Cross Validation - 5 Features

**Classifier: KNN**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 0.7322 | 0.91 | 0.93 | 0.89 | 0.91 | 0.91 |
| 2 | 0.8352 | 0.91 | 0.93 | 0.89 | 0.91 | 0.91 |
| 3 | 0.8221 | 0.91 | 0.93 | 0.89 | 0.91 | 0.91 |
| 4 | 0.7690 | 0.91 | 0.93 | 0.89 | 0.91 | 0.91 |
| 5 | 0.7734 | 0.91 | 0.93 | 0.89 | 0.91 | 0.91 |
| Mean | 0.7864 | 0.91 | 0.93 | 0.89 | 0.91 | 0.91 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 32.7160 | 0.84 | 0.86 | 0.81 | 0.84 | 0.84 |
| 2 | 33.1511 | 0.84 | 0.86 | 0.82 | 0.84 | 0.84 |
| 3 | 33.2156 | 0.84 | 0.86 | 0.82 | 0.84 | 0.84 |
| 4 | 31.1195 | 0.84 | 0.86 | 0.81 | 0.84 | 0.84 |
| 5 | 31.2687 | 0.84 | 0.86 | 0.81 | 0.83 | 0.84 |
| Mean | 32.2942 | 0.84 | 0.86 | 0.81 | 0.84 | 0.84 |

**Classifier: Random Forest**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 193.5105 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 189.8720 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 187.9471 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 187.9697 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 188.2007 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 189.5000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 21.2560 | 0.83 | 0.84 | 0.80 | 0.82 | 0.83 |
| 2 | 20.8922 | 0.83 | 0.84 | 0.80 | 0.82 | 0.83 |
| 3 | 21.2103 | 0.83 | 0.84 | 0.80 | 0.82 | 0.83 |
| 4 | 20.4279 | 0.83 | 0.85 | 0.80 | 0.82 | 0.83 |
| 5 | 20.7494 | 0.83 | 0.84 | 0.80 | 0.82 | 0.83 |
| Mean | 20.9072 | 0.83 | 0.84 | 0.80 | 0.82 | 0.83 |

**Classifier: XGBoost**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 3.3736 | 0.78 | 0.82 | 0.73 | 0.77 | 0.78 |
| 2 | 3.3715 | 0.78 | 0.82 | 0.73 | 0.77 | 0.78 |
| 3 | 3.3728 | 0.78 | 0.82 | 0.73 | 0.77 | 0.78 |
| 4 | 3.3386 | 0.78 | 0.82 | 0.72 | 0.77 | 0.78 |
| 5 | 3.3464 | 0.78 | 0.82 | 0.73 | 0.77 | 0.78 |
| Mean | 3.3606 | 0.78 | 0.82 | 0.73 | 0.77 | 0.78 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 3.5044 | 0.72 | 0.75 | 0.67 | 0.71 | 0.72 |
| 2 | 3.4530 | 0.72 | 0.75 | 0.67 | 0.71 | 0.72 |
| 3 | 3.4772 | 0.72 | 0.75 | 0.67 | 0.71 | 0.72 |
| 4 | 3.4544 | 0.72 | 0.75 | 0.67 | 0.71 | 0.72 |
| 5 | 3.4884 | 0.72 | 0.75 | 0.68 | 0.71 | 0.72 |
| Mean | 3.4755 | 0.72 | 0.75 | 0.67 | 0.71 | 0.72 |

**Classifier: Decision Tree**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 6.7492 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 6.7274 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 6.7367 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 6.7648 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 6.5565 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 6.7069 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 0.2170 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| 2 | 0.2050 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| 3 | 0.2090 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| 4 | 0.2030 | 0.74 | 0.74 | 0.73 | 0.74 | 0.74 |
| 5 | 0.2070 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| Mean | 0.2082 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |

