A machine learning approach to solve the network overload problem caused by IoT devices spatially tracked indoors: supplemental material

DANIEL CARVALHO [1], **DANIEL SULLIVAN** [1], **RAFAEL ALMEIDA** [1] **AND CARLOS CAMINHA** [1]

[1] Universidade de Fortaleza, Brazil; danielrotheia@edu.unifor.br
[1] Universidade de Fortaleza, Brazil; daniel.sullivan@edu.unifor.br
[1] Universidade de Fortaleza, Brazil; rafael.alm@edu.unifor.br
[1] Universidade de Fortaleza, Brazil; caminha@unifor.br

1. METRIC VALUES OBTAINED IN THE EXPERIMENTS

The tables presented in this session represent all the values of R^2, MAE and RMSE for the experiments performed in the main text of this article. In the Tables 1, 2, 3 and 4 are the values referred to the experiments presented in Figure 4. Each table corresponds to a different environment. In the Tables 5, 6 and 7, are the values referred to the experiments presented in Figure 5. Each table corresponds to a different environment.

2. DETAILED ALGORITHMS PARAMETERS

The tables presented in this session details all parameters used in each algorithm in the main text. The Tables 8, 9, 10 and 12 refers to Random Forest algorithm [1], Ada Boost algorithm [2], Decision Tree algorithm (used by Ada Boost) and Histogram Based Gradient Boost [3, 4]. Each one is implemented by *scikit-learn*[1] [5].

The Table 11 refers to XGBoost [6] algorithm, implemented by xgboost [2] module.

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[1] https://scikit-learn.org/stable/modules/classes.html#module-sklearn.ensemble
[2] https://xgboost.readthedocs.io/en/stable/python/python_intro.html

d	Linear Interpolation			Hist Based Gradient Boost			Random Forest		
	R^2	MAE	RMSE	R^2	MAE	RMSE	R^2	MAE	RMSE
1	0.998 ± 0	1.574 ± 0	3.025 ± 0	0.999 ± 0.0	1.568 ± 0.01	2.809 ± 0.012	0.999 ± 0.0	1.515 ± 0.027	3.207 ± 0.161
2	0.998 ± 0	2.066 ± 0	3.771 ± 0	0.999 ± 0.0	1.72 ± 0.007	3.083 ± 0.009	0.999 ± 0.0	1.713 ± 0.025	3.468 ± 0.11
3	0.997 ± 0	2.699 ± 0	4.787 ± 0	0.999 ± 0.0	1.915 ± 0.006	3.459 ± 0.013	0.999 ± 0.0	1.98 ± 0.024	3.835 ± 0.113
4	0.995 ± 0	3.475 ± 0	6.03 ± 0	0.999 ± 0.0	2.135 ± 0.006	3.915 ± 0.025	0.998 ± 0.0	2.208 ± 0.018	4.213 ± 0.059
5	0.992 ± 0	4.374 ± 0	7.448 ± 0	0.998 ± 0.0	2.373 ± 0.008	4.401 ± 0.027	0.998 ± 0.0	2.43 ± 0.018	4.573 ± 0.054
6	0.989 ± 0	5.388 ± 0	9.002 ± 0	0.998 ± 0.0	2.614 ± 0.011	4.852 ± 0.031	0.998 ± 0.0	2.743 ± 0.029	5.217 ± 0.09
7	0.986 ± 0	6.504 ± 0	10.666 ± 0	0.997 ± 0.0	2.901 ± 0.01	5.473 ± 0.031	0.997 ± 0.0	2.959 ± 0.021	5.618 ± 0.051
8	0.982 ± 0	7.716 ± 0	12.422 ± 0	0.997 ± 0.0	3.18 ± 0.01	6.053 ± 0.031	0.997 ± 0.0	3.194 ± 0.024	6.109 ± 0.067
9	0.978 ± 0	9.02 ± 0	14.254 ± 0	0.996 ± 0.0	3.504 ± 0.009	6.729 ± 0.029	0.996 ± 0.0	3.455 ± 0.034	6.828 ± 0.11
10	0.973 ± 0	10.391 ± 0	16.139 ± 0	0.996 ± 0.0	3.801 ± 0.016	7.39 ± 0.039	0.996 ± 0.0	3.711 ± 0.018	7.329 ± 0.057
11	0.967 ± 0	11.845 ± 0	18.088 ± 0	0.995 ± 0.0	4.176 ± 0.022	8.09 ± 0.05	0.995 ± 0.0	3.943 ± 0.026	7.85 ± 0.047
12	0.961 ± 0	13.372 ± 0	20.086 ± 0	0.994 ± 0.0	4.5 ± 0.022	8.751 ± 0.04	0.994 ± 0.0	4.246 ± 0.025	8.453 ± 0.066
13	0.954 ± 0	14.965 ± 0	22.128 ± 0	0.993 ± 0.0	4.832 ± 0.021	9.413 ± 0.053	0.994 ± 0.0	4.49 ± 0.022	9.014 ± 0.061
14	0.947 ± 0	16.62 ± 0	24.207 ± 0	0.992 ± 0.0	5.235 ± 0.025	10.258 ± 0.065	0.993 ± 0.0	4.798 ± 0.018	9.69 ± 0.043
15	0.938 ± 0	18.332 ± 0	26.32 ± 0	0.99 ± 0.0	5.701 ± 0.025	11.101 ± 0.063	0.992 ± 0.0	5.097 ± 0.02	10.318 ± 0.038
16	0.929 ± 0	20.089 ± 0	28.46 ± 0	0.989 ± 0.0	6.118 ± 0.027	11.907 ± 0.075	0.991 ± 0.0	5.402 ± 0.023	10.967 ± 0.059
17	0.92 ± 0	21.882 ± 0	30.622 ± 0	0.987 ± 0.0	6.5 ± 0.034	12.643 ± 0.082	0.99 ± 0.0	5.702 ± 0.024	11.624 ± 0.039
18	0.909 ± 0	23.706 ± 0	32.799 ± 0	0.986 ± 0.0	6.965 ± 0.027	13.516 ± 0.052	0.988 ± 0.0	6.032 ± 0.026	12.352 ± 0.05
19	0.897 ± 0	25.554 ± 0	34.985 ± 0	0.984 ± 0.0	7.402 ± 0.046	14.255 ± 0.096	0.987 ± 0.0	6.387 ± 0.024	13.091 ± 0.051
20	0.885 ± 0	27.407 ± 0	37.182 ± 0	0.982 ± 0.0	7.909 ± 0.039	15.049 ± 0.079	0.985 ± 0.0	6.743 ± 0.025	13.772 ± 0.034
21	0.872 ± 0	29.244 ± 0	39.376 ± 0	0.98 ± 0.0	8.449 ± 0.035	15.878 ± 0.061	0.984 ± 0.0	7.093 ± 0.027	14.461 ± 0.049
22	0.858 ± 0	31.058 ± 0	41.562 ± 0	0.978 ± 0.0	8.949 ± 0.053	16.74 ± 0.124	0.982 ± 0.0	7.477 ± 0.024	15.207 ± 0.041
23	0.843 ± 0	32.854 ± 0	43.733 ± 0	0.975 ± 0.0	9.502 ± 0.039	17.622 ± 0.097	0.98 ± 0.0	7.861 ± 0.02	15.924 ± 0.038
24	0.828 ± 0	34.629 ± 0	45.886 ± 0	0.973 ± 0.0	9.981 ± 0.043	18.521 ± 0.103	0.978 ± 0.0	8.272 ± 0.019	16.706 ± 0.033
25	0.812 ± 0	36.374 ± 0	48.016 ± 0	0.971 ± 0.0	10.528 ± 0.056	19.35 ± 0.104	0.976 ± 0.0	8.697 ± 0.021	17.607 ± 0.034
26	0.795 ± 0	38.081 ± 0	50.117 ± 0	0.968 ± 0.0	11.047 ± 0.049	20.223 ± 0.088	0.974 ± 0.0	9.089 ± 0.024	18.371 ± 0.034
27	0.779 ± 0	39.748 ± 0	52.187 ± 0	0.966 ± 0.0	11.536 ± 0.05	20.94 ± 0.111	0.972 ± 0.0	9.466 ± 0.021	19.076 ± 0.032
28	0.762 ± 0	41.374 ± 0	54.223 ± 0	0.963 ± 0.0	12.131 ± 0.06	21.877 ± 0.092	0.97 ± 0.0	9.849 ± 0.02	19.855 ± 0.039
29	0.745 ± 0	42.96 ± 0	56.223 ± 0	0.96 ± 0.0	12.58 ± 0.082	22.638 ± 0.114	0.967 ± 0.0	10.263 ± 0.019	20.592 ± 0.028
30	0.727 ± 0	44.507 ± 0	58.187 ± 0	0.957 ± 0.001	13.171 ± 0.068	23.557 ± 0.111	0.965 ± 0.0	10.657 ± 0.023	21.262 ± 0.039

