Projection based ensemble learning for ordinal regression: Experimental results

This document provides supplementary material for the experimental results in the paper entitled Projection based ensemble learning for ordinal regression submitted to IEEE Transactions on Systems, Man and Cybernetics: Part b.

TABLE I
MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD KERNEL DISCRIMINANT LEARNING FOR ORDINAL REGRESSION (KDLOR)

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	68.72 ± 11.42	0.318 ± 0.122	0.349 ± 0.144	0.587 ± 0.269	0.666 ± 0.150	0.618 ± 0.156
squash-unstored	78.46 ± 8.43	0.215 ± 0.084	0.341 ± 0.150	0.789 ± 0.315	0.729 ± 0.119	0.724 ± 0.129
tae	56.05 ± 6.88	0.498 ± 0.088	0.496 ± 0.088	0.750 ± 0.132	0.475 ± 0.112	0.441 ± 0.111
newthyroid	97.22 ± 1.87	0.028 ± 0.019	0.057 ± 0.041	0.144 ± 0.107	0.953 ± 0.031	0.950 ± 0.034
car	95.75 ± 0.86	0.043 ± 0.009	0.085 ± 0.022	0.218 ± 0.075	0.962 ± 0.007	0.954 ± 0.014
eucalyptus	52.67 ± 8.64	0.631 ± 0.083	1.172 ± 0.261	2.517 ± 0.533	0.234 ± 0.259	0.205 ± 0.225
pyrimx5	46.88 ± 7.63	0.667 ± 0.139	0.656 ± 0.147	1.048 ± 0.243	0.758 ± 0.078	0.650 ± 0.084
machinex5	58.47 ± 6.99	0.471 ± 0.081	0.467 ± 0.081	0.767 ± 0.113	0.857 ± 0.033	0.772 ± 0.043
housingx5	64.85 ± 3.28	0.383 ± 0.043	0.384 ± 0.043	0.568 ± 0.063	0.888 ± 0.020	0.813 ± 0.025
abalonex5	45.36 ± 1.16	0.759 ± 0.025	0.759 ± 0.025	1.046 ± 0.041	0.712 ± 0.018	0.612 ± 0.018
automobile	70.96 ± 6.53	0.346 ± 0.081	0.382 ± 0.103	0.854 ± 0.232	0.852 ± 0.047	0.791 ± 0.054
pyrimx10	21.88 ± 7.87	1.404 ± 0.165	1.407 ± 0.169	2.700 ± 0.473	0.811 ± 0.055	0.630 ± 0.062
machinex10	33.22 ± 5.65	1.030 ± 0.135	1.020 ± 0.136	1.875 ± 0.315	0.882 ± 0.034	0.763 ± 0.043
housingx10	40.92 ± 3.34	0.826 ± 0.058	0.825 ± 0.058	1.237 ± 0.166	0.910 ± 0.012	0.803 ± 0.017
abalonex10	25.72 ± 1.56	1.643 ± 0.048	1.643 ± 0.048	2.145 ± 0.124	0.724 ± 0.020	0.583 ± 0.021

TABLE II
MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD ENSEMBLE LEARNING FOR ORDINAL REGRESSION USING PRODUCT COMBINER AND KERNEL DISCRIMINANT ANALYSIS (ELORP(KDA))

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	68.97 ± 13.01	0.318 ± 0.144	0.345 ± 0.174	0.603 ± 0.304	0.682 ± 0.195	0.642 ± 0.188
squash-unstored	81.28 ± 9.19	0.190 ± 0.092	0.313 ± 0.189	0.739 ± 0.439	0.754 ± 0.145	0.750 ± 0.140
tae	56.32 ± 5.60	0.489 ± 0.070	0.488 ± 0.073	0.705 ± 0.134	0.496 ± 0.103	0.460 ± 0.097
newthyroid	97.59 ± 2.67	0.024 ± 0.027	0.035 ± 0.043	0.086 ± 0.104	0.961 ± 0.043	0.957 ± 0.047
car	97.21 ± 0.69	0.028 ± 0.007	0.066 ± 0.021	0.177 ± 0.068	0.974 ± 0.007	0.971 ± 0.012
eucalyptus	63.24 ± 2.85	0.402 ± 0.034	0.400 ± 0.036	0.548 ± 0.054	0.883 ± 0.015	0.797 ± 0.018
pyrimx5	51.67 ± 10.33	0.640 ± 0.155	0.625 ± 0.163	1.120 ± 0.307	0.770 ± 0.087	0.664 ± 0.103
machinex5	59.24 ± 5.23	0.465 ± 0.068	0.459 ± 0.068	0.800 ± 0.131	0.865 ± 0.029	0.782 ± 0.035
housingx5	66.31 ± 3.18	0.372 ± 0.040	0.373 ± 0.040	0.613 ± 0.087	0.893 ± 0.017	0.821 ± 0.022
abalonex5	47.61 ± 1.22	0.729 ± 0.027	0.729 ± 0.027	1.006 ± 0.037	0.719 ± 0.019	0.622 ± 0.020
automobile	72.82 ± 6.36	0.342 ± 0.089	0.331 ± 0.113	0.752 ± 0.277	0.848 ± 0.061	0.785 ± 0.064
pyrimx10	29.17 ± 8.86	1.331 ± 0.251	1.347 ± 0.252	2.900 ± 0.674	0.816 ± 0.069	0.634 ± 0.088
machinex10	34.66 ± 6.28	1.097 ± 0.209	1.085 ± 0.210	2.107 ± 0.414	0.861 ± 0.048	0.749 ± 0.054
housingx10	45.39 ± 2.63	0.763 ± 0.051	0.763 ± 0.052	1.251 ± 0.141	0.915 ± 0.016	0.818 ± 0.018
abalonex10	28.65 ± 1.55	1.529 ± 0.054	1.529 ± 0.054	1.994 ± 0.078	0.737 ± 0.022	0.602 ± 0.025