**Classifier: Extra Trees**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 64.7759 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 63.9121 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 61.8825 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 60.9889 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 65.4140 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 63.3947 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 32.2387 | 0.83 | 0.86 | 0.79 | 0.82 | 0.83 |
| 2 | 32.7604 | 0.83 | 0.86 | 0.79 | 0.82 | 0.83 |
| 3 | 32.6157 | 0.83 | 0.86 | 0.79 | 0.82 | 0.83 |
| 4 | 32.2244 | 0.83 | 0.86 | 0.79 | 0.82 | 0.83 |
| 5 | 31.5734 | 0.83 | 0.86 | 0.79 | 0.83 | 0.83 |
| Mean | 32.2825 | 0.83 | 0.86 | 0.79 | 0.82 | 0.83 |

Cross Validation - 8 Features

**Classifier: KNN**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 1.2510 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 2 | 0.9260 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 3 | 1.0977 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 4 | 1.1267 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 5 | 1.1690 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| Mean | 1.1141 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 86.0789 | 0.95 | 0.96 | 0.94 | 0.95 | 0.95 |
| 2 | 77.8383 | 0.95 | 0.96 | 0.94 | 0.95 | 0.95 |
| 3 | 80.0951 | 0.96 | 0.96 | 0.95 | 0.95 | 0.96 |
| 4 | 80.7484 | 0.95 | 0.96 | 0.94 | 0.95 | 0.95 |
| 5 | 80.1442 | 0.95 | 0.97 | 0.94 | 0.95 | 0.95 |
| Mean | 80.9810 | 0.95 | 0.96 | 0.94 | 0.95 | 0.95 |

**Classifier: Random Forest**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 192.0020 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 192.3436 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 202.6803 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 193.0782 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 204.4891 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 196.9187 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 19.8781 | 0.93 | 0.95 | 0.91 | 0.93 | 0.93 |
| 2 | 20.1846 | 0.93 | 0.95 | 0.92 | 0.93 | 0.93 |
| 3 | 21.2704 | 0.93 | 0.95 | 0.91 | 0.93 | 0.93 |
| 4 | 20.2064 | 0.93 | 0.95 | 0.91 | 0.93 | 0.93 |
| 5 | 21.7195 | 0.93 | 0.95 | 0.91 | 0.93 | 0.93 |
| Mean | 20.6518 | 0.93 | 0.95 | 0.91 | 0.93 | 0.93 |

**Classifier: XGBoost**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 3.9103 | 0.86 | 0.89 | 0.83 | 0.86 | 0.86 |
| 2 | 4.0870 | 0.86 | 0.89 | 0.83 | 0.86 | 0.86 |
| 3 | 3.9710 | 0.86 | 0.89 | 0.83 | 0.86 | 0.86 |
| 4 | 4.0778 | 0.87 | 0.89 | 0.83 | 0.86 | 0.87 |
| 5 | 4.0447 | 0.86 | 0.89 | 0.83 | 0.86 | 0.86 |
| Mean | 4.0181 | 0.86 | 0.89 | 0.83 | 0.86 | 0.86 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 3.6867 | 0.82 | 0.84 | 0.79 | 0.81 | 0.82 |
| 2 | 3.6936 | 0.82 | 0.84 | 0.79 | 0.81 | 0.82 |
| 3 | 3.6630 | 0.82 | 0.84 | 0.78 | 0.81 | 0.82 |
| 4 | 3.8050 | 0.82 | 0.84 | 0.78 | 0.81 | 0.82 |
| 5 | 3.6840 | 0.82 | 0.84 | 0.78 | 0.81 | 0.82 |
| Mean | 3.7065 | 0.82 | 0.84 | 0.78 | 0.81 | 0.82 |

**Classifier: Decision Tree**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 11.5010 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 11.3593 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 11.2272 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 11.4199 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 11.5358 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 11.4086 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 0.2110 | 0.84 | 0.84 | 0.83 | 0.84 | 0.84 |
| 2 | 0.2041 | 0.84 | 0.84 | 0.83 | 0.84 | 0.84 |
| 3 | 0.2180 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| 4 | 0.2080 | 0.83 | 0.84 | 0.83 | 0.83 | 0.83 |
| 5 | 0.2050 | 0.84 | 0.84 | 0.83 | 0.84 | 0.84 |
| Mean | 0.2092 | 0.84 | 0.84 | 0.83 | 0.84 | 0.84 |

