**Thresholding Table:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Threshold** | **Accuracy** | **Precision** | **Recall** | **F1** | **ROC-AUC** |
| **0.100** | **0.920** | **0.803** | **1.000** | **0.891** | **0.993** |
| **0.200** | **0.954** | **0.877** | **1.000** | **0.934** | **0.993** |
| **0.300** | **0.954** | **0.877** | **1.000** | **0.934** | **0.993** |
| **0.400** | **0.966** | **0.905** | **1.000** | **0.950** | **0.993** |
| **0.500** | **0.971** | **0.919** | **1.000** | **0.958** | **0.993** |
| **0.600** | **0.971** | **0.948** | **0.965** | **0.957** | **0.993** |
| **0.700** | **0.949** | **0.944** | **0.895** | **0.919** | **0.993** |
| **0.800** | **0.943** | **0.943** | **0.877** | **0.909** | **0.993** |
| **0.900** | **0.903** | **1.000** | **0.702** | **0.825** | **0.993** |

**Optimum Threshold (max F1): 0.5 with F1: 0.958**

**Accuracy: 0.971**

**F1 Score: 0.958**

**ROC-AUC: 0.993**

**Confusion Matrix (Custom Threshold 0.5):**

|  |  |  |
| --- | --- | --- |
|  | **Predicted 0** | **Predicted 1** |
| **Actual 0** | **113** | **5** |
| **Actual 1** | **0** | **57** |

**Random Forest & Permutation Feature Importance (F1):**

|  |  |  |  |
| --- | --- | --- | --- |
| **Feature** | **Random Forest** | **Importance Mean** | **Importance Std** |
| **1** | **0.019** | **0.002** | **0.004** |
| **2** | **0.464** | **0.030** | **0.006** |
| **3** | **0.130** | **0.045** | **0.013** |
| **4** | **0.004** | **0.000** | **0.000** |
| **5** | **0.073** | **0.013** | **0.009** |
| **6** | **0.066** | **0.204** | **0.016** |
| **7** | **0.162** | **0.004** | **0.008** |
| **8** | **0.077** | **0.021** | **0.009** |
| **9** | **0.004** | **0.002** | **0.003** |