This warning occurs when you log a model in MLflow **without** providing:

1. A **model signature** (input/output schema)
2. An **input example** (sample input for the model)

While the model will still work, adding these improves reproducibility, validation, and deployment.

How to Fix the Warning

1. Add an `input_example` and Infer Signature Automatically

python Copy

```python
import mlflow
from sklearn.ensemble import RandomForestClassifier
from sklearn.datasets import load_iris

# Load data
data = load_iris()
X, y = data.data, data.target

# Train model
model = RandomForestClassifier()
model.fit(X, y)

# Log with input example (MLflow infers signature automatically)
with mlflow.start_run():
    mlflow.sklearn.log_model(
        model,
        "model",
        input_example=X[:1],  # Log first row as input example
    )
```

2. Manually Define a Signature (Advanced Control)

python Copy

```python
from mlflow.models import infer_signature
import pandas as pd

# Infer signature from input/output
signature = infer_signature(X, model.predict(X))

with mlflow.start_run():
    mlflow.sklearn.log_model(
```

```
        model,
        "model",
        signature=signature,  # Explicit signature
        input_example=pd.DataFrame(X[:1], columns=data.feature_names),
    )
```

Why This Matters

Feature	Benefit
Model Signature	Ensures the model receives correct input types/shapes during deployment.
Input Example	Lets users test the model instantly in the MLflow UI.

Key Fixes for Common Scenarios

A. **Scikit-Learn Models**

python Copy

```
mlflow.sklearn.log_model(
    model,
    "model",
    input_example=X_test[0:1],  # First row of test data
)
```

B. **PyTorch/TensorFlow Models**

python Copy

```
# Example for PyTorch
input_example = torch.rand(1, 3, 224, 224)  # Example input tensor
mlflow.pytorch.log_model(
    model,
    "model",
    input_example=input_example,
)
```

C. **Custom Python Models (pyfunc)**

python Copy

```
mlflow.pyfunc.log_model(
    "model",
```

```
    python_model=my_custom_model,
    input_example={"feature1": 0.5, "feature2": "text"},
)
```

How to Verify in MLflow UI

1. Run `mlflow ui` and open the run in your browser.
2. Check the **Artifacts** section for the model.
3. The logged model will now show:
   - ✅ **Input Example** (sample input)
   - ✅ **Signature** (input/output schema)

Best Practices

1. Always provide `input_example` for usability.
2. Use `infer_signature()` for complex data structures.
3. For production, validate signatures using:

```python
model = mlflow.pyfunc.load_model("runs:/<RUN_ID>/model")
model.predict(input_example)  # Test if it works
```