TABLE III

MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD ENSEMBLE LEARNING FOR ORDINAL REGRESSION USING AVERAGE COMBINER AND KERNEL DISCRIMINANT ANALYSIS (ELORA(KDA))

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	68.97 ± 13.01	0.313 ± 0.134	0.342 ± 0.156	0.570 ± 0.222	0.676 ± 0.157	0.634 ± 0.164
squash-unstored	80.51 ± 8.74	0.195 ± 0.087	0.307 ± 0.173	0.706 ± 0.373	0.755 ± 0.126	0.749 ± 0.125
tae	56.32 ± 5.60	0.489 ± 0.070	0.488 ± 0.073	0.705 ± 0.134	0.496 ± 0.103	0.460 ± 0.097
newthyroid	96.05 ± 1.99	0.040 ± 0.020	0.087 ± 0.046	0.189 ± 0.115	0.932 ± 0.035	0.926 ± 0.037
car	96.76 ± 0.95	0.033 ± 0.009	0.086 ± 0.035	0.275 ± 0.148	0.970 ± 0.009	0.969 ± 0.013
eucalyptus	63.70 ± 2.96	0.397 ± 0.032	0.398 ± 0.034	0.550 ± 0.093	0.876 ± 0.014	0.795 ± 0.018
pyrimx5	49.38 ± 10.05	0.617 ± 0.138	0.607 ± 0.141	1.020 ± 0.182	0.774 ± 0.075	0.675 ± 0.083
machinex5	59.49 ± 5.69	0.454 ± 0.065	0.451 ± 0.066	0.689 ± 0.118	0.856 ± 0.030	0.775 ± 0.035
housingx5	65.87 ± 2.89	0.373 ± 0.037	0.373 ± 0.037	0.530 ± 0.067	0.885 ± 0.017	0.814 ± 0.022
abalonex5	47.90 ± 1.41	0.690 ± 0.027	0.690 ± 0.027	0.856 ± 0.043	0.727 ± 0.020	0.629 ± 0.020
automobile	71.92 ± 6.18	0.342 ± 0.082	0.389 ± 0.111	0.898 ± 0.317	0.844 ± 0.060	0.786 ± 0.065
pyrimx10	28.33 ± 9.13	1.344 ± 0.336	1.322 ± 0.319	2.708 ± 0.796	0.795 ± 0.098	0.631 ± 0.105
machinex10	36.53 ± 6.23	0.977 ± 0.165	0.972 ± 0.167	1.745 ± 0.346	0.873 ± 0.040	0.757 ± 0.048
housingx10	43.74 ± 3.22	0.773 ± 0.067	0.774 ± 0.068	1.121 ± 0.162	0.910 ± 0.016	0.812 ± 0.022
abalonex10	28.04 ± 2.23	1.462 ± 0.072	1.462 ± 0.072	1.828 ± 0.247	0.741 ± 0.026	0.602 ± 0.028

TABLE IV

MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD SIMPLE ENSEMBLE LEARNING FOR ORDINAL REGRESSION AND KERNEL DISCRIMINANT ANALYSIS (SELOR(KDA))

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	61.79 ± 14.63	0.408 ± 0.163	0.442 ± 0.187	0.729 ± 0.315	0.546 ± 0.236	0.496 ± 0.232
squash-unstored	75.64 ± 14.58	0.262 ± 0.165	0.356 ± 0.201	0.722 ± 0.354	0.630 ± 0.280	0.622 ± 0.279
tae	56.23 ± 5.19	0.471 ± 0.062	0.468 ± 0.063	0.740 ± 0.115	0.502 ± 0.110	0.471 ± 0.105
newthyroid	96.85 ± 2.24	0.031 ± 0.022	0.053 ± 0.043	0.128 ± 0.109	0.948 ± 0.037	0.943 ± 0.040
car	97.52 ± 0.82	0.025 ± 0.008	0.046 ± 0.023	0.108 ± 0.052	0.977 ± 0.008	0.977 ± 0.013
eucalyptus	61.43 ± 3.07	0.438 ± 0.044	0.446 ± 0.049	0.579 ± 0.098	0.853 ± 0.029	0.766 ± 0.030
pyrimx5	45.83 ± 9.17	0.729 ± 0.158	0.717 ± 0.165	1.190 ± 0.314	0.673 ± 0.140	0.576 ± 0.118
machinex5	58.47 ± 5.73	0.481 ± 0.071	0.477 ± 0.071	0.779 ± 0.144	0.837 ± 0.035	0.752 ± 0.038
housingx5	64.08 ± 3.25	0.429 ± 0.060	0.430 ± 0.060	0.632 ± 0.093	0.852 ± 0.037	0.776 ± 0.041
abalonex5	47.83 ± 0.85	0.717 ± 0.015	0.717 ± 0.015	0.956 ± 0.036	0.718 ± 0.010	0.620 ± 0.010
automobile	72.37 ± 5.81	0.372 ± 0.092	0.391 ± 0.107	0.899 ± 0.303	0.816 ± 0.073	0.759 ± 0.070
pyrimx10	26.25 ± 7.54	1.467 ± 0.289	1.458 ± 0.291	3.175 ± 0.792	0.749 ± 0.105	0.596 ± 0.081
machinex10	36.10 ± 4.77	1.045 ± 0.149	1.040 ± 0.153	2.075 ± 0.569	0.854 ± 0.053	0.746 ± 0.047
housingx10	44.22 ± 2.64	0.818 ± 0.072	0.818 ± 0.072	1.242 ± 0.202	0.892 ± 0.024	0.793 ± 0.026
abalonex10	29.00 ± 0.82	1.516 ± 0.033	1.516 ± 0.033	1.947 ± 0.061	0.732 ± 0.015	0.600 ± 0.014