d	Neural Network (MLP)			Ada Boost			XGBoost		
	R^2	MAE	RMSE	R^2	MAE	RMSE	R^2	MAE	RMSE
1	0.999 ± 0.0	1.792 ± 0.098	3.097 ± 0.161	0.999 ± 0.0	1.309 ± 0.002	2.673 ± 0.009	0.999 ± 0	1.484 ± 0	2.748 ± 0
2	0.999 ± 0.0	2.075 ± 0.044	3.424 ± 0.053	0.999 ± 0.0	1.476 ± 0.001	3.006 ± 0.004	0.999 ± 0	1.709 ± 0	3.112 ± 0
3	0.998 ± 0.0	2.411 ± 0.061	3.925 ± 0.073	0.999 ± 0.0	1.667 ± 0.002	3.413 ± 0.005	0.999 ± 0	1.917 ± 0	3.48 ± 0
4	0.998 ± 0.0	2.521 ± 0.098	4.236 ± 0.107	0.999 ± 0.0	1.869 ± 0.002	3.928 ± 0.01	0.999 ± 0	2.147 ± 0	3.895 ± 0
5	0.998 ± 0.0	2.884 ± 0.099	4.879 ± 0.107	0.998 ± 0.0	2.079 ± 0.005	4.459 ± 0.019	0.998 ± 0	2.366 ± 0	4.362 ± 0
6	0.998 ± 0.0	3.039 ± 0.105	5.292 ± 0.119	0.998 ± 0.0	2.289 ± 0.005	5.025 ± 0.014	0.998 ± 0	2.61 ± 0	4.845 ± 0
7	0.997 ± 0.0	3.341 ± 0.08	5.876 ± 0.097	0.997 ± 0.0	2.514 ± 0.004	5.646 ± 0.015	0.998 ± 0	2.867 ± 0	5.43 ± 0
8	0.997 ± 0.0	3.46 ± 0.073	6.291 ± 0.09	0.997 ± 0.0	2.745 ± 0.005	6.302 ± 0.018	0.997 ± 0	3.125 ± 0	5.975 ± 0
9	0.996 ± 0.0	3.817 ± 0.092	6.974 ± 0.105	0.996 ± 0.0	2.977 ± 0.006	6.92 ± 0.017	0.996 ± 0	3.395 ± 0	6.576 ± 0
10	0.996 ± 0.0	3.908 ± 0.126	7.41 ± 0.109	0.995 ± 0.0	3.168 ± 0.006	7.631 ± 0.017	0.996 ± 0	3.674 ± 0	7.226 ± 0
11	0.995 ± 0.0	4.415 ± 0.169	8.221 ± 0.145	0.994 ± 0.0	3.395 ± 0.007	8.337 ± 0.022	0.995 ± 0	3.976 ± 0	7.874 ± 0
12	0.994 ± 0.0	4.528 ± 0.108	8.713 ± 0.086	0.993 ± 0.0	3.646 ± 0.009	8.985 ± 0.027	0.994 ± 0	4.274 ± 0	8.497 ± 0
13	0.993 ± 0.0	4.84 ± 0.072	9.418 ± 0.07	0.992 ± 0.0	3.936 ± 0.008	9.794 ± 0.028	0.993 ± 0	4.611 ± 0	9.164 ± 0
14	0.992 ± 0.0	5.192 ± 0.097	10.12 ± 0.083	0.99 ± 0.0	4.307 ± 0.01	10.769 ± 0.03	0.992 ± 0	4.969 ± 0	9.913 ± 0
15	0.991 ± 0.0	5.511 ± 0.149	10.836 ± 0.099	0.989 ± 0.0	4.623 ± 0.012	11.642 ± 0.039	0.991 ± 0	5.332 ± 0	10.71 ± 0
16	0.989 ± 0.0	5.826 ± 0.14	11.579 ± 0.09	0.987 ± 0.0	4.919 ± 0.013	12.612 ± 0.037	0.989 ± 0	5.697 ± 0	11.559 ± 0
17	0.988 ± 0.0	6.216 ± 0.092	12.415 ± 0.066	0.986 ± 0.0	5.184 ± 0.018	13.193 ± 0.058	0.988 ± 0	6.087 ± 0	12.271 ± 0
18	0.986 ± 0.0	6.416 ± 0.149	13.089 ± 0.099	0.984 ± 0.0	5.556 ± 0.014	14.06 ± 0.046	0.987 ± 0	6.462 ± 0	12.983 ± 0
19	0.984 ± 0.0	7.384 ± 0.144	14.203 ± 0.091	0.983 ± 0.0	5.844 ± 0.018	14.885 ± 0.058	0.985 ± 0	6.89 ± 0	13.869 ± 0
20	0.982 ± 0.0	7.324 ± 0.104	14.966 ± 0.098	0.98 ± 0.0	6.244 ± 0.018	15.972 ± 0.072	0.983 ± 0	7.306 ± 0	14.667 ± 0
21	0.98 ± 0.0	7.86 ± 0.102	15.765 ± 0.082	0.978 ± 0.0	6.56 ± 0.017	16.775 ± 0.057	0.981 ± 0	7.746 ± 0	15.514 ± 0
22	0.978 ± 0.0	8.43 ± 0.133	16.675 ± 0.105	0.975 ± 0.0	6.934 ± 0.018	17.742 ± 0.054	0.979 ± 0	8.151 ± 0	16.216 ± 0
23	0.976 ± 0.001	8.785 ± 0.304	17.398 ± 0.229	0.973 ± 0.0	7.293 ± 0.02	18.63 ± 0.06	0.977 ± 0	8.622 ± 0	17.104 ± 0
24	0.974 ± 0.0	9.313 ± 0.123	18.275 ± 0.113	0.97 ± 0.0	7.727 ± 0.027	19.469 ± 0.066	0.975 ± 0	9.093 ± 0	17.812 ± 0
25	0.971 ± 0.0	9.802 ± 0.173	19.238 ± 0.102	0.967 ± 0.0	8.144 ± 0.031	20.334 ± 0.082	0.973 ± 0	9.49 ± 0	18.595 ± 0
26	0.969 ± 0.0	9.925 ± 0.118	19.948 ± 0.125	0.966 ± 0.0	8.417 ± 0.036	20.876 ± 0.088	0.971 ± 0	9.88 ± 0	19.32 ± 0
27	0.965 ± 0.0	10.521 ± 0.127	20.971 ± 0.1	0.964 ± 0.001	8.73 ± 0.059	21.531 ± 0.147	0.969 ± 0	10.31 ± 0	20.1 ± 0
28	0.962 ± 0.0	11.004 ± 0.115	21.866 ± 0.084	0.961 ± 0.0	9.09 ± 0.052	22.308 ± 0.136	0.966 ± 0	10.719 ± 0	20.914 ± 0
29	0.96 ± 0.0	11.405 ± 0.106	22.633 ± 0.131	0.96 ± 0.001	9.398 ± 0.037	22.898 ± 0.104	0.964 ± 0	11.091 ± 0	21.559 ± 0
30	0.957 ± 0.001	11.857 ± 0.573	23.394 ± 0.226	0.957 ± 0.001	9.698 ± 0.054	23.349 ± 0.115	0.962 ± 0	11.474 ± 0	22.241 ± 0

Table S1. These values corresponds to the experiments presented in Figure 4 (Environment 1)

	Linear Interpolation			Hist Based Gradient Boost			Random Forest		
d	R^2	MAE	$RMSE$	R^2	MAE	$RMSE$	R^2	MAE	$RMSE$
1	0.998 ± 0	1.817 ± 0	3.246 ± 0	0.999 ± 0.0	1.785 ± 0.011	2.969 ± 0.012	0.999 ± 0.0	1.727 ± 0.015	3.127 ± 0.041
2	0.996 ± 0	2.401 ± 0	4.129 ± 0	0.999 ± 0.0	2.066 ± 0.006	3.413 ± 0.007	0.999 ± 0.0	2.067 ± 0.017	3.612 ± 0.044
3	0.994 ± 0	3.149 ± 0	5.305 ± 0	0.998 ± 0.0	2.411 ± 0.005	3.979 ± 0.009	0.998 ± 0.0	2.439 ± 0.019	4.12 ± 0.035
4	0.991 ± 0	4.054 ± 0	6.707 ± 0	0.998 ± 0.0	2.795 ± 0.009	4.63 ± 0.017	0.998 ± 0.0	2.863 ± 0.017	4.782 ± 0.042
5	0.987 ± 0	5.088 ± 0	8.269 ± 0	0.997 ± 0.0	3.232 ± 0.007	5.379 ± 0.013	0.997 ± 0.0	3.262 ± 0.019	5.453 ± 0.03
6	0.982 ± 0	6.232 ± 0	9.943 ± 0	0.996 ± 0.0	3.721 ± 0.01	6.218 ± 0.018	0.996 ± 0.0	3.726 ± 0.019	6.215 ± 0.023
7	0.977 ± 0	7.469 ± 0	11.7 ± 0	0.995 ± 0.0	4.246 ± 0.012	7.141 ± 0.02	0.995 ± 0.0	4.15 ± 0.017	7.023 ± 0.019
8	0.971 ± 0	8.792 ± 0	13.523 ± 0	0.994 ± 0.0	4.796 ± 0.015	8.08 ± 0.024	0.994 ± 0.0	4.621 ± 0.019	7.869 ± 0.018
9	0.964 ± 0	10.185 ± 0	15.399 ± 0	0.992 ± 0.0	5.419 ± 0.017	9.156 ± 0.034	0.993 ± 0.0	5.121 ± 0.015	8.803 ± 0.017
10	0.956 ± 0	11.617 ± 0	17.311 ± 0	0.99 ± 0.0	6.056 ± 0.02	10.243 ± 0.038	0.991 ± 0.0	5.659 ± 0.015	9.759 ± 0.014
11	0.948 ± 0	13.107 ± 0	19.264 ± 0	0.988 ± 0.0	6.709 ± 0.018	11.333 ± 0.032	0.989 ± 0.0	6.201 ± 0.021	10.75 ± 0.017
12	0.939 ± 0	14.639 ± 0	21.247 ± 0	0.985 ± 0.0	7.42 ± 0.026	12.536 ± 0.043	0.987 ± 0.0	6.807 ± 0.022	11.834 ± 0.021
13	0.93 ± 0	16.205 ± 0	23.253 ± 0	0.982 ± 0.0	8.156 ± 0.027	13.73 ± 0.041	0.984 ± 0.0	7.451 ± 0.014	12.971 ± 0.016
14	0.92 ± 0	17.798 ± 0	25.277 ± 0	0.978 ± 0.0	8.946 ± 0.039	14.991 ± 0.054	0.981 ± 0.0	8.132 ± 0.018	14.111 ± 0.015
15	0.909 ± 0	19.416 ± 0	27.316 ± 0	0.974 ± 0.0	9.802 ± 0.033	16.312 ± 0.055	0.978 ± 0.0	8.854 ± 0.015	15.311 ± 0.016
16	0.898 ± 0	21.056 ± 0	29.365 ± 0	0.97 ± 0.0	10.745 ± 0.028	17.813 ± 0.044	0.974 ± 0.0	9.655 ± 0.013	16.618 ± 0.011
17	0.886 ± 0	22.712 ± 0	31.423 ± 0	0.965 ± 0.0	11.729 ± 0.035	19.249 ± 0.041	0.97 ± 0.0	10.49 ± 0.02	17.953 ± 0.02
18	0.873 ± 0	24.378 ± 0	33.485 ± 0	0.959 ± 0.0	12.771 ± 0.042	20.745 ± 0.059	0.965 ± 0.0	11.396 ± 0.02	19.359 ± 0.02
19	0.859 ± 0	26.049 ± 0	35.544 ± 0	0.953 ± 0.0	13.79 ± 0.041	22.255 ± 0.061	0.96 ± 0.0	12.332 ± 0.016	20.807 ± 0.02
20	0.845 ± 0	27.715 ± 0	37.603 ± 0	0.946 ± 0.0	14.843 ± 0.055	23.827 ± 0.066	0.953 ± 0.0	13.337 ± 0.018	22.331 ± 0.019
21	0.83 ± 0	29.375 ± 0	39.651 ± 0	0.939 ± 0.0	15.993 ± 0.045	25.499 ± 0.07	0.947 ± 0.0	14.32 ± 0.021	23.814 ± 0.014
22	0.815 ± 0	31.022 ± 0	41.682 ± 0	0.931 ± 0.0	17.182 ± 0.031	27.119 ± 0.045	0.94 ± 0.0	15.397 ± 0.019	25.38 ± 0.025
23	0.799 ± 0	32.651 ± 0	43.692 ± 0	0.922 ± 0.0	18.423 ± 0.06	28.877 ± 0.074	0.933 ± 0.0	16.539 ± 0.026	27.036 ± 0.027
24	0.783 ± 0	34.256 ± 0	45.676 ± 0	0.913 ± 0.001	19.708 ± 0.052	30.518 ± 0.08	0.924 ± 0.0	17.705 ± 0.025	28.702 ± 0.021
25	0.766 ± 0	35.834 ± 0	47.63 ± 0	0.903 ± 0.001	21.049 ± 0.072	32.422 ± 0.089	0.915 ± 0.0	18.907 ± 0.028	30.406 ± 0.022
26	0.749 ± 0	37.379 ± 0	49.551 ± 0	0.891 ± 0.001	22.341 ± 0.063	34.197 ± 0.087	0.905 ± 0.0	20.136 ± 0.027	32.078 ± 0.024
27	0.731 ± 0	38.89 ± 0	51.434 ± 0	0.881 ± 0.001	23.621 ± 0.05	35.824 ± 0.068	0.896 ± 0.0	21.289 ± 0.029	33.636 ± 0.02
28	0.714 ± 0	40.365 ± 0	53.278 ± 0	0.872 ± 0.001	24.788 ± 0.056	37.311 ± 0.089	0.887 ± 0.0	22.376 ± 0.019	35.029 ± 0.02
29	0.696 ± 0	41.801 ± 0	55.079 ± 0	0.86 ± 0.001	26.058 ± 0.064	38.91 ± 0.082	0.878 ± 0.0	23.579 ± 0.02	36.516 ± 0.017
30	0.679 ± 0	43.199 ± 0	56.838 ± 0	0.849 ± 0.001	27.39 ± 0.055	40.514 ± 0.085	0.867 ± 0.0	24.73 ± 0.031	38.011 ± 0.03

