Appendix 1. Comparison of best results related to machine learning methods in predicting AKI based on precision, recall, F1-score and accuracy metrics on the first day after cardiac surgery.

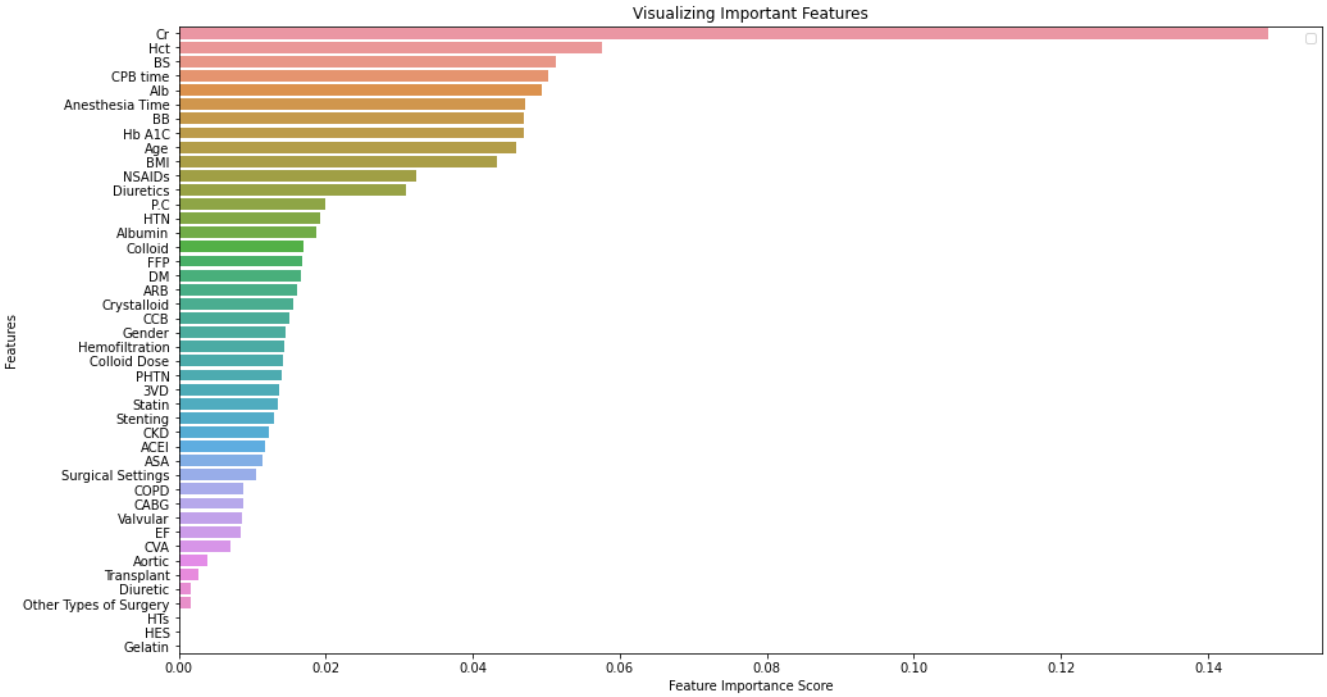
Missing value Imputation / ML Method	Precision	Recall	F1-score	Accuracy
SVM	0.64	0.67	0.65	0.68
MLP	0.65	0.63	0.64	0.68
DT	0.61	0.63	0.62	0.65
Logistic Regression	0.65	0.70	0.67	0.69
AdaBoost	0.66	0.69	0.67	0.70
XGBoost	0.71	0.68	0.69	0.73
RF	0.74	0.67	0.70	0.74

SVM= Support vector machine, MLP= Multi-layer Perceptron, DT= Decision tree, RF= Random forest.

