

MIMIC 기반 기존 연구 리뷰 및 재현 보고서 // Appendix

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1 Pneumothorax

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Model	Dataset	Accuracy	F1 Score	Precision	Recall	AUROC (95% CI)	AUPRC	Sensitivity	NPV	PPV
XGBoost	MIMIC-IV	0.947	0.822	0.941	0.730	0.979 (0.966, 0.989)	0.926	0.991	0.730	0.941
ANN	MIMIC-IV	0.882	0.529	0.793	0.397	0.915 (0.893, 0.936)	0.717	0.979	0.397	0.793
SVM	MIMIC-IV	0.934	0.761	0.957	0.632	0.967 (0.946, 0.985)	0.911	0.994	0.632	0.957
KNN	MIMIC-IV	0.943	0.816	0.891	0.753	0.948 (0.923, 0.969)	0.900	0.982	0.753	0.891
XGBoost	80%MIMIC-IV+20%EICU	0.718	0.512	0.360	0.886	0.806 (0.740, 0.864)	0.359	0.886	0.684	0.967
ANN	80%MIMIC-IV+20%EICU	0.627	0.426	0.287	0.829	0.703 (0.628, 0.780)	0.238	0.829	0.586	0.944
SVM	80%MIMIC-IV+20%EICU	0.636	0.415	0.284	0.771	0.705 (0.621, 0.780)	0.247	0.771	0.609	0.930
KNN	80%MIMIC-IV+20%EICU	0.679	0.247	0.204	0.314	0.655 (0.565, 0.740)	0.215	0.314	0.753	0.845

XGBoost: eXtreme Gradient Boosting; ANN: Artificial Neural Network; SVM: Support Vector Machine; KNN: k-Nearest Neighbors; AUROC: Area Under Receiver Operating Characteristic Curve; AUPRC: Area Under Precision-Recall Curve; NPV: Negative Predictive Value; PPV: Positive Predictive Value.

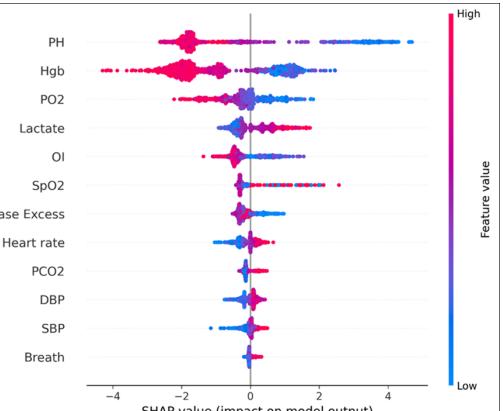


Figure 1: Original Research Performance Evaluation and SHAP Analysis Results. (Left) Model Performance Comparison Table for MIMIC-IV Internal Validation and EICU External Validation. (Right) SHAP Summary Plot for XGBoost Model, showing pH, Hgb, PO2 as the most influential factors in prediction.

Table 1: Environment and Key Library Versions

Software / Library	Version
Python	3.12.12
CUDA	13.0
XGBoost	3.1.2
Scikit-learn	1.7.2
SHAP	0.48.0
Pandas	2.3.3
NumPy	2.3.4
SciPy	1.16.3