Set Up Amazon SageMaker Notebook

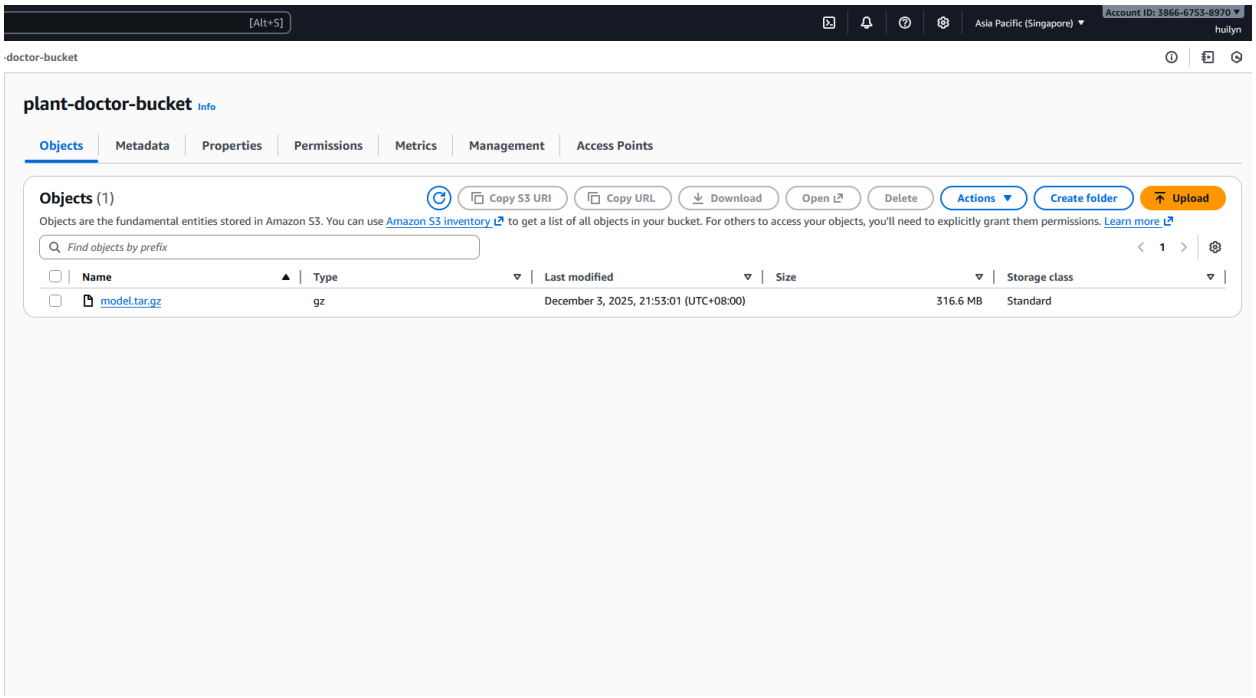
You may install the model.tar.gz as it is too large to be put in github.
This guide will help you set up the SageMaker Inference, using the model's weights, allowing it to be called by the Plant-Doctor Backend Service.

This model is an image classification model that will predict the disease of a plant image (frog_eye_leaf_spot, multiple_diseases, powdery_mildew, rust, or scab). Will return the confidence interval as well (%).

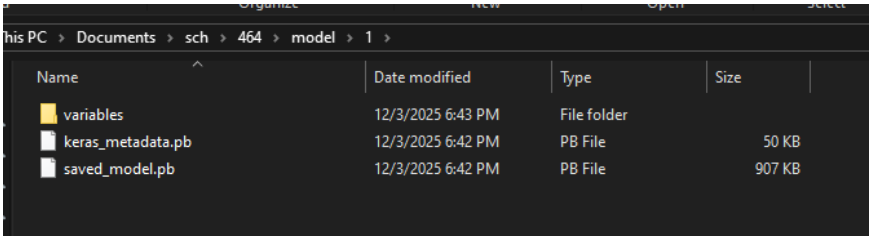
User (Mobile) → Plant Doctor Service POST /predict → SageMaker Inference (Returns the classification)

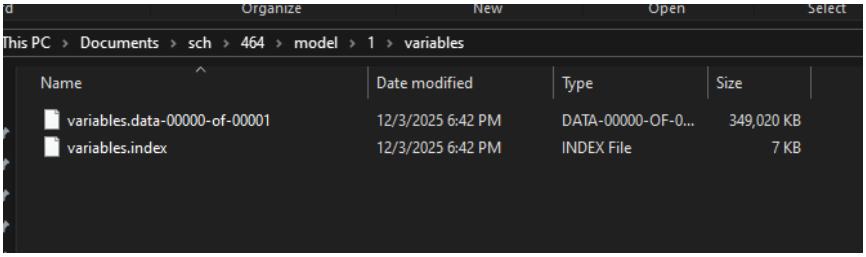
Step 1: Create an S3 Bucket (if not already existing)

This step helps you make an S3 bucket that will house the model file and weights. Sagemaker will read from this S3 bucket.