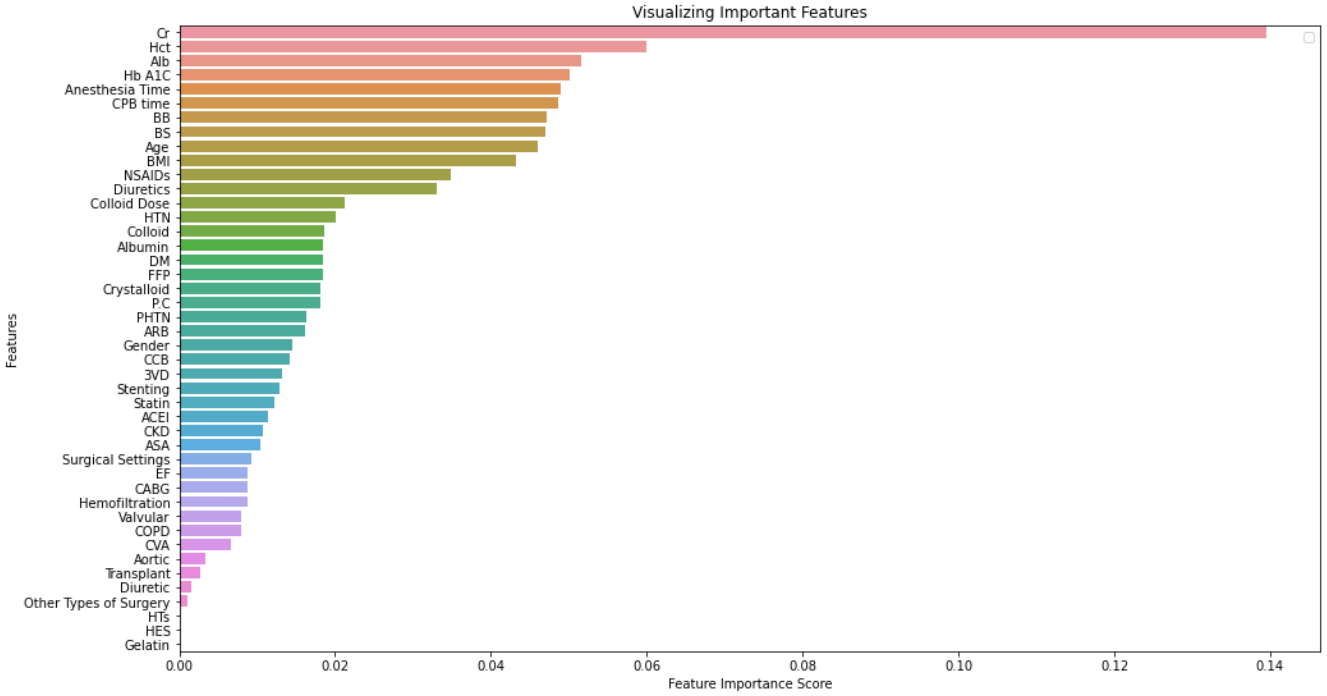
Appendix 2. Comparison of best results related to machine learning methods in predicting AKI based on precision, recall, F1-score and accuracy metrics on the seventh day after cardiac surgery.

Missing value Imputation / ML Method	Precision	Recall	F1-score	Accuracy
SVM	0.42	0.71	0.53	0.65
MLP	0.42	0.67	0.51	0.65
DT	0.40	0.68	0.50	0.63
Logistic Regression	0.41	0.74	0.53	0.64
AdaBoost	0.46	0.76	0.57	0.68
XGBoost	0.48	0.73	0.58	0.71
RF	0.47	0.71	0.56	0.70

SVM= Support vector machine, MLP= Multi-layer Perceptron, DT= Decision tree, RF= Random forest.

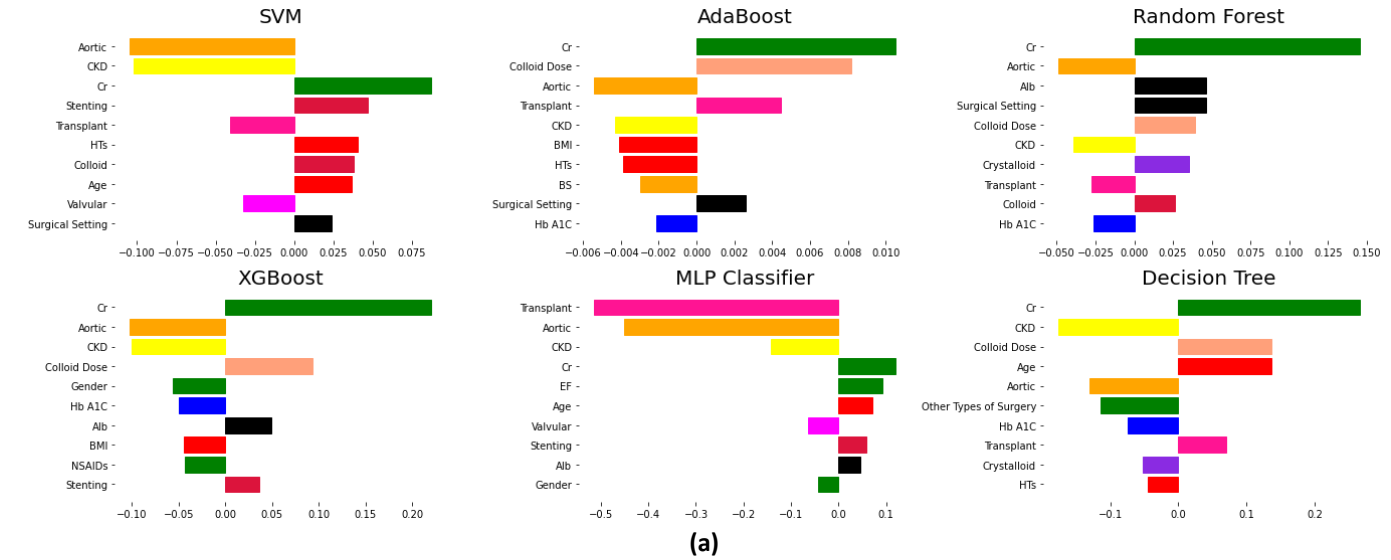


(a)

