

IT Team Agentic RAG Chatbot

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what is FLAML? Give example code.



FLAML (Fast and Lightweight AutoML) is a Python library that provides an efficient and flexible way to automate machine learning (ML) model selection and hyperparameter tuning. It's designed to work with various ML frameworks, including scikit-learn, TensorFlow, and PyTorch.

FLAML's key features include:

1. **AutoML:** Automated machine learning model selection and hyperparameter tuning.
2. **Efficient search:** Uses a combination of search algorithms, such as Bayesian optimization and random search, to efficiently explore the hyperparameter space.
3. **Multi-framework support:** Works with multiple ML frameworks, allowing you to use the same AutoML workflow across different libraries.
4. **Customizable:** Provides options to customize the search space, evaluation metrics, and optimization algorithms.

Here's an example code snippet that demonstrates how to use FLAML with scikit-learn:

```
import pandas as pd
from sklearn.datasets import load_iris
from sklearn.model_selection import train_test_split
from flaml import AutoML

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

# Split the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, ra

# Initialize the AutoML object with the training data
automl = AutoML()

# Set the evaluation metric to accuracy
automl.set_estimator_list(["lm", "knn", "rf", "gbm"]) # Try linear regress
```

```
automl.set_metric("accuracy")

# Fit the AutoML object to the training data
automl.fit(X_train, y_train)

# Get the best model and its hyperparameters
best_model, best_hyperparams, _ = automl.get_best_estimator()

print("Best model:", best_model)
print("Best hyperparameters:", best_hyperparams)

# Evaluate the best model on the testing data
y_pred = best_model.predict(X_test)
print("Test accuracy:", accuracy_score(y_test, y_pred))
```

In this example, we load the iris dataset, split it into training and testing sets, and initialize the AutoML object with the training data. We set the evaluation metric to accuracy and specify a list of estimators to try (linear regression, KNN, random forest, and gradient boosting). FLAML then performs an efficient search to find the best model and its hyperparameters. Finally, we evaluate the best model on the testing data and print the test accuracy.

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