**Thresholding Table:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Threshold** | **Accuracy** | **Precision** | **Recall** | **F1** | **ROC-AUC** |
| **0.100** | **0.863** | **0.704** | **1.000** | **0.826** | **0.996** |
| **0.200** | **0.943** | **0.851** | **1.000** | **0.919** | **0.996** |
| **0.300** | **0.960** | **0.891** | **1.000** | **0.942** | **0.996** |
| **0.400** | **0.971** | **0.919** | **1.000** | **0.958** | **0.996** |
| **0.500** | **0.977** | **0.949** | **0.982** | **0.966** | **0.996** |
| **0.600** | **0.977** | **0.949** | **0.982** | **0.966** | **0.996** |
| **0.700** | **0.966** | **0.947** | **0.947** | **0.947** | **0.996** |
| **0.800** | **0.937** | **0.942** | **0.860** | **0.899** | **0.996** |
| **0.900** | **0.897** | **1.000** | **0.684** | **0.812** | **0.996** |

**Optimum Threshold (max F1): 0.5 with F1: 0.966**

**Accuracy: 0.971**

**F1 Score: 0.958**

**ROC-AUC: 0.996**

**Confusion Matrix (Custom Threshold 0.4):**

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

**XGBoost & Permutation Feature Importance (F1):**

|  |  |  |  |
| --- | --- | --- | --- |
| **Feature** | **XGBoost** | **Importance Mean** | **Importance Std** |
| **1** | **0.065** | **0.019** | **0.010** |
| **2** | **0.133** | **0.014** | **0.009** |
| **3** | **0.189** | **0.014** | **0.008** |
| **4** | **0.133** | **0.002** | **0.003** |
| **5** | **0.084** | **0.012** | **0.004** |
| **6** | **0.158** | **0.041** | **0.018** |
| **7** | **0.126** | **0.001** | **0.005** |
| **8** | **0.084** | **0.025** | **0.009** |
| **9** | **0.028** | **-0.002** | **0.004** |