**Name:** BSE No.13

**Classification**

**Target name:** Cyberattack Detected

**Number of Inputs:** 22

**Feature Selection:** VIF, Threshold 5. Reports for all steps.

**Number of samples:** 5000

**Number of Classes:** Two, (0: 4836 and 1: 164).

**Data Balancing:** Using SMOTE-ENC for oversampling.

**Cross Validation:** 5-Fold

**Models:** Extra Tree classification (ETC), Gaussian Boosting classification (GBC), and Random Forest Classification (RFC).

**Optimizers:** Haze Optimization Algorithm (HOA) and Perfumer optimization algorithm (POA).

**Convergence:** Based on F1-Score.

**Report Search spaces**

**Report Run Time**

**Metrics:** Accuracy, Precision, Recall, F1-Score, AUC, and MCC.

**Statistical Wilcoxon test**

**ROC Curves**

**Sensitivity:** Copula.