Model	Hyperparameter	Range	Remarks
RF	n_estimators	200–1200	
	max_depth	{None, 4–20}	
	min_samples_split	2–19	
	min_samples_leaf	1–9	
	max_features	{sqrt, log2, None}	
	bootstrap	{True, False}	
DT	max_depth	{None, 4–30}	
	min_samples_split	2–29	
	min_samples_leaf	1–14	
	max_features	{None, sqrt, log2}	
	criterion	{squared_error, friedman_mse}	
	splitter	{best, random}	
ADA	n_estimators	200–1200	
	learning_rate	0.01–0.5 (log-unif.)	
	loss	{linear, square, exponential}	
	estimator__max_depth	2–5	
	estimator__min_samples_leaf	1–9	
GB	n_estimators	200–2000	
	learning_rate	0.01–0.2 (log-unif.)	
	subsample	0.5–1.0	
	max_depth	2–9	
	min_samples_split	2–19	
	min_samples_leaf	1–14	
	max_features	{None, sqrt, log2}	
	loss	{squared_error, absolute_error, huber}	
XGB	n_estimators	400–2000	tree_method=hist
	learning_rate	0.01–0.2 (log-unif.)	eval_metric=rmse
	max_depth	3–9	ES: 200 iterations
	subsample	0.5–1.0	
	colsample_bytree	0.5–1.0	
	min_child_weight	1.0–10.0	
	reg_lambda	0.0–20.0	
	reg_alpha	0.0–10.0	
	gamma	0.0–1.0	
LGBM	n_estimators	400–2000	
	learning_rate	0.01–0.2 (log-unif.)	
	num_leaves	$2^k,\ k \in [4, 11]$	16–2048
	max_depth	{-1, 6–17}	-1 = no limit
	min_data_in_leaf	10–199	
	subsample	0.5–1.0	
	colsample_bytree	0.5–1.0	
	reg_lambda	0.0–20.0	
	reg_alpha	0.0–10.0	
MLP	hidden_layer_sizes	{(128,64), (256,128), (64,64), (128,), (256,), (64,32)}	
	activation	{relu, tanh}	
	alpha	$10^{[-5,-2]}$ (log-unif.)	
	learning_rate_init	$10^{[-4,-2]}$ (log-unif.)	
	learning_rate	{adaptive, constant}	
	early_stopping	True	
	max_iter	2000	

Table 1: Hyperparameter Search Space for Each Model.