**Classifier: Extra Trees**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 69.3777 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 69.5458 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 68.7583 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 68.4874 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 69.3701 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 69.1079 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 33.5339 | 0.94 | 0.96 | 0.91 | 0.94 | 0.94 |
| 2 | 35.4017 | 0.94 | 0.96 | 0.91 | 0.93 | 0.94 |
| 3 | 33.2477 | 0.94 | 0.96 | 0.91 | 0.94 | 0.94 |
| 4 | 34.2392 | 0.94 | 0.96 | 0.91 | 0.93 | 0.93 |
| 5 | 33.2031 | 0.94 | 0.96 | 0.91 | 0.93 | 0.94 |
| Mean | 33.9251 | 0.94 | 0.96 | 0.91 | 0.93 | 0.94 |

Cross Validation - 16 Features

**Classifier: KNN**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 0.0310 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 0.0430 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 0.0400 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 0.0310 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 0.0400 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 0.0370 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 637.5476 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 2 | 641.6691 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 3 | 635.9238 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 4 | 647.1554 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 5 | 645.4335 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| Mean | 641.5459 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |

**Classifier: Random Forest**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 389.9796 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 380.3000 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 378.8399 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 377.3119 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 376.3905 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 380.5644 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 18.8616 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 2 | 19.0602 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 3 | 19.0170 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 4 | 19.1538 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 5 | 19.1269 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| Mean | 19.0439 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |

**Classifier: XGBoost**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 4.6246 | 0.95 | 0.97 | 0.94 | 0.95 | 0.95 |
| 2 | 4.5263 | 0.95 | 0.97 | 0.94 | 0.95 | 0.95 |
| 3 | 4.5909 | 0.95 | 0.97 | 0.94 | 0.95 | 0.95 |
| 4 | 4.5837 | 0.95 | 0.97 | 0.94 | 0.95 | 0.95 |
| 5 | 4.6405 | 0.95 | 0.97 | 0.94 | 0.95 | 0.95 |
| Mean | 4.5932 | 0.95 | 0.97 | 0.94 | 0.95 | 0.95 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 3.5471 | 0.92 | 0.94 | 0.90 | 0.92 | 0.92 |
| 2 | 3.5531 | 0.92 | 0.94 | 0.90 | 0.92 | 0.92 |
| 3 | 3.5738 | 0.92 | 0.94 | 0.90 | 0.92 | 0.92 |
| 4 | 3.5347 | 0.92 | 0.94 | 0.90 | 0.92 | 0.92 |
| 5 | 3.5544 | 0.92 | 0.94 | 0.90 | 0.92 | 0.92 |
| Mean | 3.5526 | 0.92 | 0.94 | 0.90 | 0.92 | 0.92 |

**Classifier: Decision Tree**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 22.9820 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 23.3804 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 22.9038 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 23.5073 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 23.6684 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 23.2884 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 0.1400 | 0.90 | 0.90 | 0.89 | 0.90 | 0.90 |
| 2 | 0.2170 | 0.90 | 0.90 | 0.89 | 0.89 | 0.90 |
| 3 | 0.2100 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| 4 | 0.2126 | 0.90 | 0.90 | 0.89 | 0.90 | 0.90 |
| 5 | 0.2050 | 0.90 | 0.90 | 0.89 | 0.90 | 0.90 |
| Mean | 0.1969 | 0.90 | 0.90 | 0.89 | 0.90 | 0.90 |

**Classifier: Extra Trees**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 103.1889 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 102.8822 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 102.3848 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 102.6727 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 101.4900 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 102.5237 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 29.3723 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 2 | 29.0632 | 0.99 | 1.00 | 0.98 | 0.99 | 0.99 |
| 3 | 28.6078 | 0.99 | 1.00 | 0.98 | 0.99 | 0.99 |
| 4 | 28.8035 | 0.99 | 1.00 | 0.98 | 0.99 | 0.99 |
| 5 | 29.2119 | 0.99 | 1.00 | 0.98 | 0.99 | 0.99 |
| Mean | 29.0118 | 0.99 | 1.00 | 0.98 | 0.99 | 0.99 |

