Packaging and Running Models



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Overview



Models as a special type of artifact

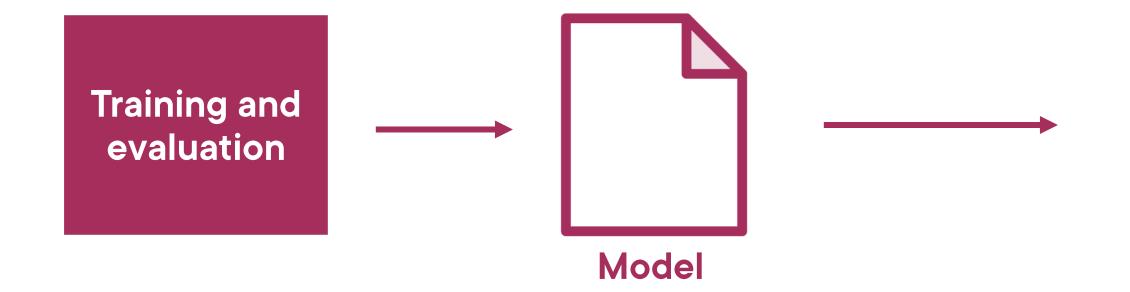
Models directly supported by MLflow

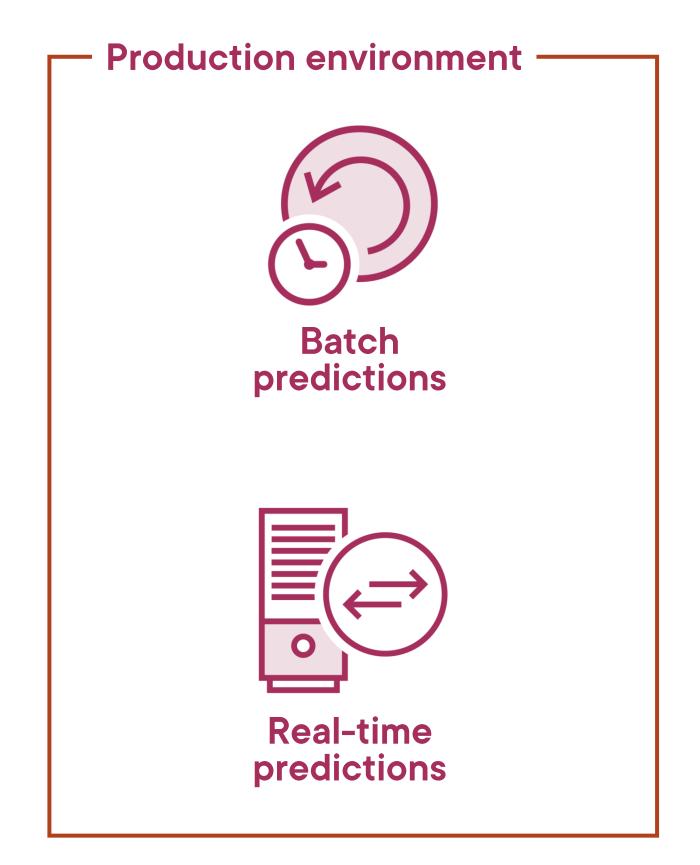
Custom models

Running predictions



Logging the Model







```
lr_model = LinearRegression()
lr_model.fit(...)
mlflow.sklearn.log_model(lr_model, "model")
```