	Neural Network (MLP)			Ada Boost			XGBoost		
d	R^2	MAE	$RMSE$	R^2	MAE	$RMSE$	R^2	MAE	$RMSE$
1	0.998 ± 0.0	2.659 ± 0.273	4.129 ± 0.404	0.999 ± 0.0	1.601 ± 0.002	2.915 ± 0.003	0.999 ± 0	1.766 ± 0	2.986 ± 0
2	0.998 ± 0.0	2.709 ± 0.185	4.158 ± 0.219	0.999 ± 0.0	1.906 ± 0.001	3.419 ± 0.003	0.999 ± 0	2.095 ± 0	3.472 ± 0
3	0.997 ± 0.0	2.907 ± 0.164	4.51 ± 0.183	0.998 ± 0.0	2.266 ± 0.002	4.075 ± 0.004	0.998 ± 0	2.459 ± 0	4.031 ± 0
4	0.996 ± 0.0	3.687 ± 0.08	5.57 ± 0.088	0.998 ± 0.0	2.646 ± 0.003	4.803 ± 0.006	0.998 ± 0	2.845 ± 0	4.675 ± 0
5	0.996 ± 0.0	4.159 ± 0.077	6.346 ± 0.081	0.997 ± 0.0	3.057 ± 0.003	5.611 ± 0.008	0.997 ± 0	3.291 ± 0	5.428 ± 0
6	0.995 ± 0.0	4.709 ± 0.1	7.244 ± 0.11	0.996 ± 0.0	3.5 ± 0.005	6.502 ± 0.011	0.996 ± 0	3.744 ± 0	6.218 ± 0
7	0.994 ± 0.0	5.323 ± 0.16	8.19 ± 0.178	0.994 ± 0.0	3.99 ± 0.008	7.572 ± 0.018	0.995 ± 0	4.26 ± 0	7.14 ± 0
8	0.993 ± 0.0	5.647 ± 0.163	8.914 ± 0.163	0.993 ± 0.0	4.501 ± 0.005	8.668 ± 0.014	0.994 ± 0	4.802 ± 0	8.111 ± 0
9	0.991 ± 0.0	6.337 ± 0.136	9.961 ± 0.135	0.991 ± 0.0	5.046 ± 0.008	9.789 ± 0.019	0.992 ± 0	5.367 ± 0	9.098 ± 0
10	0.989 ± 0.0	6.927 ± 0.144	10.978 ± 0.139	0.989 ± 0.0	5.567 ± 0.007	10.885 ± 0.017	0.99 ± 0	5.934 ± 0	10.111 ± 0
11	0.987 ± 0.0	7.679 ± 0.114	12.085 ± 0.103	0.986 ± 0.0	6.175 ± 0.008	12.123 ± 0.021	0.988 ± 0	6.58 ± 0	11.214 ± 0
12	0.985 ± 0.0	7.927 ± 0.129	12.866 ± 0.112	0.983 ± 0.0	6.763 ± 0.011	13.352 ± 0.024	0.985 ± 0	7.239 ± 0	12.346 ± 0
13	0.982 ± 0.0	8.913 ± 0.107	14.293 ± 0.093	0.979 ± 0.0	7.413 ± 0.01	14.636 ± 0.025	0.982 ± 0	7.961 ± 0	13.573 ± 0
14	0.978 ± 0.0	9.688 ± 0.177	15.562 ± 0.145	0.975 ± 0.0	8.195 ± 0.012	16.115 ± 0.031	0.979 ± 0	8.722 ± 0	14.806 ± 0
15	0.974 ± 0.0	10.378 ± 0.194	16.735 ± 0.173	0.97 ± 0.0	8.971 ± 0.021	17.512 ± 0.042	0.975 ± 0	9.561 ± 0	16.152 ± 0
16	0.97 ± 0.001	11.117 ± 0.274	18.015 ± 0.225	0.966 ± 0.0	9.73 ± 0.02	18.839 ± 0.054	0.971 ± 0	10.426 ± 0	17.53 ± 0
17	0.965 ± 0.001	12.221 ± 0.17	19.612 ± 0.133	0.96 ± 0.0	10.621 ± 0.015	20.462 ± 0.044	0.966 ± 0	11.352 ± 0	18.946 ± 0
18	0.959 ± 0.001	13.057 ± 0.189	20.951 ± 0.157	0.955 ± 0.0	11.581 ± 0.023	22.064 ± 0.061	0.96 ± 0	12.401 ± 0	20.516 ± 0
19	0.953 ± 0.001	14.176 ± 0.332	22.551 ± 0.251	0.947 ± 0.0	12.602 ± 0.032	23.738 ± 0.069	0.955 ± 0	13.38 ± 0	21.977 ± 0
20	0.945 ± 0.0	15.431 ± 0.159	24.256 ± 0.129	0.939 ± 0.0	13.664 ± 0.042	25.495 ± 0.085	0.948 ± 0	14.475 ± 0	23.577 ± 0
21	0.939 ± 0.001	16.18 ± 0.252	25.62 ± 0.184	0.933 ± 0.0	14.505 ± 0.049	26.833 ± 0.08	0.941 ± 0	15.491 ± 0	25.061 ± 0
22	0.931 ± 0.001	17.389 ± 0.184	27.292 ± 0.128	0.924 ± 0.0	15.627 ± 0.038	28.698 ± 0.069	0.934 ± 0	16.565 ± 0	26.576 ± 0
23	0.922 ± 0.001	18.268 ± 0.381	28.845 ± 0.293	0.915 ± 0.001	16.743 ± 0.051	30.442 ± 0.111	0.926 ± 0	17.745 ± 0	28.297 ± 0
24	0.912 ± 0.001	19.886 ± 0.134	30.766 ± 0.107	0.906 ± 0.0	17.895 ± 0.036	32.131 ± 0.078	0.917 ± 0	18.97 ± 0	29.999 ± 0
25	0.902 ± 0.001	20.844 ± 0.146	32.474 ± 0.125	0.895 ± 0.0	19.2 ± 0.032	34.087 ± 0.058	0.908 ± 0	20.201 ± 0	31.678 ± 0
26	0.892 ± 0.001	22.293 ± 0.144	34.014 ± 0.141	0.882 ± 0.0	20.571 ± 0.021	36.202 ± 0.047	0.898 ± 0	21.442 ± 0	33.386 ± 0
27	0.882 ± 0.001	23.592 ± 0.112	35.73 ± 0.095	0.872 ± 0.0	21.7 ± 0.028	37.685 ± 0.049	0.888 ± 0	22.654 ± 0	34.953 ± 0
28	0.872 ± 0.001	24.374 ± 0.383	37.136 ± 0.165	0.862 ± 0.0	22.801 ± 0.035	39.094 ± 0.064	0.878 ± 0	23.845 ± 0	36.487 ± 0
29	0.862 ± 0.002	25.842 ± 0.545	38.661 ± 0.331	0.851 ± 0.0	23.959 ± 0.028	40.633 ± 0.052	0.868 ± 0	25.058 ± 0	37.994 ± 0
30	0.851 ± 0.002	27.171 ± 0.477	40.188 ± 0.288	0.84 ± 0.001	25.164 ± 0.036	42.108 ± 0.078	0.857 ± 0	26.283 ± 0	39.524 ± 0

