

Supplementary Table S1. Hyperparameters for eight ML models.

Model	Hyperparameters for ACLF	Hyperparameters for Non-ACLF
CatBoost	Iterations=100, max_depth = 3, learning_rate = 0.1, l2_leaf_reg= 3, max_bin = auto , threads = 4	Iterations= 80, max_depth = 6, learning_rate = 0.1, l2_leaf_reg= 3, max_bin = auto , threads = 4
MLP	Activation = relu, solver = adam, alpha = 0.0001, hidden_layer_sizes = (100, 100, 100), learning_rate_init = 0.001	Activation = relu, solver = adam, alpha = 0.0001, hidden_layer_sizes = (100, 100, 100) learning_rate_init = 0.001
SVM	Cost = 1, degree = 3, kernel = linear, gamma = scale, tolerance = 0.001	Cost = 1, degree = 2, kernel = linear, gamma = scale, tolerance = 0.001
Logistic	Cost = 1, penalty = l2, solver = liblinear, tolerance = 0.0001, max_iter = 10	Cost = 1, penalty = l2, solver = lbfgs, tolerance = 0.0001, max_iter = 100
NB	var_smoothing = 1e-8, method = gaussian	var_smoothing = 1e-8, method = gaussian
RF	Criterion = gini, max_depth = 50, max_features = sqrt, min_samples_leaf = 6, min_samples_split = 30, n_estimators = 3000	Criterion = gini, max_depth = 30, max_features = sqrt, min_samples_leaf = 4, min_samples_split = 10, n_estimators = 3000
DT	Criterion = log_loss, max_depth = 3, max_features = sqrt, min_samples_leaf = 1, min_samples_split = 2, splitter = best	Criterion = gini, max_depth = 6, max_features = sqrt, min_samples_leaf = 1, min_samples_split = 2, splitter = best
KNN	Metric = minkowski, n_neighbors = 5, p = 2, weights = uniform	Metric = minkowski, n_neighbors = 3, p = 2, weights = uniform

Note: ACLF, acute-on-chronic liver failure; CatBoost, Categorical boosting; DT, decision tree; KNN, K-nearest neighbor; Logistic, logistic regression; ML, machine learning; MLP, multilayer perceptron; NB, naive bayes; RF, random forest; SVM, support vector machine.