Cross Validation - 22 Features

**Classifier: KNN**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 0.0420 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 0.0460 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 0.0480 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 0.0460 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 0.0460 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 0.0456 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 550.2346 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| 2 | 558.5052 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| 3 | 564.9699 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| 4 | 551.5664 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| 5 | 518.0179 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Mean | 548.6588 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |

**Classifier: Random Forest**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 379.8187 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 384.9673 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 379.0849 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 379.1571 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 378.6745 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 380.3405 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 19.2374 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 2 | 19.0324 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 3 | 19.2432 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 4 | 19.2702 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 5 | 19.1418 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| Mean | 19.1850 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |

**Classifier: XGBoost**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 5.1325 | 0.97 | 0.98 | 0.96 | 0.97 | 0.97 |
| 2 | 5.2100 | 0.97 | 0.98 | 0.96 | 0.97 | 0.97 |
| 3 | 5.2362 | 0.97 | 0.98 | 0.96 | 0.97 | 0.97 |
| 4 | 5.2334 | 0.97 | 0.98 | 0.96 | 0.97 | 0.97 |
| 5 | 5.2888 | 0.97 | 0.98 | 0.96 | 0.97 | 0.97 |
| Mean | 5.2202 | 0.97 | 0.98 | 0.96 | 0.97 | 0.97 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 3.6020 | 0.95 | 0.96 | 0.93 | 0.95 | 0.95 |
| 2 | 3.6262 | 0.94 | 0.96 | 0.93 | 0.94 | 0.94 |
| 3 | 3.5822 | 0.95 | 0.96 | 0.93 | 0.95 | 0.95 |
| 4 | 3.5841 | 0.94 | 0.96 | 0.93 | 0.94 | 0.94 |
| 5 | 3.5919 | 0.95 | 0.96 | 0.93 | 0.95 | 0.95 |
| Mean | 3.5973 | 0.95 | 0.96 | 0.93 | 0.94 | 0.95 |

**Classifier: Decision Tree**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 31.5368 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 32.0774 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 31.3898 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 32.5194 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 32.3436 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 31.9734 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 0.1903 | 0.91 | 0.91 | 0.90 | 0.91 | 0.91 |
| 2 | 0.2200 | 0.90 | 0.91 | 0.90 | 0.90 | 0.90 |
| 3 | 0.2080 | 0.90 | 0.91 | 0.90 | 0.90 | 0.90 |
| 4 | 0.1991 | 0.91 | 0.91 | 0.90 | 0.91 | 0.91 |
| 5 | 0.2183 | 0.91 | 0.91 | 0.90 | 0.91 | 0.91 |
| Mean | 0.2071 | 0.91 | 0.91 | 0.90 | 0.91 | 0.91 |

**Classifier: Extra Trees**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 109.4506 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 108.6248 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 111.3653 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 109.5240 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 112.2108 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 110.2351 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 28.7791 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 2 | 28.4722 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 3 | 29.9147 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 4 | 29.1803 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 5 | 29.2211 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| Mean | 29.1135 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |

Cross Validation - 27 Features

**Classifier: KNN**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 0.0430 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 0.0470 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 0.0501 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 0.0490 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 0.0520 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 0.0482 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 602.2717 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 600.9983 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 597.9188 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 601.8546 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 606.2669 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 601.8621 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Classifier: Random Forest**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 474.1762 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 475.2481 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 472.4331 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 474.1308 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 469.1267 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 473.0230 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 18.8028 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 2 | 19.2354 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 3 | 19.1949 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 4 | 19.3246 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 5 | 19.3403 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| Mean | 19.1796 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |

