Unified AI Platform User Guide

VERSION 1.0

KAMAL RAJ

Contents

Introduction

Unified AI Platform enables you to build, deploy, and scale machine learning (ML) models using an integrated suite of tools. This guide provides a step-by-step overview of the platform's basic setup and key features. With the Unified AI Platform, you can leverage pre-trained models, automate training processes, and seamlessly deploy models into production.

Key features:

- **Model training:** Train ML models using your custom data.
- **Model deployment:** Deploy models to the cloud for real-time predictions.
- **Pre-trained models:** Use pre-trained models for image and text analysis.
- **Scalable infrastructure:** Scale your ML models across cloud environments easily.

Prerequisites

Before you start, make sure you have the following:

- A Unified AI Platform account with access credentials.
- Python 3.8 or later installed on your local machine.
- Basic knowledge of machine learning concepts and Python programming.

Setting Up the Environment

Follow these steps to set up the environment:

1. Create a project on Unified AI Platform:
    a. Sign in to your account at unified-ai-platform.com.
    b. Click **Create a new project**.
    c. Enter a unique name for your project using letters and numbers only, for example, *MyFirstMLProject*. Avoid using spaces or special characters.
2. Install the Unified AI SDK:
    a. Open a terminal.
    b. Run the following command:

    ```
    pip install unified-ai-sdk
    ```

    c. To verify the installation, run the following command:

    ```
    unified-ai –version
    ```

    Note: You should see output like: `Unified AI SDK version 2.1.0`. If the command fails, ensure you have the correct permissions.
3. Set up authentication:
    a. Download your API key from the **Project Settings** tab.

b. In the terminal, run the following command to set the API key as an environment variable:

```
export UNIFIED_AI_API_KEY='YOUR_API_KEY'
```

c. Run the following command to verify the API key setup:

```
echo $UNIFIED_AI_API_KEY
```

Note: You should see the API key printed in the terminal.

Building Your First Machine Learning Model

Follow these steps to build your machine learning model:

1. Prepare your data: Ensure your training data is in CSV format with appropriate column headers, for example, feature1, feature2, and label.
2. Upload data to Unified AI Platform: Run the following command to upload your dataset:

```
unified-ai data upload --source /path/to/your/data.csv --destination
dataset1
```

Note: The platform provides a dataset_id upon successful upload.

3. Train a model using pre-built algorithms: Use the following Python code to train a model using the Unified AI SDK:

```
from unified_ai_sdk import UnifiedAI

# Initialize the client
client = UnifiedAI(api_key='YOUR_API_KEY')

# Create a training job
training_job = client.create_training_job(
    dataset_id='your_dataset_id',
    model_type='classification',
    model_name='my_first_model'
)

# Start training
training_job.train()
```

Note: The SDK displays logs during training and notifies you when the training is complete.

Deploying Your Model

Follow these steps to deploy your model:

1. Create a model deployment: To deploy your trained model, run the following command:

```
deployment = client.deploy_model(model_name='my_first_model')
```

2. Access the deployed model: Once deployed, the platform provides an endpoint URL for real-time predictions. You can use this endpoint URL in your applications to send prediction requests.
3. Test your deployment: Make a sample prediction using the following code:

```
response = client.predict(
    endpoint='your_model_endpoint_url',
    input_data={'feature1': 5.6, 'feature2': 3.1}
)

print(response)
```

Note: The response includes the predicted label and confidence score.

Monitoring and Managing Models

The Unified AI Platform console provides features to monitor and manage your deployed models.

1. View model performance: Navigate to the **Models** tab in the Unified AI Platform console to view performance metrics, such as accuracy, precision, and recall of your deployed model.
2. Update or retrain models: To improve accuracy, update your dataset and retrain the model. For more details, see the *Building Your First Machine Learning Model* section.

Best Practices and Tips

This section provides details for best practices and tips for working with the Unified AI Platform.

- Regular retraining: Periodically retrain your models with new data to maintain performance.
- Security: Keep your API key secure and update it regularly.
- Scaling: For high-traffic applications, enable auto-scaling in the **Deployments** section of the platform.

Troubleshooting

This section provides information for troubleshooting common issues.

Installation Issues

- Problem: `Command not found: unified-ai`
- Solution: Verify that Python 3.8 or later is installed and that the PATH variable includes the Python scripts directory. To check the PATH, run:

```
echo $PATH
```

Authentication Error

- Problem: Invalid API Key
- Solution: Verify that your API key is correctly set as an environment variable. Check for typos or missing characters in the key.

Support and Additional Resources

For further assistance, visit the Unified AI Platform Support page or contact our support team at `support@unified-ai-platform.com`.