Table S2. These values corresponds to the experiments presented in Figure 4 (Environment 2)

d	Linear Interpolation			Hist Based Gradient Boost			Random Forest		
	R^2	MAE	RMSE	R^2	MAE	RMSE	R^2	MAE	RMSE
1	0.998 ± 0	1.063 ± 0	2.072 ± 0	1.0 ± 0.0	1.024 ± 0.007	1.638 ± 0.009	1.0 ± 0.0	0.901 ± 0.009	1.651 ± 0.033
2	0.997 ± 0	1.608 ± 0	3.125 ± 0	1.0 ± 0.0	1.223 ± 0.009	2.083 ± 0.007	1.0 ± 0.0	1.173 ± 0.007	2.19 ± 0.019
3	0.995 ± 0	2.33 ± 0	4.431 ± 0	0.999 ± 0.0	1.451 ± 0.005	2.612 ± 0.009	0.999 ± 0.0	1.547 ± 0.018	2.836 ± 0.027
4	0.992 ± 0	3.211 ± 0	5.914 ± 0	0.999 ± 0.0	1.731 ± 0.007	3.243 ± 0.016	0.999 ± 0.0	1.879 ± 0.014	3.459 ± 0.021
5	0.988 ± 0	4.226 ± 0	7.521 ± 0	0.999 ± 0.0	2.041 ± 0.006	3.893 ± 0.015	0.998 ± 0.0	2.226 ± 0.017	4.141 ± 0.021
6	0.983 ± 0	5.364 ± 0	9.227 ± 0	0.998 ± 0.0	2.398 ± 0.009	4.644 ± 0.017	0.998 ± 0.0	2.603 ± 0.02	4.852 ± 0.022
7	0.978 ± 0	6.61 ± 0	11.015 ± 0	0.997 ± 0.0	2.786 ± 0.011	5.434 ± 0.023	0.997 ± 0.0	2.911 ± 0.023	5.552 ± 0.025
8	0.972 ± 0	7.954 ± 0	12.873 ± 0	0.996 ± 0.0	3.199 ± 0.009	6.271 ± 0.02	0.996 ± 0.0	3.312 ± 0.018	6.314 ± 0.016
9	0.965 ± 0	9.386 ± 0	14.793 ± 0	0.995 ± 0.0	3.67 ± 0.017	7.176 ± 0.033	0.995 ± 0.0	3.655 ± 0.016	7.11 ± 0.017
10	0.957 ± 0	10.894 ± 0	16.767 ± 0	0.994 ± 0.0	4.161 ± 0.016	8.084 ± 0.035	0.994 ± 0.0	4.106 ± 0.022	7.978 ± 0.018
11	0.949 ± 0	12.467 ± 0	18.786 ± 0	0.992 ± 0.0	4.631 ± 0.017	8.999 ± 0.031	0.993 ± 0.0	4.519 ± 0.024	8.86 ± 0.02
12	0.94 ± 0	14.086 ± 0	20.843 ± 0	0.99 ± 0.0	5.184 ± 0.025	9.979 ± 0.043	0.991 ± 0.0	5.021 ± 0.02	9.798 ± 0.019
13	0.93 ± 0	15.734 ± 0	22.929 ± 0	0.988 ± 0.0	5.789 ± 0.02	11.095 ± 0.035	0.989 ± 0.0	5.477 ± 0.022	10.76 ± 0.016
14	0.92 ± 0	17.404 ± 0	25.038 ± 0	0.985 ± 0.0	6.406 ± 0.031	12.151 ± 0.052	0.987 ± 0.0	5.977 ± 0.015	11.755 ± 0.014
15	0.908 ± 0	19.088 ± 0	27.163 ± 0	0.982 ± 0.0	7.077 ± 0.024	13.372 ± 0.044	0.984 ± 0.0	6.542 ± 0.015	12.838 ± 0.018
16	0.896 ± 0	20.785 ± 0	29.303 ± 0	0.979 ± 0.0	7.781 ± 0.033	14.612 ± 0.055	0.981 ± 0.0	7.136 ± 0.023	13.921 ± 0.018
17	0.883 ± 0	22.493 ± 0	31.455 ± 0	0.975 ± 0.0	8.59 ± 0.052	15.951 ± 0.061	0.978 ± 0.0	7.799 ± 0.016	15.114 ± 0.016
18	0.869 ± 0	24.212 ± 0	33.616 ± 0	0.97 ± 0.0	9.437 ± 0.044	17.297 ± 0.065	0.974 ± 0.0	8.509 ± 0.019	16.403 ± 0.018
19	0.853 ± 0	25.94 ± 0	35.784 ± 0	0.965 ± 0.0	10.308 ± 0.045	18.772 ± 0.055	0.969 ± 0.0	9.279 ± 0.021	17.744 ± 0.021
20	0.837 ± 0	27.678 ± 0	37.957 ± 0	0.959 ± 0.0	11.248 ± 0.05	20.269 ± 0.064	0.964 ± 0.0	10.003 ± 0.023	19.075 ± 0.017
21	0.82 ± 0	29.427 ± 0	40.133 ± 0	0.953 ± 0.0	12.185 ± 0.06	21.759 ± 0.066	0.959 ± 0.0	10.904 ± 0.022	20.5 ± 0.022
22	0.802 ± 0	31.186 ± 0	42.31 ± 0	0.946 ± 0.0	13.259 ± 0.056	23.391 ± 0.077	0.952 ± 0.0	11.817 ± 0.028	21.956 ± 0.022
23	0.783 ± 0	32.951 ± 0	44.484 ± 0	0.938 ± 0.0	14.376 ± 0.054	25.0 ± 0.069	0.947 ± 0.0	12.688 ± 0.03	23.317 ± 0.025
24	0.763 ± 0	34.716 ± 0	46.654 ± 0	0.931 ± 0.001	15.484 ± 0.083	26.559 ± 0.103	0.939 ± 0.0	13.713 ± 0.029	24.812 ± 0.02
25	0.742 ± 0	36.478 ± 0	48.816 ± 0	0.922 ± 0.001	16.534 ± 0.076	28.037 ± 0.094	0.931 ± 0.0	14.689 ± 0.038	26.345 ± 0.027
26	0.72 ± 0	38.235 ± 0	50.967 ± 0	0.913 ± 0.0	17.713 ± 0.081	29.697 ± 0.1	0.923 ± 0.0	15.747 ± 0.04	27.9 ± 0.026
27	0.698 ± 0	39.983 ± 0	53.103 ± 0	0.903 ± 0.0	18.826 ± 0.059	31.233 ± 0.069	0.915 ± 0.0	16.825 ± 0.059	29.437 ± 0.037
28	0.675 ± 0	41.719 ± 0	55.22 ± 0	0.893 ± 0.001	20.07 ± 0.065	32.883 ± 0.082	0.906 ± 0.0	17.811 ± 0.034	30.853 ± 0.027
29	0.652 ± 0	43.436 ± 0	57.315 ± 0	0.884 ± 0.001	21.2 ± 0.103	34.353 ± 0.112	0.897 ± 0.0	19.002 ± 0.046	32.351 ± 0.029
30	0.629 ± 0	45.13 ± 0	59.383 ± 0	0.871 ± 0.001	22.606 ± 0.118	36.122 ± 0.112	0.887 ± 0.0	20.074 ± 0.065	33.79 ± 0.031

