

File Edit View Run Kernel Settings Help

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Interrupt Kernel I, I

Restart Kernel... 0, 0

Restart Kernel and Clear Outputs of All Cells...

Restart Kernel and Run up to Selected Cell...

Restart Kernel and Run All Cells...

Restart Kernel and Debug...

Reconnect to Kernel

Shut Down Kernel

Shut Down All Kernels...

Change Kernel...

```

# Step 8: Predict using the trained model
y_pred_rf = rf.predict(X_test)

# Step 9: Calculate confusion matrix and classification report
print("\nClassification Report")
print(classification_report(y_test, y_pred_rf))

print("\nConfusion Matrix")
print(confusion_matrix(y_test, y_pred_rf))

```

Class 0 — Functional pumps: 100% correctly detected.

High precision (0.93) indicates that most predicted functional pumps are indeed functional.

F1 = 0.83 → overall, your model handles Class 0 well.

Class 1 — Non-Functional pumps: Recall (0.66) is lower: about 34% of non-functional pumps are missed.

Precision (0.75) is decent, so most predicted non-functionals are indeed correct.

F1 = 0.70 → reasonable performance, but room to improve recall.

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