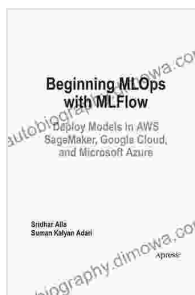


Deploy Models in AWS SageMaker, Google Cloud and Microsoft Azure

Machine learning models are only as useful as their ability to be deployed and used in production. This article will teach you how to deploy your machine learning models to production using three of the major cloud platforms: AWS SageMaker, Google Cloud and Microsoft Azure.



Beginning MLOps with MLFlow: Deploy Models in AWS SageMaker, Google Cloud, and Microsoft Azure by I. D. Oro

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AWS SageMaker

AWS SageMaker is a fully managed service that makes it easy to build, train, and deploy machine learning models. SageMaker offers a variety of tools and services to help you with every step of the machine learning process, from data preparation to model deployment.

To deploy a model in SageMaker, you can use the SageMaker console, the AWS CLI, or the SageMaker Python SDK. The following code sample shows how to deploy a model using the SageMaker Python SDK:

```
python import sagemaker
```

```
# Create a SageMaker client client = sagemaker.Session()
```

```
# Create a model model = client.create_model( name="my-model",  
role="arn:aws:iam::123456789012:role/my-role", container={ "image": "my-  
image", "model_data": "my-model-data" })
```

```
# Deploy the model endpoint = client.create_endpoint( name="my-  
endpoint", model_name="my-model" )
```

Once your model is deployed, you can use the SageMaker endpoint to make predictions. The following code sample shows how to make a prediction using the SageMaker Python SDK:

```
python import sagemaker
```

```
# Create a SageMaker client client = sagemaker.Session()
```

```
# Create an endpoint endpoint = client.create_endpoint( name="my-  
endpoint", model_name="my-model" )
```

```
# Make a prediction prediction = endpoint.predict( data="my-data" )
```

Google Cloud

Google Cloud is another major cloud platform that offers a variety of services for machine learning. Google Cloud Machine Learning Engine is a fully managed service that makes it easy to deploy and manage your machine learning models.

To deploy a model in Google Cloud Machine Learning Engine, you can use the Google Cloud console, the gcloud command-line tool, or the Google Cloud Python client library. The following code sample shows how to deploy a model using the Google Cloud Python client library:

```
python import google.cloud.aiplatform

# Create a client client =
google.cloud.aiplatform.gapic.EndpointServiceClient()

# Create a model model = { "display_name": "my-model", "container_spec":
{ "image_uri": "my-image", "command": ["my-command"], "args": ["my-
args"] }}

# Create an endpoint endpoint = { "display_name": "my-endpoint",
"deployed_models": [ { "model": model } ] }

# Deploy the model client.create_endpoint(
parent="projects/PROJECT_ID/locations/LOCATION", endpoint=endpoint )
```

Once your model is deployed, you can use the Google Cloud Machine Learning Engine endpoint to make predictions. The following code sample shows how to make a prediction using the Google Cloud Python client library:

```
python import google.cloud.aiplatform

# Create a client client =
google.cloud.aiplatform.gapic.PredictionServiceClient()

# Create an endpoint endpoint = client.endpoint_path(
project="PROJECT_ID", location="LOCATION", endpoint="ENDPOINT_ID"
)

# Make a prediction prediction = client.predict( endpoint=endpoint,
instances=[ { "features": { "my-feature": 1.0 } } ] )
```

Microsoft Azure

Microsoft Azure is a third major cloud platform that offers a variety of services for machine learning. Azure Machine Learning is a fully managed service that makes it easy to build, train, and deploy machine learning models.

To deploy a model in Azure Machine Learning, you can use the Azure Machine Learning studio, the Azure CLI, or the Azure Machine Learning Python SDK. The following code sample shows how to deploy a model using the Azure Machine Learning Python SDK:

```
python import azureml.core

# Create a workspace workspace = azureml.core.Workspace.from_config()

# Create a model model = azureml.core.Model(workspace, name="my-
model") model.upload_file("my-model.pkl")
```

```
# Create a deployment configuration deployment_config =  
azureml.core.DeploymentConfiguration( name="my-deployment",  
model=model, endpoint_name="my-endpoint" )
```

```
# Deploy the model deployment =  
workspace.deployments.create(deployment_config)
```

Once your model is deployed, you can use the Azure Machine Learning endpoint to make predictions. The following code sample shows how to make a prediction using the Azure Machine Learning Python SDK:

```
python import azureml.core
```

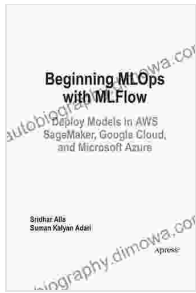
```
# Create a workspace workspace = azureml.core.Workspace.from_config()
```

```
# Create an endpoint endpoint = workspace.endpoints["my-endpoint"]
```

```
# Make a prediction prediction = endpoint.predict(data="my-data")
```

In this article, you learned how to deploy your machine learning models to production using AWS SageMaker, Google Cloud and Microsoft Azure. These three cloud platforms offer a variety of tools and services to help you with every step of the machine learning process, from data preparation to model deployment.

By following the instructions in this article, you can quickly and easily deploy your machine learning models to production and start using them to make predictions.



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