d	Neural Network (MLP)			Ada Boost			XGBoost		
	R^2	MAE	RMSE	R^2	MAE	RMSE	R^2	MAE	RMSE
1	0.999 ± 0.0	1.181 ± 0.064	1.926 ± 0.109	1.0 ± 0.0	0.771 ± 0.001	1.42 ± 0.002	1.0 ± 0	0.894 ± 0	1.487 ± 0
2	0.999 ± 0.0	1.379 ± 0.048	2.312 ± 0.056	1.0 ± 0.0	0.964 ± 0.001	1.967 ± 0.003	1.0 ± 0	1.13 ± 0	2.001 ± 0
3	0.999 ± 0.0	1.629 ± 0.056	2.825 ± 0.066	0.999 ± 0.0	1.215 ± 0.002	2.609 ± 0.005	0.999 ± 0	1.397 ± 0	2.577 ± 0
4	0.999 ± 0.0	1.989 ± 0.032	3.507 ± 0.036	0.999 ± 0.0	1.485 ± 0.002	3.325 ± 0.006	0.999 ± 0	1.692 ± 0	3.213 ± 0
5	0.998 ± 0.0	2.354 ± 0.044	4.219 ± 0.044	0.998 ± 0.0	1.771 ± 0.004	4.054 ± 0.009	0.999 ± 0	2.027 ± 0	3.91 ± 0
6	0.998 ± 0.0	2.579 ± 0.065	4.837 ± 0.065	0.998 ± 0.0	2.1 ± 0.004	4.922 ± 0.015	0.998 ± 0	2.367 ± 0	4.646 ± 0
7	0.997 ± 0.0	2.9 ± 0.067	5.573 ± 0.058	0.997 ± 0.0	2.426 ± 0.004	5.788 ± 0.013	0.997 ± 0	2.729 ± 0	5.426 ± 0
8	0.996 ± 0.0	3.358 ± 0.075	6.453 ± 0.059	0.996 ± 0.0	2.764 ± 0.006	6.608 ± 0.011	0.996 ± 0	3.128 ± 0	6.229 ± 0
9	0.995 ± 0.0	3.756 ± 0.055	7.317 ± 0.049	0.994 ± 0.0	3.173 ± 0.004	7.659 ± 0.014	0.995 ± 0	3.565 ± 0	7.129 ± 0
10	0.993 ± 0.0	4.309 ± 0.068	8.268 ± 0.053	0.993 ± 0.0	3.611 ± 0.003	8.771 ± 0.012	0.994 ± 0	4.024 ± 0	8.022 ± 0
11	0.992 ± 0.0	4.655 ± 0.054	9.155 ± 0.051	0.991 ± 0.0	4.008 ± 0.005	9.671 ± 0.02	0.992 ± 0	4.522 ± 0	8.977 ± 0
12	0.99 ± 0.0	5.246 ± 0.09	10.233 ± 0.092	0.989 ± 0.0	4.504 ± 0.007	10.793 ± 0.02	0.99 ± 0	5.022 ± 0	9.958 ± 0
13	0.987 ± 0.0	5.733 ± 0.087	11.325 ± 0.076	0.986 ± 0.0	5.041 ± 0.011	12.032 ± 0.033	0.988 ± 0	5.586 ± 0	11.026 ± 0
14	0.985 ± 0.0	6.501 ± 0.089	12.5 ± 0.11	0.983 ± 0.0	5.636 ± 0.007	13.317 ± 0.026	0.985 ± 0	6.222 ± 0	12.179 ± 0
15	0.982 ± 0.0	7.04 ± 0.249	13.61 ± 0.154	0.979 ± 0.0	6.24 ± 0.009	14.57 ± 0.029	0.982 ± 0	6.829 ± 0	13.299 ± 0
16	0.977 ± 0.001	8.054 ± 0.375	15.102 ± 0.201	0.975 ± 0.0	6.916 ± 0.012	16.026 ± 0.025	0.979 ± 0	7.475 ± 0	14.432 ± 0
17	0.972 ± 0.001	9.44 ± 0.413	16.725 ± 0.257	0.97 ± 0.0	7.694 ± 0.016	17.607 ± 0.04	0.975 ± 0	8.278 ± 0	15.848 ± 0
18	0.967 ± 0.001	10.263 ± 0.482	18.164 ± 0.246	0.965 ± 0.0	8.513 ± 0.017	19.146 ± 0.046	0.971 ± 0	9.059 ± 0	17.169 ± 0
19	0.963 ± 0.001	10.186 ± 0.392	19.191 ± 0.22	0.958 ± 0.0	9.335 ± 0.023	20.795 ± 0.056	0.965 ± 0	9.927 ± 0	18.659 ± 0
20	0.955 ± 0.001	12.254 ± 0.468	21.25 ± 0.339	0.951 ± 0.0	10.416 ± 0.024	22.707 ± 0.05	0.96 ± 0	10.891 ± 0	20.237 ± 0
21	0.949 ± 0.001	13.351 ± 0.471	22.673 ± 0.273	0.944 ± 0.0	11.421 ± 0.023	24.332 ± 0.035	0.953 ± 0	11.856 ± 0	21.756 ± 0
22	0.941 ± 0.001	14.281 ± 0.627	24.354 ± 0.353	0.935 ± 0.0	12.467 ± 0.024	26.187 ± 0.057	0.947 ± 0	12.844 ± 0	23.241 ± 0
23	0.934 ± 0.002	15.205 ± 0.46	25.843 ± 0.383	0.928 ± 0.0	13.338 ± 0.031	27.577 ± 0.055	0.94 ± 0	13.883 ± 0	24.711 ± 0
24	0.927 ± 0.001	16.075 ± 0.317	27.156 ± 0.247	0.915 ± 0.0	14.744 ± 0.039	29.932 ± 0.09	0.932 ± 0	15.073 ± 0	26.379 ± 0
25	0.918 ± 0.001	17.646 ± 0.287	28.804 ± 0.265	0.904 ± 0.0	15.948 ± 0.027	31.803 ± 0.055	0.922 ± 0	16.272 ± 0	28.108 ± 0
26	0.908 ± 0.002	17.553 ± 0.608	30.472 ± 0.392	0.891 ± 0.001	17.344 ± 0.029	34.101 ± 0.082	0.913 ± 0	17.49 ± 0	29.84 ± 0
27	0.898 ± 0.002	19.865 ± 0.689	32.2 ± 0.443	0.88 ± 0.001	18.656 ± 0.05	35.845 ± 0.085	0.904 ± 0	18.556 ± 0	31.34 ± 0
28	0.89 ± 0.002	20.908 ± 0.498	33.317 ± 0.304	0.871 ± 0.001	19.665 ± 0.035	36.967 ± 0.055	0.895 ± 0	19.579 ± 0	32.689 ± 0
29	0.879 ± 0.001	21.708 ± 0.428	34.853 ± 0.264	0.856 ± 0.0	21.305 ± 0.033	39.223 ± 0.05	0.885 ± 0	20.743 ± 0	34.24 ± 0
30	0.866 ± 0.002	23.652 ± 0.431	36.754 ± 0.248	0.844 ± 0.001	22.387 ± 0.039	40.697 ± 0.069	0.874 ± 0	21.924 ± 0	35.768 ± 0

Table S3. These values corresponds to the experiments presented in Figure 4 (Environment 3)

d	Linear Interpolation R^2	MAE	$RMSE$	Hist Based Gradient Boost R^2	MAE	$RMSE$	Random Forest R^2	MAE	$RMSE$
1	0.999 ± 0	0.028 ± 0	0.123 ± 0	1.0 ± 0.0	0.041 ± 0.005	0.1 ± 0.012	0.999 ± 0.0	0.023 ± 0.001	0.104 ± 0.003
2	0.998 ± 0	0.052 ± 0	0.156 ± 0	0.999 ± 0.0	0.074 ± 0.01	0.159 ± 0.01	0.999 ± 0.0	0.038 ± 0.001	0.137 ± 0.002
3	0.997 ± 0	0.084 ± 0	0.192 ± 0	0.998 ± 0.0	0.078 ± 0.006	0.172 ± 0.005	0.998 ± 0.0	0.054 ± 0.0	0.161 ± 0.001
4	0.996 ± 0	0.12 ± 0	0.232 ± 0	0.998 ± 0.0	0.084 ± 0.005	0.175 ± 0.008	0.998 ± 0.0	0.072 ± 0.001	0.185 ± 0.002
5	0.994 ± 0	0.156 ± 0	0.274 ± 0	0.997 ± 0.0	0.101 ± 0.006	0.208 ± 0.007	0.997 ± 0.0	0.09 ± 0.001	0.213 ± 0.002
6	0.992 ± 0	0.193 ± 0	0.318 ± 0	0.996 ± 0.0	0.121 ± 0.004	0.243 ± 0.008	0.996 ± 0.0	0.109 ± 0.001	0.238 ± 0.002
7	0.99 ± 0	0.231 ± 0	0.365 ± 0	0.996 ± 0.0	0.133 ± 0.008	0.259 ± 0.007	0.995 ± 0.0	0.128 ± 0.001	0.265 ± 0.003
8	0.987 ± 0	0.268 ± 0	0.413 ± 0	0.995 ± 0.0	0.153 ± 0.004	0.284 ± 0.004	0.995 ± 0.0	0.143 ± 0.001	0.288 ± 0.002
9	0.984 ± 0	0.306 ± 0	0.463 ± 0	0.994 ± 0.0	0.169 ± 0.003	0.312 ± 0.005	0.993 ± 0.0	0.161 ± 0.001	0.317 ± 0.002
10	0.98 ± 0	0.344 ± 0	0.513 ± 0	0.993 ± 0.0	0.186 ± 0.006	0.344 ± 0.006	0.992 ± 0.0	0.176 ± 0.001	0.346 ± 0.003
11	0.976 ± 0	0.382 ± 0	0.564 ± 0	0.991 ± 0.0	0.197 ± 0.004	0.372 ± 0.007	0.991 ± 0.0	0.19 ± 0.001	0.368 ± 0.003
12	0.972 ± 0	0.42 ± 0	0.615 ± 0	0.99 ± 0.001	0.214 ± 0.004	0.402 ± 0.009	0.99 ± 0.0	0.205 ± 0.001	0.396 ± 0.003
13	0.967 ± 0	0.459 ± 0	0.666 ± 0	0.989 ± 0.001	0.231 ± 0.006	0.416 ± 0.01	0.988 ± 0.0	0.224 ± 0.001	0.423 ± 0.004
14	0.961 ± 0	0.498 ± 0	0.719 ± 0	0.988 ± 0.0	0.244 ± 0.004	0.442 ± 0.007	0.986 ± 0.0	0.241 ± 0.001	0.456 ± 0.004
15	0.956 ± 0	0.537 ± 0	0.772 ± 0	0.987 ± 0.0	0.263 ± 0.005	0.466 ± 0.007	0.984 ± 0.0	0.262 ± 0.001	0.494 ± 0.003
16	0.949 ± 0	0.576 ± 0	0.825 ± 0	0.984 ± 0.0	0.284 ± 0.003	0.503 ± 0.006	0.983 ± 0.0	0.28 ± 0.002	0.521 ± 0.004
17	0.943 ± 0	0.616 ± 0	0.878 ± 0	0.982 ± 0.0	0.309 ± 0.004	0.542 ± 0.006	0.98 ± 0.0	0.303 ± 0.002	0.559 ± 0.004
18	0.936 ± 0	0.655 ± 0	0.931 ± 0	0.979 ± 0.0	0.336 ± 0.004	0.583 ± 0.006	0.976 ± 0.0	0.336 ± 0.002	0.621 ± 0.005
19	0.928 ± 0	0.694 ± 0	0.984 ± 0	0.974 ± 0.001	0.371 ± 0.003	0.643 ± 0.008	0.973 ± 0.0	0.358 ± 0.001	0.652 ± 0.003
20	0.921 ± 0	0.732 ± 0	1.037 ± 0	0.968 ± 0.001	0.398 ± 0.004	0.696 ± 0.01	0.969 ± 0.0	0.383 ± 0.001	0.695 ± 0.003
21	0.913 ± 0	0.77 ± 0	1.089 ± 0	0.969 ± 0.001	0.402 ± 0.004	0.702 ± 0.007	0.97 ± 0.0	0.384 ± 0.002	0.7 ± 0.004
22	0.904 ± 0	0.808 ± 0	1.141 ± 0	0.968 ± 0.001	0.415 ± 0.004	0.729 ± 0.012	0.968 ± 0.0	0.395 ± 0.001	0.723 ± 0.003
23	0.896 ± 0	0.846 ± 0	1.192 ± 0	0.966 ± 0.001	0.432 ± 0.005	0.756 ± 0.013	0.967 ± 0.0	0.41 ± 0.002	0.746 ± 0.004
24	0.888 ± 0	0.883 ± 0	1.242 ± 0	0.963 ± 0.001	0.451 ± 0.004	0.789 ± 0.008	0.965 ± 0.0	0.429 ± 0.002	0.78 ± 0.004
25	0.879 ± 0	0.92 ± 0	1.291 ± 0	0.961 ± 0.001	0.467 ± 0.004	0.82 ± 0.01	0.963 ± 0.0	0.445 ± 0.001	0.807 ± 0.003
26	0.87 ± 0	0.956 ± 0	1.34 ± 0	0.959 ± 0.001	0.487 ± 0.005	0.845 ± 0.01	0.96 ± 0.0	0.461 ± 0.002	0.834 ± 0.003
27	0.862 ± 0	0.992 ± 0	1.387 ± 0	0.957 ± 0.001	0.498 ± 0.006	0.87 ± 0.01	0.959 ± 0.0	0.471 ± 0.002	0.854 ± 0.003
28	0.853 ± 0	1.027 ± 0	1.434 ± 0	0.951 ± 0.001	0.529 ± 0.005	0.92 ± 0.01	0.956 ± 0.0	0.489 ± 0.002	0.883 ± 0.003
29	0.844 ± 0	1.062 ± 0	1.479 ± 0	0.951 ± 0.001	0.535 ± 0.005	0.924 ± 0.011	0.953 ± 0.0	0.504 ± 0.002	0.907 ± 0.004
30	0.836 ± 0	1.097 ± 0	1.524 ± 0	0.947 ± 0.001	0.556 ± 0.005	0.963 ± 0.01	0.95 ± 0.0	0.523 ± 0.001	0.933 ± 0.002

