

Leap Forward 1

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Files

- `experiment_leap_forward_1.py`
- `analyze_leap_forward_1.py`

Motivation

This report displays the results of a validation experiment which aims at quantifying the improvements of the changes made to the model.

Experiments that were validated were:

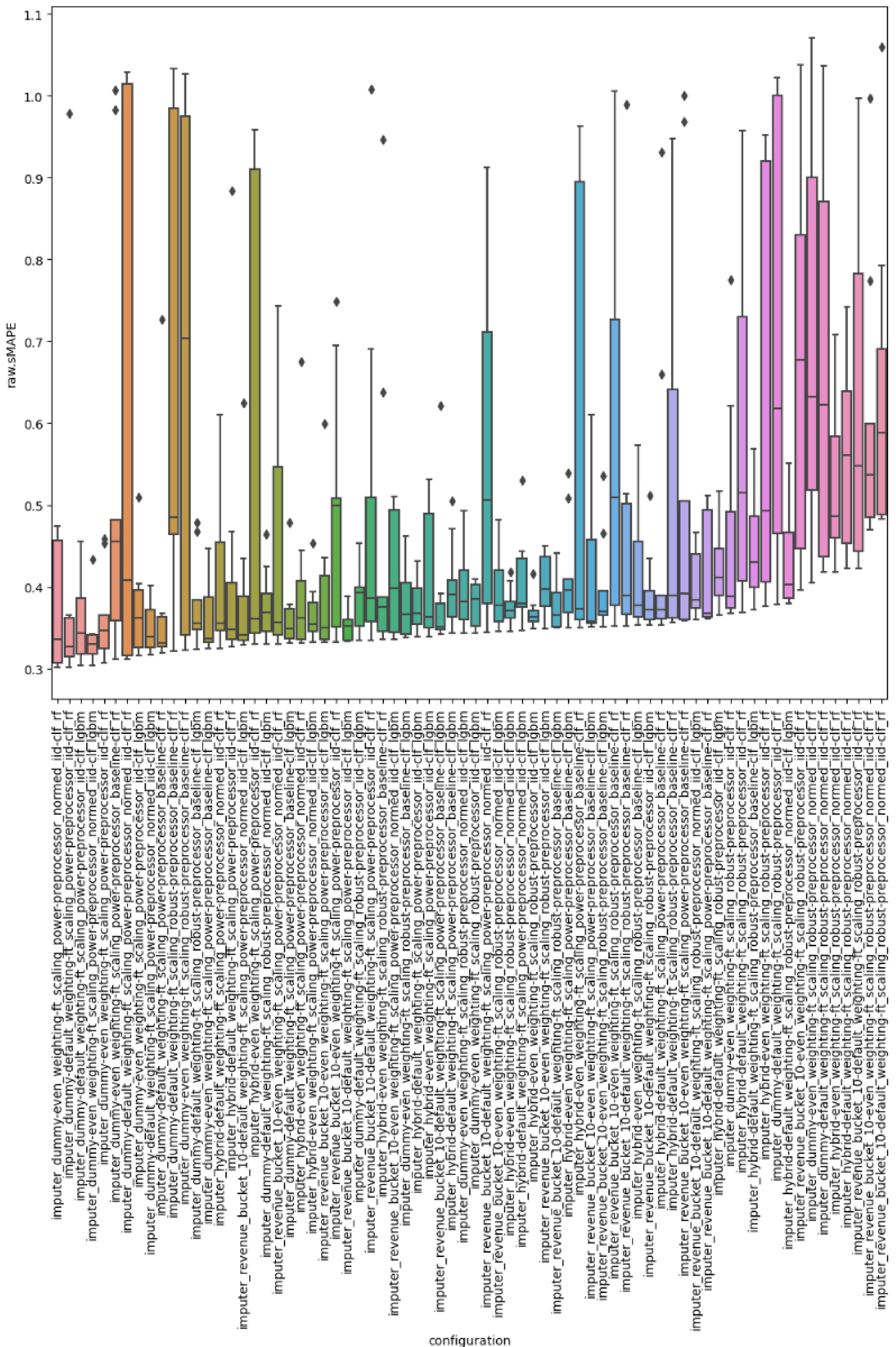
- `experiment_missing_value_imputer.py`
- `experiment_weighted_voting_vs_even_voting.py`
- `experiment_feature_scaling.py`
- `experiment_preprocessors.py`
- `experiment_bucket_classifier.py`

