.9%	0.718	0.731	1.8%

Table 5: Performances of multi-training, co-training and self-training (labeled data size=1,unlabeled data size=5)

Data set	Random Forest								
	Multi-training			Co-training			Self-training		
	Initial	Final	Improve	Initial	Final	Improve	Initial	Final	Improve
Vegetation	0.904	0.941	4.1%	0.908	0.912	0.4%	0.896	0.893	-0.4%
Shadow	0.779	0.840	7.9%	0.732	0.679	-7.2%	0.775	0.797	2.9%
Water	0.832	0.874	5.1%	0.790	0.764	-3.3%	0.823	0.843	2.5%
Road	0.674	0.745	10.5%	0.671	0.655	-2.5%	0.678	0.673	-0.8%
Building	0.454	0.603	33.0%	0.481	0.526	9.5%	0.460	0.514	11.6%
Ave.	0.728	0.801	9.9%	0.716	0.707	-1.3%	0.726	0.744	2.4%

Table 6: Performances of multi-training, co-training and self-training (labeled data size=1,unlabeled data size=10)

Data set	Multi-training			Co-training			Self-training			Sup-training		
	Initial	Final	Improve	Initial	Final	Improve	Initial	Final	Improve	Initial	Final	Improve
Vegetation	0.829	0.912	10.1%	0.820	0.833	1.6%	0.822	0.831	1.1%	0.953	0.982	2.8%
Shadow	0.690	0.799	15.8%	0.676	0.724	7.1%	0.690	0.718	4.0%	0.912	0.965	5.3%
Water	0.807	0.832	3.0%	0.779	0.837	7.5%	0.790	0.814	3.0%	0.929	0.979	5.0%
Road	0.645	0.691	7.1%	0.624	0.625	0.1%	0.628	0.603	-4.0%	0.786	0.902	11.5%
Building	0.466	0.531	13.9%	0.421	0.468	11.2%	0.417	0.448	7.3%	0.715	0.889	17.3%
Ave.	0.688	0.753	9.5%	0.664	0.698	5.0%	0.670	0.683	2.0%	0.859	0.943	8.4%

Table 7: Performances of multi-training, co-training and self-training (labeled data size=1,unlabeled data size=15)

Domain		Class						
Source domain(T1)	Target domain(T2)	Vegetation	Shadow	Water	Road	Building	Ave.	
50	50	0.751	0.400	0.763	0.422	0.542	0.576	
100	100	0.740	0.443	0.769	0.394	0.621	0.593	
150	150	0.884	0.395	0.754	0.025	0.744	0.561	
200	200	0.941	0.482	0.779	0.260	0.731	0.639	

Domain		Class						
Source domain(T2)	Target domain(T1)	Vegetation	Shadow	Water	Road	Building	Ave.	
50	50	0.550	0.500	0.684	0.589	0.446	0.554	
100	100	0.425	0.663	0.692	0.548	0.479	0.561	
150	150	0.642	0.655	0.324	0.546	0.336	0.500	
200	200	0.608	0.561	0.305	0.458	0.402	0.467	