d	Neural Network (MLP) R^2	MAE	$RMSE$	Ada Boost R^2	MAE	$RMSE$	XGBoost R^2	MAE	$RMSE$
1	0.999 ± 0.0	0.052 ± 0.005	0.137 ± 0.005	1.0 ± 0.0	0.016 ± 0.0	0.084 ± 0.002	0.999 ± 0	0.024 ± 0	0.112 ± 0
2	0.998 ± 0.0	0.076 ± 0.005	0.167 ± 0.003	0.999 ± 0.0	0.027 ± 0.0	0.137 ± 0.004	0.999 ± 0	0.036 ± 0	0.13 ± 0
3	0.997 ± 0.0	0.093 ± 0.006	0.191 ± 0.005	0.998 ± 0.0	0.038 ± 0.0	0.16 ± 0.002	0.998 ± 0	0.052 ± 0	0.158 ± 0
4	0.996 ± 0.0	0.114 ± 0.004	0.218 ± 0.004	0.998 ± 0.0	0.052 ± 0.001	0.176 ± 0.003	0.998 ± 0	0.069 ± 0	0.181 ± 0
5	0.995 ± 0.0	0.143 ± 0.004	0.254 ± 0.005	0.997 ± 0.0	0.067 ± 0.0	0.197 ± 0.004	0.998 ± 0	0.087 ± 0	0.197 ± 0
6	0.994 ± 0.0	0.159 ± 0.006	0.28 ± 0.006	0.996 ± 0.0	0.087 ± 0.001	0.239 ± 0.003	0.996 ± 0	0.105 ± 0	0.228 ± 0
7	0.992 ± 0.0	0.196 ± 0.005	0.324 ± 0.004	0.995 ± 0.0	0.105 ± 0.0	0.266 ± 0.003	0.995 ± 0	0.124 ± 0	0.265 ± 0
8	0.991 ± 0.0	0.215 ± 0.009	0.354 ± 0.009	0.994 ± 0.0	0.126 ± 0.001	0.298 ± 0.002	0.994 ± 0	0.142 ± 0	0.288 ± 0
9	0.991 ± 0.001	0.219 ± 0.012	0.368 ± 0.011	0.992 ± 0.0	0.141 ± 0.001	0.324 ± 0.002	0.993 ± 0	0.157 ± 0	0.315 ± 0
10	0.989 ± 0.001	0.237 ± 0.006	0.4 ± 0.012	0.991 ± 0.0	0.157 ± 0.001	0.364 ± 0.003	0.992 ± 0	0.173 ± 0	0.337 ± 0
11	0.987 ± 0.001	0.243 ± 0.007	0.425 ± 0.014	0.989 ± 0.0	0.176 ± 0.001	0.4 ± 0.003	0.991 ± 0	0.191 ± 0	0.375 ± 0
12	0.983 ± 0.001	0.249 ± 0.013	0.469 ± 0.017	0.987 ± 0.0	0.194 ± 0.001	0.432 ± 0.003	0.99 ± 0	0.206 ± 0	0.395 ± 0
13	0.983 ± 0.001	0.288 ± 0.01	0.493 ± 0.018	0.986 ± 0.0	0.211 ± 0.001	0.477 ± 0.01	0.989 ± 0	0.219 ± 0	0.415 ± 0
14	0.979 ± 0.001	0.298 ± 0.01	0.533 ± 0.014	0.984 ± 0.0	0.23 ± 0.001	0.493 ± 0.002	0.987 ± 0	0.24 ± 0	0.446 ± 0
15	0.979 ± 0.001	0.305 ± 0.007	0.534 ± 0.011	0.982 ± 0.0	0.247 ± 0.001	0.524 ± 0.003	0.985 ± 0	0.259 ± 0	0.481 ± 0
16	0.973 ± 0.001	0.342 ± 0.008	0.596 ± 0.012	0.98 ± 0.0	0.265 ± 0.001	0.552 ± 0.004	0.983 ± 0	0.279 ± 0	0.514 ± 0
17	0.972 ± 0.001	0.345 ± 0.009	0.614 ± 0.013	0.977 ± 0.0	0.283 ± 0.001	0.589 ± 0.004	0.981 ± 0	0.305 ± 0	0.556 ± 0
18	0.966 ± 0.001	0.382 ± 0.008	0.682 ± 0.015	0.972 ± 0.0	0.316 ± 0.001	0.657 ± 0.003	0.976 ± 0	0.34 ± 0	0.615 ± 0
19	0.964 ± 0.001	0.406 ± 0.007	0.711 ± 0.013	0.969 ± 0.0	0.342 ± 0.001	0.697 ± 0.003	0.973 ± 0	0.361 ± 0	0.65 ± 0
20	0.963 ± 0.001	0.426 ± 0.006	0.728 ± 0.013	0.963 ± 0.001	0.373 ± 0.002	0.745 ± 0.005	0.967 ± 0	0.394 ± 0	0.71 ± 0
21	0.964 ± 0.001	0.437 ± 0.005	0.739 ± 0.01	0.963 ± 0.001	0.375 ± 0.002	0.765 ± 0.005	0.967 ± 0	0.395 ± 0	0.711 ± 0
22	0.963 ± 0.001	0.446 ± 0.008	0.763 ± 0.009	0.961 ± 0.001	0.387 ± 0.002	0.788 ± 0.006	0.966 ± 0	0.406 ± 0	0.737 ± 0
23	0.962 ± 0.001	0.472 ± 0.011	0.783 ± 0.015	0.961 ± 0.0	0.392 ± 0.002	0.797 ± 0.004	0.964 ± 0	0.422 ± 0	0.766 ± 0
24	0.96 ± 0.001	0.474 ± 0.009	0.809 ± 0.008	0.957 ± 0.0	0.421 ± 0.002	0.85 ± 0.005	0.962 ± 0	0.435 ± 0	0.796 ± 0
25	0.958 ± 0.001	0.495 ± 0.01	0.84 ± 0.014	0.957 ± 0.001	0.436 ± 0.002	0.872 ± 0.007	0.959 ± 0	0.457 ± 0	0.832 ± 0
26	0.958 ± 0.001	0.5 ± 0.01	0.849 ± 0.009	0.954 ± 0.001	0.458 ± 0.002	0.915 ± 0.007	0.956 ± 0	0.48 ± 0	0.879 ± 0
27	0.955 ± 0.001	0.544 ± 0.012	0.881 ± 0.012	0.951 ± 0.001	0.474 ± 0.002	0.947 ± 0.005	0.955 ± 0	0.49 ± 0	0.896 ± 0
28	0.952 ± 0.002	0.555 ± 0.014	0.918 ± 0.016	0.946 ± 0.001	0.492 ± 0.002	0.995 ± 0.004	0.951 ± 0	0.507 ± 0	0.927 ± 0
29	0.952 ± 0.001	0.565 ± 0.016	0.92 ± 0.016	0.942 ± 0.001	0.515 ± 0.002	1.024 ± 0.005	0.948 ± 0	0.528 ± 0	0.961 ± 0
30	0.95 ± 0.002	0.572 ± 0.014	0.934 ± 0.015	0.942 ± 0.0	0.538 ± 0.001	1.063 ± 0.003	0.946 ± 0	0.547 ± 0	0.986 ± 0

Table S4. These values corresponds to the experiments presented in Figure 4 (Environment 4)

