Model Metrics

1.0 Features

	c	si	mn	p	s	ni	cr	mo	cu	v	al	n	nb+ta	temp	yield
0	0.12	0.36	0.52	0.009	0.003	0.089	0.97	0.61	0.04	0.0	0.003	0.0066	0.0	27	342
1	0.12	0.36	0.52	0.009	0.003	0.089	0.97	0.61	0.04	0.0	0.003	0.0066	0.0	100	338
2	0.12	0.36	0.52	0.009	0.003	0.089	0.97	0.61	0.04	0.0	0.003	0.0066	0.0	200	337
3	0.12	0.36	0.52	0.009	0.003	0.089	0.97	0.61	0.04	0.0	0.003	0.0066	0.0	300	346
4	0.12	0.36	0.52	0.009	0.003	0.089	0.97	0.61	0.04	0.0	0.003	0.0066	0.0	400	316

2.0 Model Parameters and Hyperparameters

Untuned CatBoostRegressor:

nan_mode	Min
eval_metric	RMSE
iterations	1000
sampling_frequency	PerTree
leaf_estimation_method	Newton
grow_policy	SymmetricTree
penalties_coefficient	1
boosting_type	Plain

model_shrink_mode	Constant
feature_border_type	GreedyLogSum
bayesian_matrix_reg	0.10000000149011612
force_unit_auto_pair_weights	False
l2_leaf_reg	3
random_strength	1
rsm	1
boost_from_average	True
model_size_reg	0.5
pool_metainfo_options	{'tags': {}}
subsample	0.800000011920929
use_best_model	False
random_seed	123
depth	6
posterior_sampling	False
border_count	254
classes_count	0
auto_class_weights	None

sparse_features_conflict_fraction	0
leaf_estimation_backtracking	AnyImprovement
best_model_min_trees	1
model_shrink_rate	0
min_data_in_leaf	1
loss_function	RMSE
learning_rate	0.03585800155997276
score_function	Cosine
task_type	CPU
leaf_estimation_iterations	1
bootstrap_type	MVS
max_leaves	64

Light Gradient Boosting Machine

boosting_type	gbdt
class_weight	None
colsample_bytree	1.0
importance_type	split
learning_rate	0.3
max_depth	4
min_child_samples	20
min_child_weight	0.001
min_split_gain	0.0
n_estimators	100
n_jobs	-1
num_leaves	8
objective	None
random_state	123
reg_alpha	0.0
reg_lambda	0.0
silent	warn

subsample	1.0
subsample_for_bin	200000
subsample_freq	0

Extra Trees Regressor:

bootstrap	False
ccp_alpha	0.0
criterion	squared_error
max_depth	20
max_features	auto
max_leaf_nodes	None
max_samples	None
min_impurity_decrease	0.0
min_samples_leaf	1
min_samples_split	3
min_weight_fraction_leaf	0.0
n_estimators	50
n_jobs	-1
oob_score	False
random_state	123
verbose	0
warm_start	Fal

2.0 Model Metrics

		Untuned CatBoost	LGBM	ExtraTrees	VotingRegressor
Train	**R2**	0.998044	0.988166	0.997733	0.997801
	MAE	4.381501	8.457923	3.277293	4.254489
	MSE	34.055890	206.045577	39.463553	38.284181
Valid	**R2**	0.983944	0.984886	0.982405	0.985509
	MAE	12.452790	13.106688	15.224032	12.410774
	MSE	311.425003	293.156436	341.274511	281.061241
Test	**R2**	0.927087	0.920844	0.922419	0.927101
	MAE	16.969241	18.451850	18.308929	16.846251
	MSE	1303.243063	1414.834575	1386.680810	1302.991689
CV entire	**R2**	0.956715	0.953459	0.950650	0.957005
	MAE	14.185969	15.970620	16.727021	14.218077
	MSE	762.429021	823.500995	875.942224	758.996468