**Classifier: XGBoost**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 5.7996 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 2 | 5.8231 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 3 | 5.8051 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 4 | 5.7482 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 5 | 5.7791 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| Mean | 5.7910 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 3.6491 | 0.95 | 0.97 | 0.94 | 0.95 | 0.95 |
| 2 | 3.6355 | 0.95 | 0.97 | 0.94 | 0.95 | 0.95 |
| 3 | 3.6438 | 0.96 | 0.97 | 0.94 | 0.96 | 0.96 |
| 4 | 3.6240 | 0.96 | 0.97 | 0.94 | 0.95 | 0.96 |
| 5 | 3.6382 | 0.95 | 0.97 | 0.94 | 0.95 | 0.96 |
| Mean | 3.6381 | 0.95 | 0.97 | 0.94 | 0.95 | 0.96 |

**Classifier: Decision Tree**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 38.8290 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 40.6357 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 39.3914 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 39.9194 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 40.1023 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 39.7755 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 0.2131 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| 2 | 0.2267 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| 3 | 0.2182 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| 4 | 0.2269 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| 5 | 0.2250 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Mean | 0.2220 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |

**Classifier: Extra Trees**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 127.1644 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 124.9081 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 125.8062 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 125.6845 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 124.4270 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 125.5981 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Split | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 27.6392 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 2 | 27.7353 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 3 | 27.8434 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 4 | 27.7198 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 5 | 27.6611 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| Mean | 27.7197 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |

Cross Validation - 30 Features (All)

**Classifier: KNN**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Split** | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 0.0470 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 0.0490 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 0.0470 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 0.0480 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 0.0510 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 0.0484 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Split** | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 657.8488 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 652.5104 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 654.9593 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 654.1124 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 653.6548 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 654.6171 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Classifier: Random Forest**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Split** | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 478.0760 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 478.4121 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 479.2590 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 479.3868 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 477.3759 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 478.5020 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Split** | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 19.3650 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 2 | 19.3848 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 3 | 19.2687 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 4 | 19.1582 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| 5 | 19.3415 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |
| Mean | 19.3036 | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 |

**Classifier: XGBoost**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Split** | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 6.0365 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 2 | 5.9621 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 3 | 6.0265 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 4 | 6.3231 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| 5 | 6.1407 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |
| Mean | 6.0978 | 0.98 | 0.99 | 0.97 | 0.98 | 0.98 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Split** | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 3.6429 | 0.96 | 0.97 | 0.95 | 0.96 | 0.96 |
| 2 | 3.6622 | 0.96 | 0.97 | 0.95 | 0.96 | 0.96 |
| 3 | 3.5705 | 0.96 | 0.97 | 0.95 | 0.96 | 0.96 |
| 4 | 3.7021 | 0.96 | 0.97 | 0.95 | 0.96 | 0.96 |
| 5 | 3.7195 | 0.96 | 0.97 | 0.95 | 0.96 | 0.96 |
| Mean | 3.6594 | 0.96 | 0.97 | 0.95 | 0.96 | 0.96 |

**Classifier: Decision Tree**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Split** | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 44.7473 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 45.4047 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 44.1569 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 43.5642 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 45.5704 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 44.6887 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Split** | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 0.1836 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| 2 | 0.2340 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| 3 | 0.2276 | 0.91 | 0.91 | 0.90 | 0.91 | 0.91 |
| 4 | 0.2290 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| 5 | 0.2290 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Mean | 0.2206 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |

**Classifier: Extra Trees**

**Training Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Split** | Split Training Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 130.7166 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2 | 127.4254 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 3 | 129.1343 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4 | 127.7197 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 5 | 128.4204 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mean | 128.6833 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Testing Metrics and Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Split** | Split Testing Time (s) | Accuracy | Precision | Recall | F1-score | AUC-ROC |
| 1 | 28.3315 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 2 | 27.5675 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 3 | 28.5802 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 4 | 28.0220 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| 5 | 28.0596 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |
| Mean | 28.1122 | 0.99 | 1.00 | 0.99 | 0.99 | 0.99 |