	Hist Based Gradient Boost			Random Forest			Neural Network (MLP)		
size	R^2	MAE	RMSE	R^2	MAE	RMSE	R^2	MAE	RMSE
5000	0.918 ± 0.002	18.589 ± 0.172	32.593 ± 0.363	0.93 ± 0.001	17.591 ± 0.093	30.468 ± 0.146	0.911 ± 0.006	19.708 ± 1.566	34.443 ± 1.042
20000	0.945 ± 0.001	14.624 ± 0.095	26.284 ± 0.14	0.956 ± 0.0	12.465 ± 0.033	23.71 ± 0.051	0.945 ± 0.001	14.121 ± 0.552	26.358 ± 0.167
35000	0.952 ± 0.001	13.723 ± 0.06	24.542 ± 0.118	0.962 ± 0.0	11.311 ± 0.019	22.155 ± 0.037	0.953 ± 0.002	12.677 ± 0.974	24.494 ± 0.6
50000	0.957 ± 0.001	13.171 ± 0.068	23.557 ± 0.111	0.965 ± 0.0	10.657 ± 0.023	21.262 ± 0.039	0.957 ± 0.001	11.857 ± 0.573	23.394 ± 0.226
65000	0.959 ± 0.0	12.906 ± 0.059	22.993 ± 0.095	0.967 ± 0.0	10.291 ± 0.018	20.759 ± 0.028	0.959 ± 0.0	11.44 ± 0.125	22.836 ± 0.087
80000	0.96 ± 0.0	12.774 ± 0.047	22.756 ± 0.072	0.967 ± 0.0	10.078 ± 0.019	20.574 ± 0.021	0.96 ± 0.0	11.312 ± 0.157	22.519 ± 0.082
95000	0.961 ± 0.0	12.594 ± 0.035	22.509 ± 0.073	0.969 ± 0.0	9.831 ± 0.013	20.24 ± 0.024	0.961 ± 0.0	11.079 ± 0.119	22.465 ± 0.077
110000	0.962 ± 0.0	12.415 ± 0.029	22.134 ± 0.057	0.97 ± 0.0	9.591 ± 0.014	19.918 ± 0.021	0.962 ± 0.0	10.932 ± 0.118	21.965 ± 0.09
125000	0.963 ± 0.0	12.352 ± 0.041	21.974 ± 0.084	0.97 ± 0.0	9.405 ± 0.016	19.682 ± 0.026	0.963 ± 0.0	10.788 ± 0.138	21.714 ± 0.109
140000	0.964 ± 0.0	12.174 ± 0.047	21.646 ± 0.063	0.971 ± 0.0	9.3 ± 0.019	19.516 ± 0.029	0.965 ± 0.0	10.535 ± 0.076	21.215 ± 0.126
155000	0.965 ± 0.0	12.016 ± 0.048	21.498 ± 0.088	0.971 ± 0.0	9.191 ± 0.017	19.436 ± 0.026	0.965 ± 0.0	10.294 ± 0.099	21.233 ± 0.085
170000	0.965 ± 0.0	11.916 ± 0.052	21.366 ± 0.082	0.972 ± 0.0	9.063 ± 0.015	19.266 ± 0.02	0.966 ± 0.001	10.334 ± 0.175	21.039 ± 0.144

	Ada Boost			XGBoost		
size	R^2	MAE	RMSE	R^2	MAE	RMSE
5000	0.909 ± 0.004	15.754 ± 0.309	34.84 ± 0.752	0.922 ± 0	17.602 ± 0	31.665 ± 0
20000	0.942 ± 0.001	11.398 ± 0.077	27.29 ± 0.246	0.951 ± 0	13.148 ± 0	24.988 ± 0
35000	0.952 ± 0.001	10.306 ± 0.031	24.871 ± 0.094	0.958 ± 0	12.083 ± 0	23.262 ± 0
50000	0.957 ± 0.001	9.698 ± 0.054	23.349 ± 0.115	0.962 ± 0	11.474 ± 0	22.241 ± 0
65000	0.96 ± 0.001	9.458 ± 0.027	22.579 ± 0.084	0.964 ± 0	11.105 ± 0	21.52 ± 0
80000	0.961 ± 0.001	9.367 ± 0.037	22.29 ± 0.118	0.965 ± 0	10.984 ± 0	21.427 ± 0
95000	0.962 ± 0.0	9.23 ± 0.023	21.86 ± 0.064	0.966 ± 0	10.778 ± 0	21.061 ± 0
110000	0.964 ± 0.0	9.037 ± 0.015	21.367 ± 0.053	0.967 ± 0	10.544 ± 0	20.697 ± 0
125000	0.965 ± 0.0	8.946 ± 0.024	20.976 ± 0.056	0.968 ± 0	10.414 ± 0	20.471 ± 0
140000	0.966 ± 0.0	8.879 ± 0.026	20.728 ± 0.05	0.966 ± 0	10.028 ± 0	20.803 ± 0
155000	0.967 ± 0.0	8.897 ± 0.014	20.684 ± 0.031	0.967 ± 0	9.929 ± 0	20.737 ± 0
170000	0.968 ± 0.0	8.857 ± 0.021	20.431 ± 0.051	0.967 ± 0	9.84 ± 0	20.543 ± 0

Table S5. These values corresponds to the experiments presented in Figure 5 (Environment 1)

	Hist Based Gradient Boost			Random Forest			Neural Network (MLP)		
size	R^2	MAE	RMSE	R^2	MAE	RMSE	R^2	MAE	RMSE
5000	0.78 ± 0.002	34.173 ± 0.191	49.319 ± 0.31	0.816 ± 0.001	32.132 ± 0.084	45.167 ± 0.099	0.8 ± 0.004	34.104 ± 0.976	47.753 ± 0.819
20000	0.829 ± 0.001	29.231 ± 0.1	43.265 ± 0.133	0.851 ± 0.0	26.879 ± 0.035	40.199 ± 0.028	0.832 ± 0.004	29.052 ± 0.532	42.508 ± 0.428
35000	0.843 ± 0.001	27.971 ± 0.057	41.365 ± 0.072	0.862 ± 0.0	25.502 ± 0.04	38.74 ± 0.037	0.844 ± 0.002	27.715 ± 0.606	41.141 ± 0.287
50000	0.849 ± 0.001	27.39 ± 0.055	40.514 ± 0.085	0.867 ± 0.0	24.73 ± 0.031	38.011 ± 0.03	0.851 ± 0.002	27.171 ± 0.477	40.188 ± 0.288
65000	0.857 ± 0.001	26.772 ± 0.056	39.511 ± 0.08	0.872 ± 0.0	24.26 ± 0.022	37.467 ± 0.024	0.855 ± 0.004	26.729 ± 0.834	39.582 ± 0.589
80000	0.859 ± 0.001	26.578 ± 0.051	39.243 ± 0.063	0.873 ± 0.0	23.982 ± 0.026	37.237 ± 0.025	0.859 ± 0.001	26.234 ± 0.256	39.152 ± 0.161
95000	0.861 ± 0.001	26.349 ± 0.045	38.907 ± 0.059	0.875 ± 0.0	23.672 ± 0.018	36.912 ± 0.017	0.859 ± 0.001	26.242 ± 0.108	39.145 ± 0.086
110000	0.864 ± 0.001	26.044 ± 0.044	38.509 ± 0.057	0.877 ± 0.0	23.401 ± 0.019	36.627 ± 0.018	0.861 ± 0.001	25.882 ± 0.11	38.85 ± 0.086
125000	0.866 ± 0.0	25.924 ± 0.057	38.31 ± 0.066	0.878 ± 0.0	23.201 ± 0.016	36.45 ± 0.014	0.862 ± 0.001	25.773 ± 0.143	38.727 ± 0.094
140000	0.867 ± 0.001	25.778 ± 0.054	38.144 ± 0.058	0.88 ± 0.0	23.057 ± 0.018	36.284 ± 0.016	0.862 ± 0.001	25.656 ± 0.136	38.599 ± 0.1
155000	0.868 ± 0.0	25.636 ± 0.052	37.897 ± 0.06	0.88 ± 0.0	22.945 ± 0.012	36.171 ± 0.016	0.864 ± 0.001	25.462 ± 0.18	38.338 ± 0.104
170000	0.869 ± 0.0	25.565 ± 0.049	37.805 ± 0.058	0.882 ± 0.0	22.818 ± 0.02	36.013 ± 0.019	0.865 ± 0.001	25.335 ± 0.17	38.25 ± 0.123

	Ada Boost			XGBoost		
size	R^2	MAE	RMSE	R^2	MAE	RMSE
5000	0.738 ± 0.002	34.625 ± 0.115	55.998 ± 0.194	0.786 ± 0	33.627 ± 0	48.922 ± 0
20000	0.806 ± 0.001	27.587 ± 0.073	46.731 ± 0.126	0.835 ± 0	28.348 ± 0	42.554 ± 0
35000	0.826 ± 0.001	26.139 ± 0.039	44.241 ± 0.075	0.85 ± 0	26.94 ± 0	40.489 ± 0
50000	0.84 ± 0.001	25.164 ± 0.036	42.108 ± 0.078	0.857 ± 0	26.283 ± 0	39.524 ± 0
65000	0.849 ± 0.0	24.578 ± 0.029	40.828 ± 0.053	0.863 ± 0	25.709 ± 0	38.698 ± 0
80000	0.852 ± 0.0	24.443 ± 0.026	40.343 ± 0.045	0.866 ± 0	25.465 ± 0	38.393 ± 0
95000	0.855 ± 0.0	24.189 ± 0.022	39.713 ± 0.041	0.869 ± 0	25.192 ± 0	37.984 ± 0
110000	0.859 ± 0.0	23.959 ± 0.018	39.253 ± 0.03	0.87 ± 0	24.906 ± 0	37.699 ± 0
125000	0.862 ± 0.0	23.754 ± 0.018	38.749 ± 0.032	0.873 ± 0	24.634 ± 0	37.358 ± 0
140000	0.864 ± 0.0	23.654 ± 0.016	38.509 ± 0.026	0.865 ± 0	24.388 ± 0	38.259 ± 0
155000	0.866 ± 0.0	23.566 ± 0.018	38.183 ± 0.035	0.867 ± 0	24.244 ± 0	38.038 ± 0
170000	0.868 ± 0.0	23.404 ± 0.024	37.806 ± 0.04	0.868 ± 0	24.114 ± 0	37.86 ± 0