TABLE V

MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD SUPPORT VECTOR FOR ORDINAL REGRESSION WITH IMPLICIT CONSTRAINTS (SVORIM)

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	70.00 ± 10.37	0.303 ± 0.101	0.341 ± 0.127	0.560 ± 0.252	0.687 ± 0.105	0.644 ± 0.112
squash-unstored	78.46 ± 10.77	0.215 ± 0.108	0.331 ± 0.166	0.750 ± 0.347	0.729 ± 0.133	0.713 ± 0.147
tae	57.89 ± 6.77	0.461 ± 0.068	0.458 ± 0.066	0.721 ± 0.119	0.521 ± 0.090	0.488 ± 0.087
newthyroid	96.73 ± 2.32	0.033 ± 0.023	0.055 ± 0.041	0.134 ± 0.096	0.946 ± 0.039	0.941 ± 0.041
car	98.39 ± 0.58	0.016 ± 0.006	0.065 ± 0.027	0.185 ± 0.101	0.985 ± 0.005	0.988 ± 0.008
eucalyptus	53.11 ± 8.30	0.618 ± 0.082	1.138 ± 0.283	2.317 ± 0.676	0.269 ± 0.273	0.220 ± 0.240
pyrimx5	46.67 ± 7.60	0.669 ± 0.120	0.655 ± 0.121	1.230 ± 0.315	0.743 ± 0.076	0.644 ± 0.086
machinex5	61.44 ± 4.98	0.424 ± 0.070	0.420 ± 0.071	0.683 ± 0.145	0.866 ± 0.045	0.791 ± 0.047
housingx5	67.43 ± 3.44	0.357 ± 0.040	0.357 ± 0.040	0.510 ± 0.064	0.892 ± 0.016	0.822 ± 0.021
abalonex5	47.91 ± 0.71	0.652 ± 0.008	0.652 ± 0.008	0.823 ± 0.030	0.743 ± 0.004	0.645 ± 0.005
automobile	69.17 ± 7.33	0.370 ± 0.083	0.481 ± 0.114	0.995 ± 0.161	0.833 ± 0.051	0.775 ± 0.056
pyrimx10	27.29 ± 7.09	1.375 ± 0.155	1.347 ± 0.156	2.842 ± 0.523	0.790 ± 0.054	0.630 ± 0.053
machinex10	38.98 ± 6.17	0.894 ± 0.104	0.883 ± 0.102	1.550 ± 0.210	0.896 ± 0.021	0.786 ± 0.031
housingx10	45.75 ± 2.05	0.737 ± 0.054	0.736 ± 0.054	1.119 ± 0.150	0.918 ± 0.015	0.822 ± 0.020
abalonex10	27.09 ± 0.74	1.363 ± 0.024	1.363 ± 0.024	1.709 ± 0.058	0.771 ± 0.009	0.631 ± 0.009

TABLE VI

MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD ENSEMBLE LEARNING FOR ORDINAL REGRESSION USING PRODUCT COMBINER AND SUPPORT VECTOR MACHINES (ELORP(SVM))

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	71.28 ± 10.29	0.292 ± 0.100	0.328 ± 0.126	0.573 ± 0.277	0.704 ± 0.109	0.659 ± 0.110
squash-unstored	78.97 ± 10.48	0.210 ± 0.105	0.281 ± 0.184	0.622 ± 0.384	0.737 ± 0.135	0.710 ± 0.144
tae	57.81 ± 6.57	0.467 ± 0.068	0.464 ± 0.066	0.726 ± 0.127	0.507 ± 0.094	0.474 ± 0.090
newthyroid	97.16 ± 2.32	0.028 ± 0.023	0.046 ± 0.044	0.111 ± 0.102	0.953 ± 0.039	0.949 ± 0.042
car	99.13 ± 0.54	0.009 ± 0.005	0.021 ± 0.018	0.059 ± 0.044	0.992 ± 0.005	0.989 ± 0.009
eucalyptus	65.87 ± 2.50	0.372 ± 0.025	0.403 ± 0.034	0.651 ± 0.128	0.883 ± 0.011	0.805 ± 0.014
pyrimx5	49.79 ± 10.16	0.627 ± 0.135	0.613 ± 0.139	1.135 ± 0.243	0.773 ± 0.076	0.669 ± 0.086
machinex5	61.86 ± 5.73	0.425 ± 0.079	0.421 ± 0.079	0.709 ± 0.148	0.868 ± 0.049	0.790 ± 0.054
housingx5	68.33 ± 3.12	0.353 ± 0.041	0.354 ± 0.041	0.548 ± 0.082	0.891 ± 0.018	0.823 ± 0.024
abalonex5	49.21 ± 0.64	0.653 ± 0.012	0.653 ± 0.012	0.812 ± 0.045	0.744 ± 0.007	0.646 ± 0.007
automobile	74.55 ± 6.14	0.335 ± 0.090	0.350 ± 0.114	0.854 ± 0.356	0.838 ± 0.068	0.781 ± 0.068
pyrimx10	24.38 ± 8.58	1.431 ± 0.252	1.417 ± 0.255	2.892 ± 0.550	0.790 ± 0.075	0.618 ± 0.072
machinex10	39.92 ± 4.93	0.887 ± 0.071	0.874 ± 0.070	1.633 ± 0.139	0.898 ± 0.019	0.791 ± 0.026
housingx10	46.36 ± 2.34	0.741 ± 0.066	0.740 ± 0.067	1.166 ± 0.176	0.916 ± 0.020	0.820 ± 0.024
abalonex10	28.19 ± 0.91	1.379 ± 0.023	1.380 ± 0.023	1.801 ± 0.059	0.765 ± 0.007	0.626 ± 0.008

