Experimental results of low dimensional discrete regression data with multiple models

This is a note which records some complementary experiments in OR-DPE paper. As mentioned in this paper, SVOR and RedSVM don't perform as well as expected in high dimensional data. Therefore, we test these models on low dimensional discrete regression data sets which are downloaded from a research website[1] to make further investigates. We split 4/5 of them as train datasets and the left as test datasets. The evaluation metrics we apply here are MAE as well as MSE. The experimental results are shown below. From the Table1, we could see that in most cases, SVOR and RedSVM considering ordering information perform much better than those models which doesn't consider on both MAE and MSE. Surprisingly, form this table, we find our model SVMOP achieves much pretty performance not only in high dimension data bust also in low dimensional and even outperforms all the above models as we mentioned.

Dataset	#Ins	#Att	SVC	SVR	LR	SVOR	RedSVM	SVMOP
				MAE				
abalone-5	83540	11	0.7977	0.7119	0.6997	0.6828	0.6750	**0.6475**
housing-5	10120	14	0.5165	0.4542	0.4354	0.3979	0.4033	**0.3657**
machine-5	4180	7	0.6059	0.5497	0.4514	0.3904	0.4239	**0.3688**
pyrim-5	1480	27	**0.0542**	0.2847	0.0576	0.2372	0.2711	0.0745
abalone-10	83540	11	1.9587	1.4513	1.5565	1.43461	1.4337	**1.3914**
housing-10	10120	14	1.5126	0.9624	0.9990	0.8591	0.8482	**0.7567**
machine-10	4180	7	1.4251	1.1509	0.9856	0.9353	0.9269	**0.8407**
pyrim-10	1480	27	0.2338	0.8203	0.1152	0.7288	0.6440	**0.0542**
				MSE				
abalone-5	83540	11	1.4502	0.9920	1.2441	1.0421	0.9914	**0.9623**
housing-5	10120	14	0.6648	0.5452	0.6124	0.4938	0.5239	**0.4458**
machine-5	4180	7	0.9940	0.6335	0.6479	0.4694	0.5053	**0.4287**
pyrim-5	1480	27	**0.0745**	0.3322	0.0779	0.2847	0.2983	**0.0745**
abalone-10	83540	11	7.2215	3.7030	5.0906	3.5859	3.7826	**3.6354**
housing-10	10120	14	4.5635	1.8581	2.5600	1.6935	1.6421	**1.4527**
machine-10	4180	7	3.9976	2.4874	2.2766	1.7856	1.7197	**1.5473**
pyrim-10	1480	27	0.5457	1.1864	0.3254	1.0406	0.9491	**0.0813**

Table 1: The performance with SVC, SVR, LR, SVOR, RedSVM and SVMOP model. Evaluation metrics are MAE, MSE. The best method in each setting is in **bold**

[1] http://www.gatsby.ucl.ac.uk/ chuwei/ordinalregression