Logging a Model

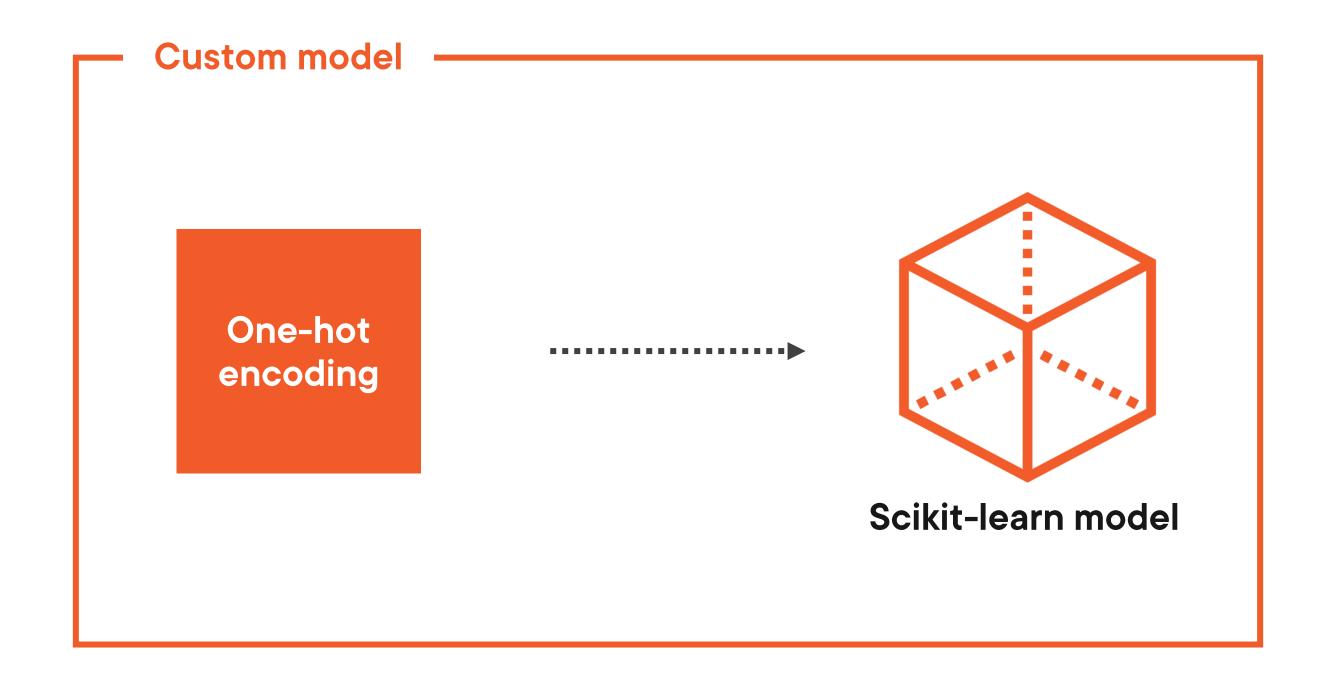
Supported 'flavor' - e.g. scikit-learn

Demo



Logging the trained model

Customizing the Model



Creating a Custom Model 'pyfunc' flavor

```
from mlflow.pyfunc import PythonModel

class CustomModel(PythonModel):
    def predict(self, ..., model_input):
        return np.array(...)

mlflow.pyfunc.log_model("model", python_model=CustomModel())
```



Storing the Original Model

```
sklearn_model = LinearRegression()
... # Train the model
with open("tmp/model.pkl", "wb") as m:
    m.write(sklearn_model)
artifacts = { "sklearn_model": "tmp/model.pkl" }
mlflow.pyfunc.log_model("model", python_model=CustomModel(), artifacts=artifacts)
```

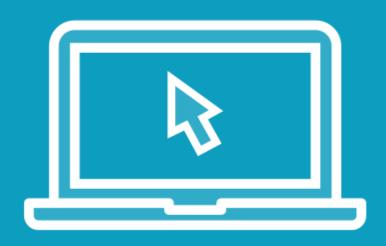


Loading the Original Model

```
from mlflow.pyfunc import PythonModel
class CustomModel(PythonModel):
    def load_context(self, context):
        with open(context.artifacts["sklearn_model"]) as m:
             self.sklearn_model = pickle.load(m)
    def predict(self, ..., model_input):
        return self.sklearn_model.predict(model_input)
```



Demo



Custom model class

One-hot encoding

Running Predictions

```
mlflow models predict
   -m <MODEL_PATH>
   -i <INPUT_DATASET_FILE>
   -no-conda
```



```
mlflow models predict
-m runs:/de223jj8sd.../model
-i <INPUT_DATASET_FILE>
-no-conda
Artifacts subdirectory for the model
```



- mlflow models predict
 - -m runs:/de223jj8sd.../model
 - -i <INPUT_DATASET_FILE>
 - --no-conda





```
$Env:MLFLOW_TRACKING_URI = "http://localhost:5000"
export MLFLOW_TRACKING_URI="http://localhost:5000"
mlflow models predict
   -m runs:/de223jj8sd.../model
   -i <INPUT_DATASET_FILE>
   --no-conda
   -t csv
```



```
$Env:MLFLOW_TRACKING_URI = "http://localhost:5000"
export MLFLOW_TRACKING_URI="http://localhost:5000"
mlflow models predict
   -m runs:/de223jj8sd.../model
   -i <INPUT_DATASET_FILE>
   --no-conda
   -t csv
   -o results.json
```



Demo



Predictions using existing model

Static dataset

Real-time predictions

Summary



Models as a special class of artifacts

Custom models

Running predictions