TABLE VII

MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD ENSEMBLE LEARNING FOR ORDINAL REGRESSION USING AVERAGE COMBINER AND SUPPORT VECTOR MACHINES (ELORA(SVM))

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	70.26 ± 10.05	0.303 ± 0.099	0.344 ± 0.133	0.576 ± 0.292	0.675 ± 0.122	0.631 ± 0.117
squash-unstored	79.23 ± 8.84	0.208 ± 0.088	0.344 ± 0.153	0.794 ± 0.330	0.733 ± 0.119	0.720 ± 0.131
tae	58.42 ± 5.76	0.451 ± 0.068	0.448 ± 0.066	0.705 ± 0.109	0.533 ± 0.102	0.501 ± 0.097
newthyroid	96.73 ± 1.93	0.033 ± 0.019	0.064 ± 0.040	0.148 ± 0.091	0.945 ± 0.033	0.940 ± 0.035
car	98.87 ± 0.45	0.011 ± 0.004	0.043 ± 0.021	0.135 ± 0.067	0.990 ± 0.004	0.990 ± 0.007
eucalyptus	66.07 ± 2.87	0.369 ± 0.031	0.396 ± 0.034	0.645 ± 0.104	0.885 ± 0.013	0.809 ± 0.018
pyrimx5	49.17 ± 9.62	0.623 ± 0.130	0.610 ± 0.134	1.157 ± 0.240	0.770 ± 0.082	0.673 ± 0.086
machinex5	61.61 ± 5.56	0.415 ± 0.071	0.413 ± 0.072	0.663 ± 0.160	0.871 ± 0.047	0.800 ± 0.048
housingx5	67.04 ± 3.66	0.364 ± 0.043	0.364 ± 0.043	0.518 ± 0.076	0.886 ± 0.017	0.817 ± 0.023
abalonex5	47.51 ± 0.95	0.651 ± 0.011	0.651 ± 0.011	0.849 ± 0.051	0.742 ± 0.007	0.645 ± 0.007
automobile	73.46 ± 6.21	0.338 ± 0.091	0.429 ± 0.134	0.957 ± 0.289	0.834 ± 0.068	0.780 ± 0.068
pyrimx10	24.17 ± 7.95	1.494 ± 0.616	1.497 ± 0.727	3.042 ± 1.474	0.762 ± 0.189	0.603 ± 0.154
machinex10	39.07 ± 5.17	0.869 ± 0.088	0.859 ± 0.086	1.592 ± 0.198	0.901 ± 0.019	0.793 ± 0.025
housingx10	44.76 ± 2.63	0.746 ± 0.058	0.746 ± 0.058	1.107 ± 0.163	0.916 ± 0.016	0.820 ± 0.021
abalonex10	26.90 ± 0.95	1.372 ± 0.021	1.373 ± 0.021	1.781 ± 0.079	0.766 ± 0.007	0.628 ± 0.007

TABLE VIII

MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD SIMPLE ENSEMBLE LEARNING FOR ORDINAL REGRESSION AND SUPPORT VECTOR MACHINES (SELOR(SVM))

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	65.90 ± 13.50	0.349 ± 0.142	0.397 ± 0.165	0.658 ± 0.331	0.620 ± 0.191	0.573 ± 0.193
squash-unstored	75.38 ± 11.67	0.251 ± 0.123	0.357 ± 0.181	0.744 ± 0.365	0.655 ± 0.189	0.633 ± 0.199
tae	55.79 ± 6.46	0.483 ± 0.071	0.481 ± 0.070	0.734 ± 0.116	0.489 ± 0.102	0.458 ± 0.099
newthyroid	96.67 ± 2.64	0.033 ± 0.026	0.058 ± 0.053	0.139 ± 0.127	0.944 ± 0.045	0.940 ± 0.048
car	99.32 ± 0.45	0.007 ± 0.004	0.027 ± 0.020	0.082 ± 0.063	0.993 ± 0.005	0.994 ± 0.006
eucalyptus	65.40 ± 2.53	0.387 ± 0.028	0.411 ± 0.034	0.601 ± 0.108	0.873 ± 0.018	0.793 ± 0.018
pyrimx5	46.46 ± 10.05	0.713 ± 0.155	0.697 ± 0.153	1.265 ± 0.287	0.695 ± 0.105	0.603 ± 0.093
machinex5	60.25 ± 7.65	0.436 ± 0.101	0.433 ± 0.103	0.705 ± 0.200	0.863 ± 0.054	0.789 ± 0.060
housingx5	67.79 ± 2.17	0.353 ± 0.030	0.353 ± 0.030	0.526 ± 0.051	0.892 ± 0.016	0.823 ± 0.019
abalonex5	47.76 ± 0.99	0.656 ± 0.012	0.656 ± 0.012	0.827 ± 0.037	0.739 ± 0.007	0.641 ± 0.007
automobile	73.14 ± 5.09	0.359 ± 0.084	0.433 ± 0.124	0.958 ± 0.243	0.815 ± 0.074	0.762 ± 0.070
pyrimx10	22.29 ± 7.56	1.723 ± 0.295	1.712 ± 0.281	3.692 ± 1.106	0.660 ± 0.108	0.511 ± 0.102
machinex10	37.71 ± 5.87	0.971 ± 0.152	0.960 ± 0.151	1.857 ± 0.375	0.874 ± 0.039	0.758 ± 0.044
housingx10	44.13 ± 2.87	0.810 ± 0.063	0.809 ± 0.062	1.314 ± 0.200	0.897 ± 0.022	0.796 ± 0.023
abalonex10	24.35 ± 1.15	1.603 ± 0.042	1.604 ± 0.042	2.128 ± 0.216	0.694 ± 0.014	0.567 ± 0.011

