TABLE IV

Comparison among different Models implemented

Algorithm type	Algorithm	AUC	Accuracy	F1 Score Micro	F1 Score Macro
Deep Learning without Nature Inspired Algorithms	Long Short Term Memory	0.88	78.84%	0.80	0.76
	Long Short Term Memory Auto-Encoders	0.73	70.00%	0.70	0.62
	Convolution Long Short Term Memory	0.75	70.98%	0.71	0.66
	Convolution Long Short Term Memory Auto-Encoders	0.87	80.32%	0.80	0.78
	Bi-Directional Long Short Term Memory Auto-Encoders	0.85	77.99%	0.78	0.75
Deep Learning with Nature Inspired Algorithms	Long Short Term Memory with Bat Algorithm	0.75	70.42%	0.70	0.63
	Long Short Term Memory with Grey Wolf optimizer Algorithm	0.85	81.57%	0.79	0.76

TABLE V

Comparison with Baseline Models

Methods	Area Under ROC Curve	Accuracy
Logistic Regression	0.54	58.09%
Support Vector Machines	0.54	59.37%
Decision Tree	0.52	55.68%
Random Forest	0.53	60.49%