Final Metrics
Predicting Sepsis in ICU Patients

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The final model selected was a gradient boost model. The classification scheme used is by-patient classification rather than hourly. A classification threshold of 11% is used to catch more sepsis cases. The model should thus be used as an elevated warning system.

Model Parameters

Gradient Boost Model

'ccp_alpha': 0.0,
'criterion': 'friedman_mse',
'init': None,
'learning_rate': 0.01,
'loss': 'deviance',
'max_depth': 5,
'max_features': 'sqrt',
'max_leaf_nodes': None,
'min_impurity_decrease': 0.0,
'min_impurity_split': None,
'min_samples_leaf': 1,
'min_samples_split': 2,
'min_weight_fraction_leaf': 0.0,
'n_estimators': 300,
'n_iter_no_change': None,
'random_state': 42,
'subsample': 1.0,
'tol': 0.0001,
'validation_fraction': 0.1,
'verbose': 0,
'warm_start': False

Results

Classification Report – Testing Data

	precision	recall	f1-score	support
0	0.96	0.76	0.85	11231
1	0.15	0.54	0.23	870
accuracy			0.74	12101
macro avg	0.55	0.65	0.54	12101
weighted avg	0.90	0.74	0.80	12101

Note: The probability threshold has been set to 11% to favor True Positives.

Confusion Matrix – Testing Data

	Predicted 0	Predicted 1
Actual 0	8534	2697
Actual 1	399	471

Note: The probability threshold has been set to 11% to favor True Positives.