TABLE IX

MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD ORDINAL CLASS CLASSIFIER WITH ORDINAL WEIGHTS AND SUPPORT VECTOR MACHINES (OCCW(SVM))

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	67.69 ± 11.14	0.344 ± 0.132	0.403 ± 0.177	0.738 ± 0.312	0.638 ± 0.181	0.594 ± 0.185
squash-unstored	78.97 ± 8.06	0.210 ± 0.081	0.411 ± 0.105	0.950 ± 0.192	0.730 ± 0.117	0.728 ± 0.124
tae	56.49 ± 5.65	0.504 ± 0.082	0.502 ± 0.081	0.742 ± 0.150	0.475 ± 0.113	0.437 ± 0.108
newthyroid	95.80 ± 3.15	0.042 ± 0.031	0.080 ± 0.062	0.190 ± 0.155	0.929 ± 0.054	0.924 ± 0.057
car	99.71 ± 0.33	0.003 ± 0.004	0.007 ± 0.012	0.026 ± 0.043	0.997 ± 0.004	0.996 ± 0.006
eucalyptus	60.00 ± 6.67	0.556 ± 0.038	1.254 ± 0.198	2.667 ± 0.577	0.073 ± 0.075	0.110 ± 0.137
pyrimx5	50.62 ± 9.00	0.631 ± 0.150	0.612 ± 0.146	1.290 ± 0.321	0.760 ± 0.100	0.676 ± 0.100
machinex5	60.17 ± 5.05	0.446 ± 0.058	0.440 ± 0.057	0.733 ± 0.152	0.866 ± 0.026	0.786 ± 0.032
housingx5	66.55 ± 2.61	0.382 ± 0.036	0.383 ± 0.037	0.583 ± 0.088	0.875 ± 0.019	0.805 ± 0.023
abalonex5	49.36 ± 0.80	0.667 ± 0.011	0.667 ± 0.011	0.802 ± 0.038	0.730 ± 0.008	0.634 ± 0.007
automobile	74.29 ± 6.24	0.354 ± 0.103	0.459 ± 0.128	1.050 ± 0.319	0.814 ± 0.088	0.764 ± 0.083
pyrimx10	26.04 ± 9.35	1.521 ± 0.245	1.459 ± 0.224	3.650 ± 0.809	0.729 ± 0.089	0.582 ± 0.094
machinex10	38.98 ± 6.41	0.920 ± 0.119	0.907 ± 0.117	1.742 ± 0.340	0.891 ± 0.024	0.782 ± 0.033
housingx10	41.84 ± 2.69	0.861 ± 0.063	0.861 ± 0.064	1.359 ± 0.169	0.895 ± 0.019	0.787 ± 0.022
abalonex10	28.59 ± 1.19	1.427 ± 0.038	1.427 ± 0.038	1.794 ± 0.102	0.749 ± 0.011	0.614 ± 0.011

TABLE X

MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD ORDINAL CLASS CLASSIFIER WITH THE C4.5 METHOD (OCC(C4.5))

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	60.26 ± 11.79	0.444 ± 0.139	0.502 ± 0.192	0.888 ± 0.366	0.456 ± 0.260	0.415 ± 0.245
squash-unstored	77.44 ± 10.09	0.238 ± 0.109	0.256 ± 0.148	0.561 ± 0.311	0.718 ± 0.144	0.692 ± 0.145
tae	39.47 ± 5.78	0.686 ± 0.146	0.689 ± 0.151	1.246 ± 0.348	0.258 ± 0.187	0.243 ± 0.177
newthyroid	91.67 ± 3.88	0.083 ± 0.039	0.115 ± 0.056	0.229 ± 0.120	0.864 ± 0.062	0.853 ± 0.067
car	91.12 ± 1.77	0.096 ± 0.018	0.204 ± 0.063	0.423 ± 0.159	0.899 ± 0.019	0.869 ± 0.027
eucalyptus	53.33 ± 7.43	0.624 ± 0.079	1.226 ± 0.175	2.367 ± 0.540	0.182 ± 0.188	0.143 ± 0.159
pyrimx5	43.12 ± 7.19	0.792 ± 0.147	0.771 ± 0.142	1.540 ± 0.459	0.652 ± 0.121	0.547 ± 0.112
machinex5	58.47 ± 5.86	0.468 ± 0.072	0.464 ± 0.072	0.750 ± 0.132	0.852 ± 0.036	0.769 ± 0.046
housingx5	60.02 ± 2.99	0.458 ± 0.043	0.459 ± 0.042	0.685 ± 0.097	0.849 ± 0.023	0.768 ± 0.027
abalonex5	43.90 ± 1.09	0.275 ± 0.044	0.766 ± 0.021	0.994 ± 0.055	0.667 ± 0.016	0.569 ± 0.015
automobile	69.62 ± 5.85	0.401 ± 0.094	0.511 ± 0.104	1.087 ± 0.228	0.805 ± 0.062	0.741 ± 0.069
pyrimx10	21.46 ± 5.93	1.621 ± 0.338	1.560 ± 0.323	3.525 ± 1.132	0.705 ± 0.123	0.545 ± 0.104
machinex10	39.58 ± 5.77	0.986 ± 0.135	0.974 ± 0.134	1.917 ± 0.369	0.866 ± 0.035	0.752 ± 0.042
housingx10	40.19 ± 2.81	0.950 ± 0.076	0.950 ± 0.078	1.457 ± 0.190	0.867 ± 0.021	0.754 ± 0.024
abalonex10	24.61 ± 0.78	1.587 ± 0.038	1.587 ± 0.038	2.073 ± 0.092	0.698 ± 0.015	0.556 ± 0.015