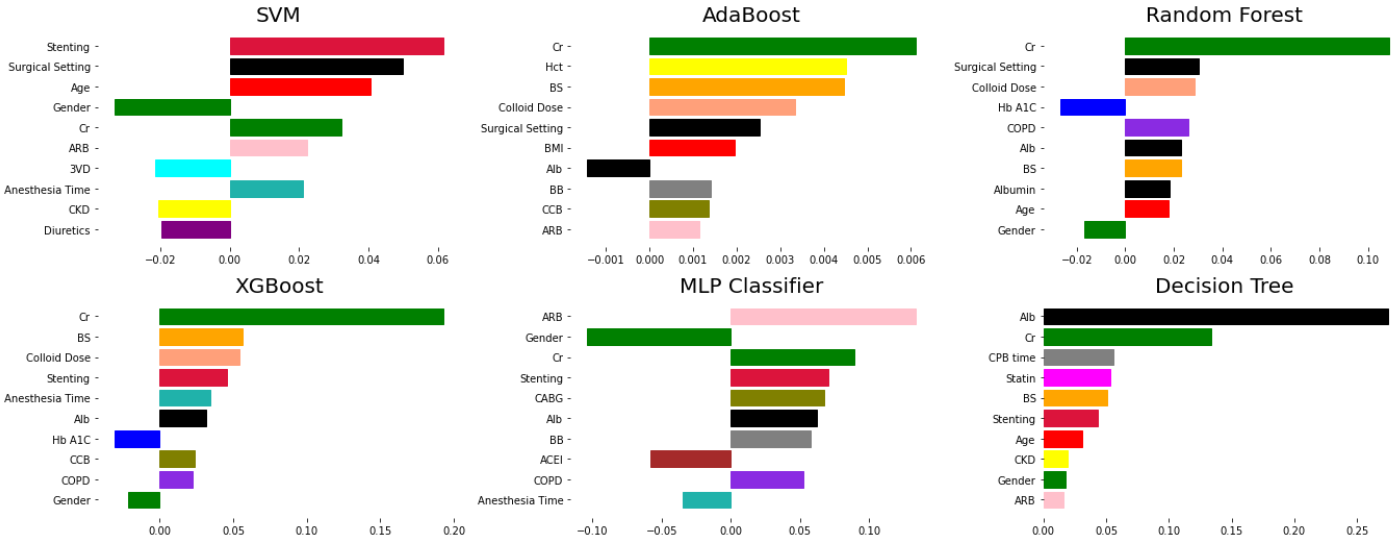


(b)

Appendix 3. Feature ranking charts for AKI prediction of the seventh day after surgery using (a) XGBoost and (b) RF models.

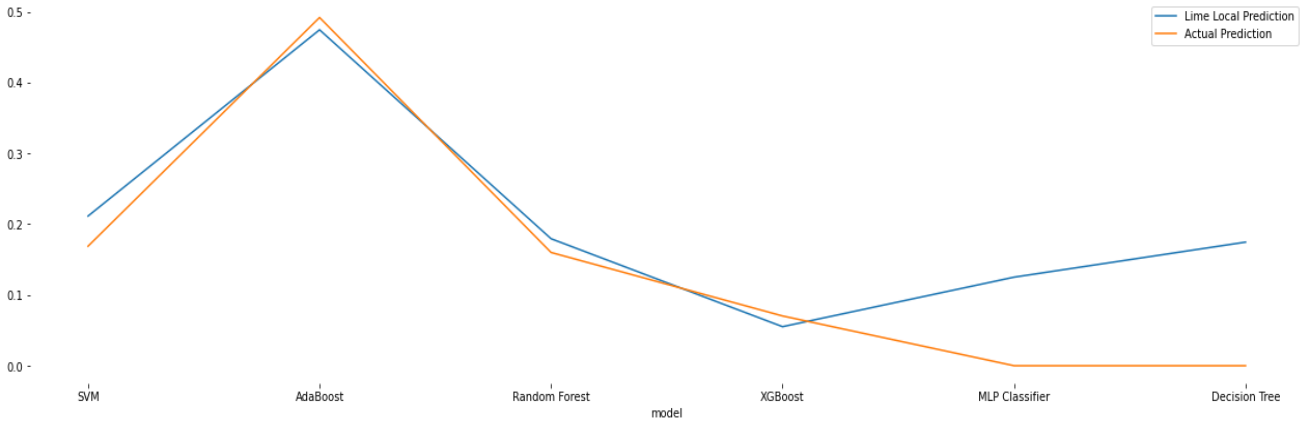


(a)



(b)

Appendix 4. Top 10 effective features in identifying a single test data instance as TP to predict AKI on the seventh day after surgery for different machine learning models analyzed by (a) LIME and (b) Shapley methods.



Appendix 5. LIME local prediction versus actual predictions of the different machine learning methods for the TP sample.