Design

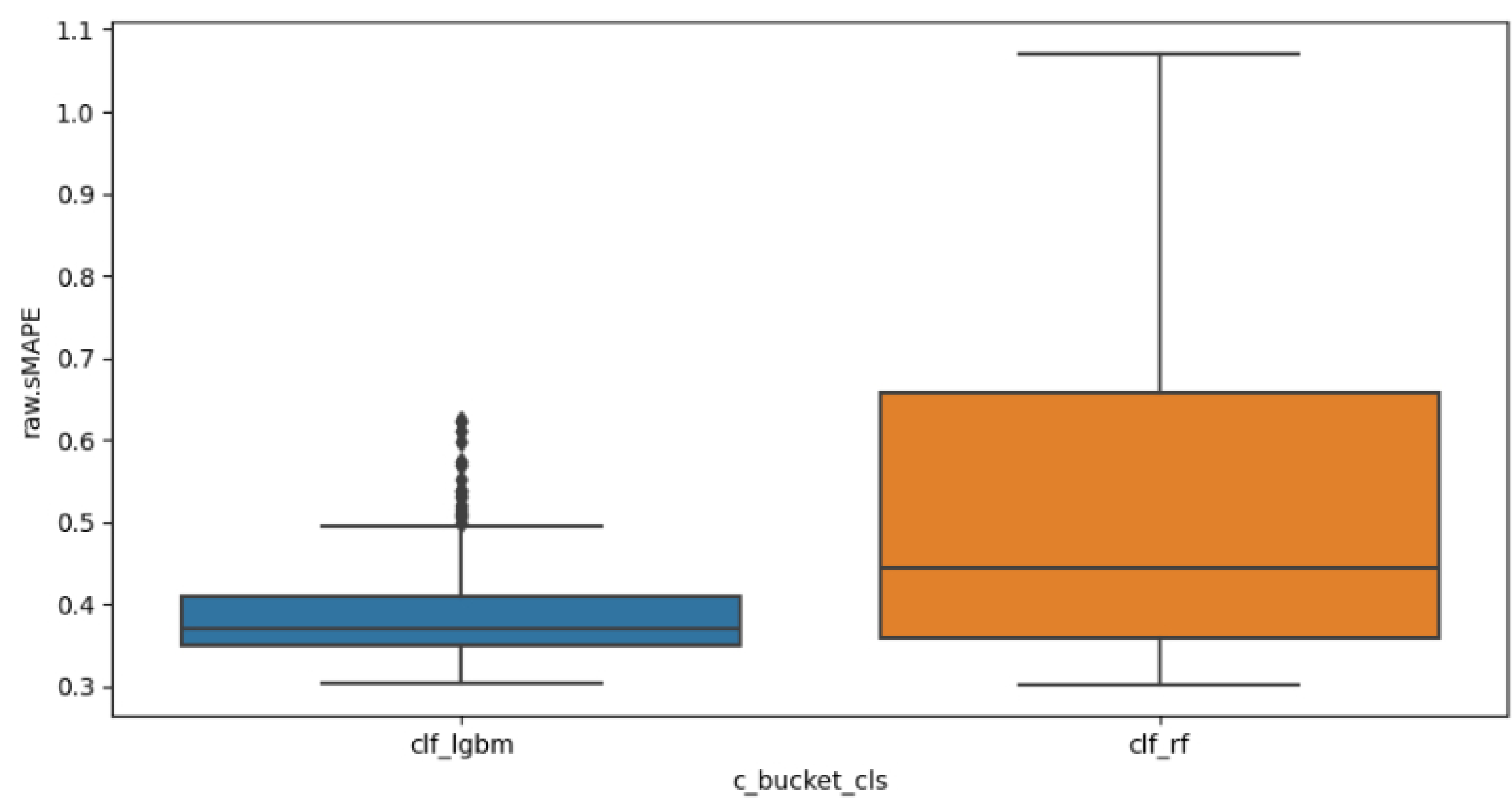
For this experiment, we train an MMA model for every configuration combination and evaluate the sMAPE value on scope 1. We run the experiment for 10 repetitions for each configuration. We run the experiments without dimensionality reduction.

Results and Insights

This plot shows the result of all configurations. They show a tangible effect of the configuration on the sMAPE. The best sMAPE appears to be DummyImputer-SmartVoting-PowerFeatureScalingIIDPreprocessing Randomforest Classification. However, the second best configuration appears to be more stable in terms of standard deviation. That configuration is DummyImputer-EvenVoting-PowerFeatureScalingNormedIIDProcessing-LGBMClassification.



The classifier is the main determinant of how stable the model is.



In total we improve by 2% (median sMAPE) compared to the configuration we used prior but 5.5% compared to the average. Compared to the worst configuration we improve by 6%.

	count	mean	std	min	25%	50%	75%	max
old	9.000000	0.353526	0.020879	0.333607	0.334853	0.351928	0.360234	0.388887
now	8.000000	0.339960	0.040095	0.304036	0.318468	0.330706	0.341838	0.433870
worst	9.000000	0.470361	0.204059	0.352107	0.366553	0.389745	0.501834	0.989773
best	9.000000	0.402380	0.216989	0.301871	0.314927	0.326694	0.362561	0.978020
all	608.000000	0.459672	0.179917	0.301527	0.352315	0.384926	0.480016	1.070382

Decision

Update 25.04.24

We decide to use the second best configuration as it appears to be close in terms to of performance compared to the best but the results remain stable throughout multiple runs.