TABLE XI

MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD EXTREME LEARNING MACHINE FOR ORDINAL REGRESSION (ELMOR)

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	63.08 ± 12.84	0.397 ± 0.142	0.462 ± 0.183	0.773 ± 0.333	0.536 ± 0.205	0.501 ± 0.188
squash-unstored	70.00 ± 10.17	0.308 ± 0.103	0.463 ± 0.138	0.922 ± 0.204	0.562 ± 0.181	0.554 ± 0.174
tae	53.60 ± 6.86	0.608 ± 0.115	0.608 ± 0.116	0.862 ± 0.179	0.344 ± 0.168	0.315 ± 0.157
newthyroid	95.49 ± 2.42	0.046 ± 0.024	0.098 ± 0.053	0.224 ± 0.128	0.919 ± 0.043	0.913 ± 0.045
car	93.51 ± 1.31	0.074 ± 0.015	0.308 ± 0.059	0.840 ± 0.191	0.915 ± 0.021	0.927 ± 0.023
eucalyptus	51.60 ± 9.53	0.654 ± 0.148	1.237 ± 0.176	2.352 ± 0.477	0.272 ± 0.304	0.206 ± 0.250
pyrimx5	47.29 ± 10.14	0.704 ± 0.178	0.695 ± 0.185	1.270 ± 0.417	0.679 ± 0.165	0.578 ± 0.154
machinex5	60.59 ± 5.30	0.431 ± 0.065	0.428 ± 0.064	0.646 ± 0.126	0.868 ± 0.031	0.792 ± 0.040
housingx5	64.15 ± 3.84	0.407 ± 0.052	0.407 ± 0.051	0.569 ± 0.079	0.864 ± 0.028	0.790 ± 0.032
abalonex5	47.35 ± 0.88	0.664 ± 0.011	0.664 ± 0.011	0.864 ± 0.053	0.732 ± 0.007	0.634 ± 0.007
automobile	68.53 ± 6.93	0.447 ± 0.102	0.546 ± 0.121	1.067 ± 0.222	0.752 ± 0.079	0.695 ± 0.081
pyrimx10	25.62 ± 8.47	1.467 ± 0.306	1.434 ± 0.295	3.267 ± 0.842	0.742 ± 0.106	0.582 ± 0.114
machinex10	39.07 ± 4.38	0.907 ± 0.183	0.901 ± 0.198	1.695 ± 0.894	0.878 ± 0.095	0.776 ± 0.076
housingx10	40.90 ± 3.69	0.863 ± 0.066	0.863 ± 0.066	1.261 ± 0.181	0.887 ± 0.024	0.784 ± 0.024
abalonex10	26.85 ± 0.97	1.377 ± 0.020	1.377 ± 0.020	1.797 ± 0.099	0.762 ± 0.006	0.624 ± 0.007

TABLE XII
MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD PROPORTIONAL ODDS MODEL (POM)

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	42.56 ± 12.57	0.738 ± 0.228	0.699 ± 0.249	1.023 ± 0.264	0.260 ± 0.296	0.223 ± 0.287
squash-unstored	38.72 ± 12.03	0.751 ± 0.196	0.709 ± 0.306	1.150 ± 0.456	0.193 ± 0.282	0.161 ± 0.274
tae	52.02 ± 7.62	0.593 ± 0.102	0.593 ± 0.102	0.837 ± 0.163	0.379 ± 0.134	0.345 ± 0.125
newthyroid	97.28 ± 2.32	0.027 ± 0.023	0.044 ± 0.040	0.111 ± 0.096	0.955 ± 0.039	0.951 ± 0.042
car	86.26 ± 22.40	0.185 ± 0.402	0.262 ± 0.203	0.520 ± 0.409	0.862 ± 0.234	0.837 ± 0.228
eucalyptus	34.44 ± 16.05	0.947 ± 0.321	1.103 ± 0.403	2.083 ± 0.789	0.315 ± 0.312	0.290 ± 0.302
pyrimx5	48.12 ± 10.85	0.783 ± 0.351	0.767 ± 0.340	1.335 ± 0.684	0.653 ± 0.207	0.572 ± 0.184
machinex5	59.58 ± 6.72	0.442 ± 0.083	0.437 ± 0.082	0.729 ± 0.171	0.869 ± 0.033	0.787 ± 0.043
housingx5	65.63 ± 2.42	0.385 ± 0.031	0.386 ± 0.031	0.556 ± 0.077	0.879 ± 0.016	0.805 ± 0.020
abalonex5	47.31 ± 0.48	0.675 ± 0.008	0.675 ± 0.008	0.835 ± 0.042	0.729 ± 0.006	0.630 ± 0.006
automobile	13.97 ± 13.85	2.144 ± 0.487	2.258 ± 0.606	4.258 ± 1.147	0.141 ± 0.288	0.124 ± 0.264
pyrimx10	23.12 ± 7.70	1.944 ± 0.804	1.915 ± 0.708	4.158 ± 1.649	0.600 ± 0.211	0.471 ± 0.162
machinex10	37.71 ± 6.27	0.914 ± 0.112	0.902 ± 0.111	1.675 ± 0.206	0.893 ± 0.024	0.781 ± 0.032
housingx10	40.73 ± 2.73	0.864 ± 0.060	0.864 ± 0.060	1.350 ± 0.205	0.894 ± 0.017	0.787 ± 0.020
abalonex10	26.27 ± 0.52	1.420 ± 0.016	1.420 ± 0.016	1.856 ± 0.100	0.751 ± 0.005	0.613 ± 0.005

TABLE XIII
MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD SUPPORT VECTOR MACHINE WITH THE 1-VS-1 PARADIGM (SVM(1VS1))

