
Supplementary material

Results when the shrinkage parameter is not used for choosing the base learner

Table 3 Comparison of KTBoost with tree and kernel boosting using test mean square error (regression) and test error rate (classification). In parentheses are approximate standard deviations. Below are average ranks of the methods over the different datasets. A p-value of a Friedman test with an Iman and Davenport correction for comparing the different algorithms is also reported. The last row shows Holm-Bonferroni corrected p-values of sign tests for pairwise comparison of the KTBoost algorithm with tree and kernel boosting.

Data	KTBoost	Tree	Kernel
abalone	4.63 (0.246)	5.07 (0.261)	4.64 (0.255)
aileron	2.64e-08 (6.19e-10)	8.11e-08 (2.39e-09)	2.64e-08 (6.19e-10)
bank8FM	0.000908 (3.89e-05)	0.000945 (2.47e-05)	0.000945 (5.83e-05)
elevators	4.71e-06 (2.16e-07)	5.66e-06 (1.44e-07)	5.18e-06 (3.89e-07)
energy	0.28 (0.039)	0.335 (0.093)	1.3 (0.377)
housing	12.8 (3.42)	15.1 (3.23)	13.6 (2.51)
liberty	14.5 (0.299)	14.5 (0.314)	15.2 (0.345)
NavalT	6.51e-09 (1.15e-09)	1.15e-06 (1.58e-07)	6.51e-09 (1.15e-09)
parkinsons	73.4 (2.02)	81.1 (2.44)	73.3 (1.91)
puma32h	6.51e-05 (2.27e-06)	6.51e-05 (2.13e-06)	0.000695 (2.2e-05)
sarcos	7.71 (0.224)	9.6 (0.207)	17.8 (0.586)
wine	0.463 (0.0124)	0.471 (0.0169)	0.506 (0.0106)
adult	0.128 (0.00304)	0.128 (0.00313)	0.163 (0.00512)
cancer	0.0349 (0.00873)	0.0415 (0.0153)	0.0358 (0.0107)
ijcnn	0.0122 (0.000567)	0.0123 (0.000702)	0.0387 (0.00516)
ionosphere	0.0855 (0.018)	0.103 (0.0226)	0.107 (0.0239)
sonar	0.194 (0.0394)	0.223 (0.05)	0.193 (0.0491)
car	0.0405 (0.0059)	0.0411 (0.00685)	0.041 (0.00624)
epileptic	0.351 (0.00543)	0.373 (0.00614)	0.442 (0.0265)
glass	0.322 (0.0702)	0.315 (0.0589)	0.344 (0.0581)
satimage	0.0892 (0.00399)	0.112 (0.00504)	0.0903 (0.00417)
Average rank	1.29	2.43	2.29
p-val Friedman test	5.48e-05		
Adj. p-val sign test		0.000664	0.0144