Table S6. These values corresponds to the experiments presented in Figure 5 (Environment 2)

size	Hist Based Gradient Boost			Random Forest			Neural Network (MLP)		
	R^2	MAE	RMSE	R^2	MAE	RMSE	R^2	MAE	RMSE
5000	0.826 ± 0.003	27.501 ± 0.285	42.009 ± 0.327	0.849 ± 0.001	26.229 ± 0.097	39.266 ± 0.07	0.824 ± 0.005	27.735 ± 0.441	42.525 ± 0.616
20000	0.854 ± 0.001	24.133 ± 0.133	38.637 ± 0.168	0.874 ± 0.0	21.838 ± 0.054	35.712 ± 0.038	0.854 ± 0.003	24.711 ± 0.447	38.793 ± 0.464
35000	0.865 ± 0.001	23.1 ± 0.058	36.901 ± 0.066	0.882 ± 0.0	20.728 ± 0.046	34.433 ± 0.02	0.86 ± 0.002	24.577 ± 0.482	37.447 ± 0.308
50000	0.871 ± 0.001	22.606 ± 0.118	36.122 ± 0.112	0.887 ± 0.0	20.074 ± 0.065	33.79 ± 0.031	0.866 ± 0.002	23.652 ± 0.431	36.754 ± 0.248
65000	0.877 ± 0.0	22.004 ± 0.056	35.221 ± 0.071	0.891 ± 0.0	19.538 ± 0.037	33.19 ± 0.027	0.868 ± 0.002	23.59 ± 0.355	36.487 ± 0.25
80000	0.881 ± 0.0	21.791 ± 0.064	34.747 ± 0.062	0.894 ± 0.0	19.106 ± 0.028	32.76 ± 0.017	0.872 ± 0.001	22.516 ± 0.446	35.658 ± 0.241
95000	0.883 ± 0.001	21.683 ± 0.061	34.583 ± 0.074	0.896 ± 0.0	18.862 ± 0.028	32.545 ± 0.016	0.874 ± 0.001	22.091 ± 0.341	35.597 ± 0.247
110000	0.886 ± 0.0	21.258 ± 0.072	34.095 ± 0.073	0.898 ± 0.0	18.518 ± 0.028	32.179 ± 0.016	0.874 ± 0.001	22.365 ± 0.336	35.526 ± 0.221
125000	0.887 ± 0.001	21.114 ± 0.065	33.848 ± 0.066	0.9 ± 0.0	18.309 ± 0.03	31.98 ± 0.02	0.877 ± 0.001	21.327 ± 0.418	34.934 ± 0.224
140000	0.888 ± 0.0	21.01 ± 0.05	33.676 ± 0.059	0.901 ± 0.0	18.137 ± 0.025	31.788 ± 0.017	0.878 ± 0.002	21.737 ± 0.617	35.061 ± 0.218
155000	0.89 ± 0.0	20.988 ± 0.054	33.536 ± 0.066	0.902 ± 0.0	18.041 ± 0.033	31.656 ± 0.019	0.881 ± 0.002	20.279 ± 0.54	34.546 ± 0.253
170000	0.89 ± 0.0	20.84 ± 0.06	33.405 ± 0.052	0.903 ± 0.0	17.846 ± 0.03	31.507 ± 0.017	0.883 ± 0.001	20.072 ± 0.322	34.314 ± 0.171

size	Ada Boost			XGBoost		
	R^2	MAE	RMSE	R^2	MAE	RMSE
5000	0.744 ± 0.002	29.962 ± 0.116	52.883 ± 0.196	0.816 ± 0	28.494 ± 0	43.39 ± 0
20000	0.817 ± 0.001	23.824 ± 0.067	44.363 ± 0.119	0.853 ± 0	23.971 ± 0	38.86 ± 0
35000	0.834 ± 0.001	23.082 ± 0.057	41.99 ± 0.129	0.867 ± 0	22.72 ± 0	36.739 ± 0
50000	0.844 ± 0.001	22.387 ± 0.039	40.697 ± 0.069	0.874 ± 0	21.924 ± 0	35.768 ± 0
65000	0.853 ± 0.0	21.797 ± 0.028	39.334 ± 0.054	0.88 ± 0	21.344 ± 0	34.919 ± 0
80000	0.859 ± 0.001	21.535 ± 0.045	38.433 ± 0.071	0.885 ± 0	20.884 ± 0	34.243 ± 0
95000	0.864 ± 0.0	21.234 ± 0.035	37.772 ± 0.047	0.887 ± 0	20.669 ± 0	34.008 ± 0
110000	0.868 ± 0.0	20.945 ± 0.034	37.141 ± 0.059	0.89 ± 0	20.324 ± 0	33.591 ± 0
125000	0.869 ± 0.0	21.061 ± 0.033	37.058 ± 0.048	0.892 ± 0	20.09 ± 0	33.287 ± 0
140000	0.87 ± 0.0	21.015 ± 0.031	36.766 ± 0.05	0.888 ± 0	19.546 ± 0	33.671 ± 0
155000	0.872 ± 0.0	21.005 ± 0.025	36.528 ± 0.043	0.89 ± 0	19.446 ± 0	33.471 ± 0
170000	0.873 ± 0.0	21.019 ± 0.033	36.414 ± 0.054	0.891 ± 0	19.294 ± 0	33.287 ± 0

Table S7. These values corresponds to the experiments presented in Figure 5 (Environment 3)

Hyperparameter	Value	Description
bootstrap	True	Whether bootstrap samples are used when building trees. If False, the whole dataset is used to build each tree.
ccp_alpha	0 (default)	Complexity parameter used for Minimal Cost-Complexity Pruning.
criterion	"squared_error" (default)	The function to measure the quality of a split.
max_depth	None (default)	The maximum depth of the tree. If None, then nodes are expanded until all leaves are pure or until all leaves contain less than min_samples_split_samples.
max_features	"sqrt"	The number of features to consider when looking for the best split.
max_leaf_nodes	None (default)	Grow trees with max_leaf_nodes in best-first fashion.
max_samples	None (default)	If bootstrap is True, the number of samples to draw from the dataser to train each base estimator.
min_impurity_decrease	0 (default)	A node will be split if this split induces a decrease of the impurity greater than or equal to this value.
min_samples_leaf	1 (default)	The minimum number of samples required to be at a leaf node.
min_samples_split	6	The minimum number of samples required to split an internal node.
min_weight_fraction _leaf	0 (default)	The minimum weighted fraction of the sum total of weights (of all the input samples) required to be at a leaf node.
n_estimators	100 (default)	The number of trees in the forest.
oob_score	False (default)	Whether to use out-of-bag samples to estimate the generalization score.

Table S8. Tunned hyperparameters of *RandomForestRegressor* component, implemented by *scikit-learn*.

Hyperparameter	Value	Description
base_estimator	DecisionTreeRegressor	The base estimator from which the boosted ensemble is built.
learning_rate	0.1	Weight applied to each regressor at each boosting iteration.
loss	"linear"	The loss function to use when updating the weights after each boosting iteration.
n_estimators	50	The maximum number of estimators at which boosting is terminated.

Table S9. Tunned hyperparameters of *AdaBoostRegressor* component, implemented by *scikit-learn*. In the Table 10 are defined the hyperparameters used by DecisionTreeRegressor, also implemented by *scikit-learn*.

Hyperparameter	Value	Description
ccp_alpha	0 (default)	Complexity parameter used for Minimal Cost-Complexity Pruning.
criterion	"squared_error" (default)	The function to measure the quality of a split.
max_depth	18	The maximum depth of the tree.
max_features	None (default)	The number of features to consider when looking for the best split.
max_leaf_nodes	None (default)	Grow trees with max_leaf_nodes in best-first fashion.
min_impurity_decrease	0 (default)	A node will be split if this split induces a decrease of the impurity greater than or equal to this value.
min_samples_leaf	1 (default)	The minimum number of samples required to be at a leaf node.
min_samples_split	14	The minimum number of samples required to split an internal node.
min_weight_fraction _leaf	0 (default)	The minimum weighted fraction of the sum total of weights (of all the input samples) required to be at a leaf node.
splitter	"best" (default)	The strategy used to choose the split at each node.

Table S10. Tunned hyperparameters of *DecisionTreeRegressor* component, implemented by *scikit-learn*.

Hyperparameter	Value	Description
alpha	1 (default)	L1 regularization term on weights.
colsample_bytree	1 (default)	The subsample ratio of columns when constructing each tree.
colsample_bylevel	1 (default)	The subsample ratio of columns for each level.
colsample_bynode	1 (default)	The subsample ratio of columns for each node (split).
grow_policy	"depthwise" (default)	Controls a way new nodes are added to the tree. If "depthwise", splits at nodes closest to the root.
lambda	1 (default)	L2 regularization term on weights.
learning_rate	0.1	Step size shrinkage used in update to prevents overfitting.
max_depth	12	The Maximum depth of a tree.
max_delta_step	0 (default)	Maximum delta step allowed each leaf output to be.
max_leaver	0 (default)	Maximum number of nodes to be added.
min_child_weight	1 (default)	Minimum sum of instance weight needed in a child.
min_split_loss	0 (default)	Minimum loss reduction required to make a further partition on a leaf node of the tree.
n_estimators	400	Number of gradient boosted trees.
process_type	"default" (default)	A type of boosting process to run. If "default", creates new trees (the normal boosting process).
refresh_leaf	1 (default)	When this flag is 1, tree leafs as well as tree nodes' stats are updated. When it is 0, only node stats are updated.
sampling_method	"uniform" (default)	The method to use to sample the training instances. If "uniform", each training instance has an equal probability of being selected.
scale_pos_weight	1 (default)	Control the balance of positive and negative weights, useful for unbalanced classes.
subsample	0.1	The subsample ratio of the training instances.
tree_method	"auto" (default)	The tree construction algorithm used in XGBoost. If auto, uses heuristic to choose the fastest method.

Table S11. Tunned hyperparameters for *XGBRegressor* component, implemented by *xgboost*.

Hyperparameter	Value	Description
categorical_features	None (default)	Indicates the categorical features. If None, no feature will be considered categorical.
early_stopping	"auto" (default)	If "auto", early stopping is enabled if the sample size is larger than 10000. If True, early stopping is enabled, otherwise early stopping is disabled.
learning_rate	0.3	The learning rate, also known as shrinkage.
loss	"squared_error"	The loss function to use in the boosting process.
l2_regulatization	0 (default)	The L2 regularization parameter.
max_bins	100	The maximum number of bins to use for non-missing values.
max_depth	None (default)	The maximum number of iterations of the boosting process.
max_iter	1000	The maximum number of iterations of the boosting process.
max_leaf_nodes	31 (default)	The maximum number of leaves for each tree.
min_samples_nodes	20 (default)	The minimum number of samples per leaf.
monotonic_cst	None (default)	Indicates the monotonic constraint to enforce on each feature.
n_iter_no_change	10 (default)	Used to determine when to early stop.
quantile	None (default)	If loss is "quantile", this parameter specifies which quantile to be estimated and must be between 0 and 1.
scoring	"loss" (default)	Scoring parameter to use for early stopping.
tol	1e-7	The absolute tolerance to use when comparing scores during early stopping.
validation_fraction	0.1 (default)	Proportion (or absolute size) of training data to set aside as validation data for early stopping.

Table S12. Tunned hyperparameters of *HistGradientBoostingRegressor* component, implemented by *scikit-learn*.