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	66.67 ± 11.49	0.354 ± 0.126	0.408 ± 0.168	0.716 ± 0.325	0.611 ± 0.191	0.565 ± 0.197
squash-unstored	82.56 ± 11.42	0.174 ± 0.114	0.274 ± 0.190	0.639 ± 0.401	0.780 ± 0.164	0.762 ± 0.174
tae	56.84 ± 7.40	0.568 ± 0.130	0.565 ± 0.131	0.867 ± 0.256	0.388 ± 0.149	0.355 ± 0.144
newthyroid	97.22 ± 2.87	0.028 ± 0.029	0.046 ± 0.055	0.112 ± 0.132	0.954 ± 0.049	0.950 ± 0.052
car	99.66 ± 0.45	0.004 ± 0.005	0.016 ± 0.021	0.060 ± 0.080	0.995 ± 0.007	0.996 ± 0.008
eucalyptus	55.56 ± 6.86	0.624 ± 0.090	1.265 ± 0.183	2.600 ± 0.548	0.164 ± 0.250	0.121 ± 0.177
pyrimx5	44.58 ± 7.42	0.765 ± 0.135	0.745 ± 0.138	1.430 ± 0.270	0.679 ± 0.095	0.574 ± 0.096
machinex5	57.88 ± 6.20	0.487 ± 0.095	0.482 ± 0.094	0.821 ± 0.195	0.847 ± 0.048	0.762 ± 0.057
housingx5	65.95 ± 2.57	0.402 ± 0.039	0.403 ± 0.039	0.595 ± 0.057	0.866 ± 0.021	0.792 ± 0.024
abalonex5	49.32 ± 0.98	0.707 ± 0.017	0.708 ± 0.017	0.962 ± 0.063	0.708 ± 0.010	0.618 ± 0.010
automobile	75.77 ± 5.57	0.352 ± 0.096	0.363 ± 0.113	0.878 ± 0.307	0.820 ± 0.065	0.764 ± 0.069
pyrimx10	21.25 ± 7.51	1.900 ± 0.308	1.843 ± 0.309	4.200 ± 0.914	0.601 ± 0.139	0.450 ± 0.137
machinex10	38.98 ± 5.30	1.010 ± 0.134	0.996 ± 0.132	1.958 ± 0.319	0.869 ± 0.034	0.753 ± 0.042
housingx10	41.75 ± 2.10	0.886 ± 0.068	0.887 ± 0.069	1.473 ± 0.179	0.885 ± 0.024	0.779 ± 0.027
abalonex10	28.60 ± 1.03	1.558 ± 0.037	1.558 ± 0.037	2.037 ± 0.096	0.717 ± 0.015	0.588 ± 0.013

TABLE XIV
MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD SUPPORT VECTOR MACHINE WITH THE 1-VS-ALL PARADIGM (SVM(1VSALL))

	Mean±SD					
Dataset	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	59.74 ± 14.09	0.459 ± 0.163	0.536 ± 0.233	0.957 ± 0.466	0.454 ± 0.228	0.413 ± 0.210
squash-unstored	74.62 ± 15.27	0.282 ± 0.175	0.361 ± 0.236	0.700 ± 0.365	0.590 ± 0.279	0.585 ± 0.263
tae	58.60 ± 7.18	0.496 ± 0.088	0.495 ± 0.088	0.723 ± 0.167	0.475 ± 0.110	0.441 ± 0.106
newthyroid	96.11 ± 2.19	0.040 ± 0.025	0.076 ± 0.051	0.184 ± 0.124	0.928 ± 0.058	0.923 ± 0.059
car	98.67 ± 0.68	0.014 ± 0.007	0.039 ± 0.030	0.113 ± 0.094	0.985 ± 0.008	0.985 ± 0.010
eucalyptus	57.78 ± 5.63	0.593 ± 0.115	1.194 ± 0.295	2.517 ± 0.701	0.222 ± 0.299	0.205 ± 0.253
pyrimx5	46.67 ± 7.84	0.746 ± 0.179	0.728 ± 0.181	1.330 ± 0.299	0.692 ± 0.110	0.589 ± 0.108
machinex5	55.00 ± 5.54	0.547 ± 0.079	0.540 ± 0.078	0.954 ± 0.207	0.820 ± 0.031	0.734 ± 0.036
housingx5	63.25 ± 2.67	0.440 ± 0.038	0.441 ± 0.038	0.644 ± 0.056	0.849 ± 0.022	0.770 ± 0.025
abalonex5	46.96 ± 0.64	0.790 ± 0.019	0.790 ± 0.019	1.150 ± 0.090	0.681 ± 0.011	0.591 ± 0.011
automobile	74.36 ± 5.45	0.388 ± 0.098	0.396 ± 0.124	0.891 ± 0.346	0.781 ± 0.090	0.725 ± 0.083
pyrimx10	22.50 ± 8.38	1.877 ± 0.347	1.843 ± 0.331	4.067 ± 0.966	0.613 ± 0.147	0.465 ± 0.144
machinex10	35.51 ± 4.48	1.142 ± 0.150	1.130 ± 0.151	2.318 ± 0.426	0.835 ± 0.054	0.718 ± 0.055
housingx10	36.97 ± 1.93	1.069 ± 0.089	1.069 ± 0.089	1.632 ± 0.162	0.842 ± 0.032	0.726 ± 0.033
abalonex10	27.04 ± 1.12	1.731 ± 0.063	1.731 ± 0.063	2.250 ± 0.100	0.681 ± 0.022	0.554 ± 0.023

TABLE XV

MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD SUPPORT VECTOR MACHINE WITH THE PROBABILISTIC 1-VS-ALL PARADIGM (SVM(P1VSALL))

Dataset	Mean±SD					
	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	57.95 ± 12.89	0.467 ± 0.162	0.528 ± 0.174	0.881 ± 0.327	0.421 ± 0.225	0.366 ± 0.192
squash-unstored	70.26 ± 13.81	0.336 ± 0.166	0.372 ± 0.206	0.711 ± 0.333	0.561 ± 0.242	0.511 ± 0.214
tae	56.23 ± 4.50	0.504 ± 0.068	0.504 ± 0.071	0.816 ± 0.165	0.416 ± 0.113	0.380 ± 0.082
newthyroid	91.42 ± 2.86	0.086 ± 0.029	0.179 ± 0.071	0.395 ± 0.158	0.837 ± 0.060	0.808 ± 0.077
car	97.92 ± 0.75	0.023 ± 0.008	0.048 ± 0.027	0.123 ± 0.074	0.980 ± 0.009	0.964 ± 0.013
eucalyptus	53.08 ± 3.31	0.576 ± 0.050	0.615 ± 0.057	0.839 ± 0.142	0.680 ± 0.031	0.619 ± 0.036
pyrimx5	42.29 ± 7.91	0.827 ± 0.141	812.000 ± 0.146	1.820 ± 0.361	0.493 ± 0.131	0.434 ± 0.097
machinex5	53.90 ± 6.95	0.539 ± 0.108	0.535 ± 0.109	0.838 ± 0.164	0.718 ± 0.076	0.641 ± 0.078
housingx5	59.25 ± 3.80	0.501 ± 0.057	0.502 ± 0.056	0.725 ± 0.126	0.736 ± 0.034	0.679 ± 0.038
abalonex5	44.48 ± 0.92	0.795 ± 0.024	0.796 ± 0.024	1.093 ± 0.080	0.557 ± 0.015	0.487 ± 0.013
automobile	73.01 ± 5.01	0.406 ± 0.104	0.470 ± 0.143	1.067 ± 0.420	0.709 ± 0.097	0.706 ± 0.077
pyrimx10	23.12 ± 4.77	1.769 ± 0.330	1.732 ± 0.344	4.033 ± 0.846	0.448 ± 0.145	0.432 ± 0.108
machinex10	35.17 ± 4.95	1.169 ± 0.250	1.163 ± 0.262	2.423 ± 0.962	0.690 ± 0.102	0.624 ± 0.086
housingx10	33.06 ± 2.54	1.128 ± 0.092	1.127 ± 0.092	1.637 ± 0.251	0.697 ± 0.035	0.642 ± 0.030
abalonex10	22.77 ± 1.08	1.818 ± 0.033	1.819 ± 0.033	2.363 ± 0.192	0.488 ± 0.011	0.432 ± 0.008

TABLE XVI

MEAN AND STANDARD DEVIATION (SD) FOR Acc, MAE, $AMAE$, $MMAE$, τ_b, AND W_k FROM THE 30 MODELS OBTAINED BY THE DIFFERENT METHODS FOR THE TEST SETS AND THE METHOD ADABOOST(C4.5)

Dataset	Mean±SD					
	$Acc(\%)$	MAE	$AMAE$	$MMAE$	τ_b	W_k
squash-stored	62.82 ± 11.62	0.408 ± 0.144	0.456 ± 0.211	0.804 ± 0.428	0.540 ± 0.235	0.494 ± 0.219
squash-unstored	77.95 ± 10.44	0.223 ± 0.108	0.235 ± 0.160	0.494 ± 0.335	0.735 ± 0.126	0.698 ± 0.137
tae	53.86 ± 4.97	0.589 ± 0.092	0.589 ± 0.092	0.817 ± 0.145	0.377 ± 0.141	0.344 ± 0.132
newthyroid	95.19 ± 2.94	0.048 ± 0.029	0.084 ± 0.051	0.178 ± 0.102	0.919 ± 0.051	0.912 ± 0.055
car	94.97 ± 1.01	0.056 ± 0.013	0.139 ± 0.041	0.303 ± 0.099	0.938 ± 0.017	0.932 ± 0.018
eucalyptus	54.67 ± 9.16	0.576 ± 0.113	1.035 ± 0.212	2.200 ± 0.664	0.438 ± 0.229	0.350 ± 0.196
pyrimx5	41.46 ± 8.49	0.852 ± 0.173	0.830 ± 0.169	1.442 ± 0.320	0.620 ± 0.124	0.513 ± 0.132
machinex5	58.31 ± 4.78	0.469 ± 0.064	0.463 ± 0.064	0.758 ± 0.111	0.857 ± 0.035	0.771 ± 0.039
housingx5	63.28 ± 2.50	0.439 ± 0.032	0.439 ± 0.032	0.670 ± 0.074	0.849 ± 0.017	0.772 ± 0.019
abalonex5	42.91 ± 0.57	0.262 ± 0.021	0.833 ± 0.014	0.975 ± 0.025	0.630 ± 0.012	0.535 ± 0.011
automobile	81.28 ± 4.25	0.292 ± 0.083	0.274 ± 0.107	0.699 ± 0.385	0.835 ± 0.072	0.784 ± 0.071
pyrimx10	17.92 ± 5.08	2.069 ± 0.306	2.002 ± 0.281	4.250 ± 0.998	0.569 ± 0.135	0.409 ± 0.105
machinex10	38.98 ± 4.22	1.059 ± 0.102	1.043 ± 0.101	2.017 ± 0.301	0.856 ± 0.033	0.735 ± 0.034
housingx10	41.29 ± 3.32	0.983 ± 0.079	0.982 ± 0.080	1.542 ± 0.160	0.856 ± 0.022	0.743 ± 0.025
abalonex10	24.15 ± 0.67	1.788 ± 0.035	1.789 ± 0.035	2.130 ± 0.060	0.640 ± 0.013	0.507 ± 0.011