- We use plant-doctor-bucket.
- Upload model.tar.gz (from the plant-doctor-service repo) inside
    - This file should have this layout

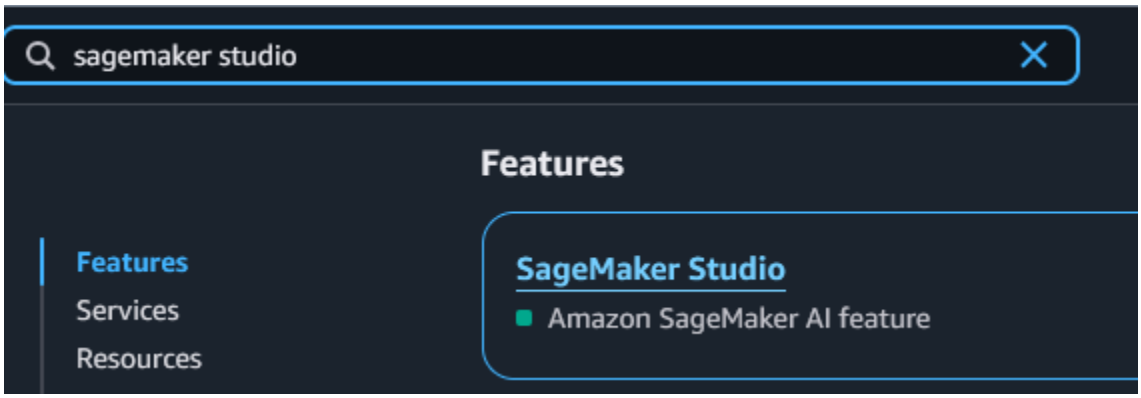
- 

- 

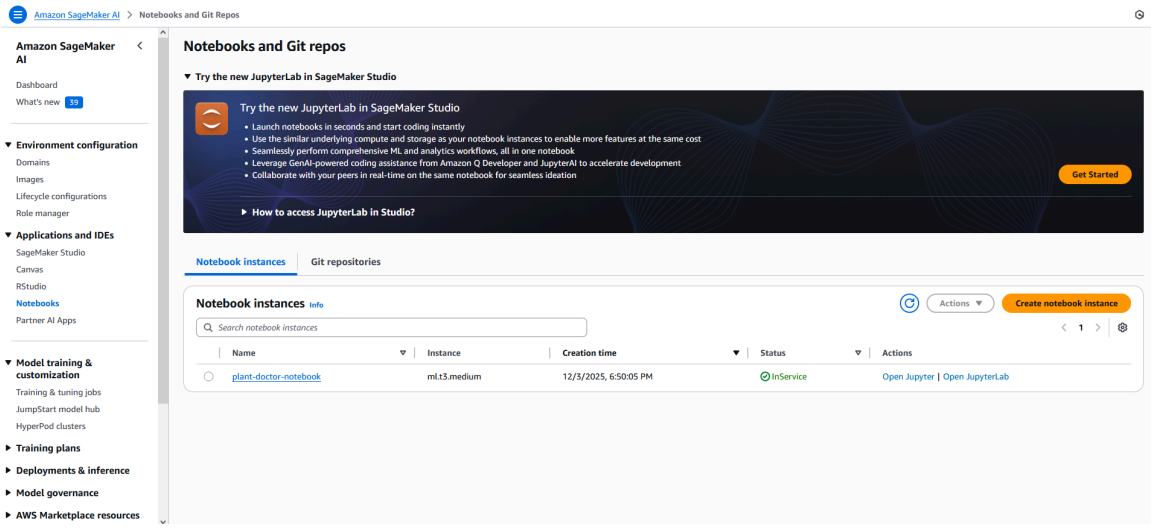
Step 2: Launch SageMaker Notebook Instance

This step will tell you how to deploy the model so that the Plant-Doctor-Service backend can call it

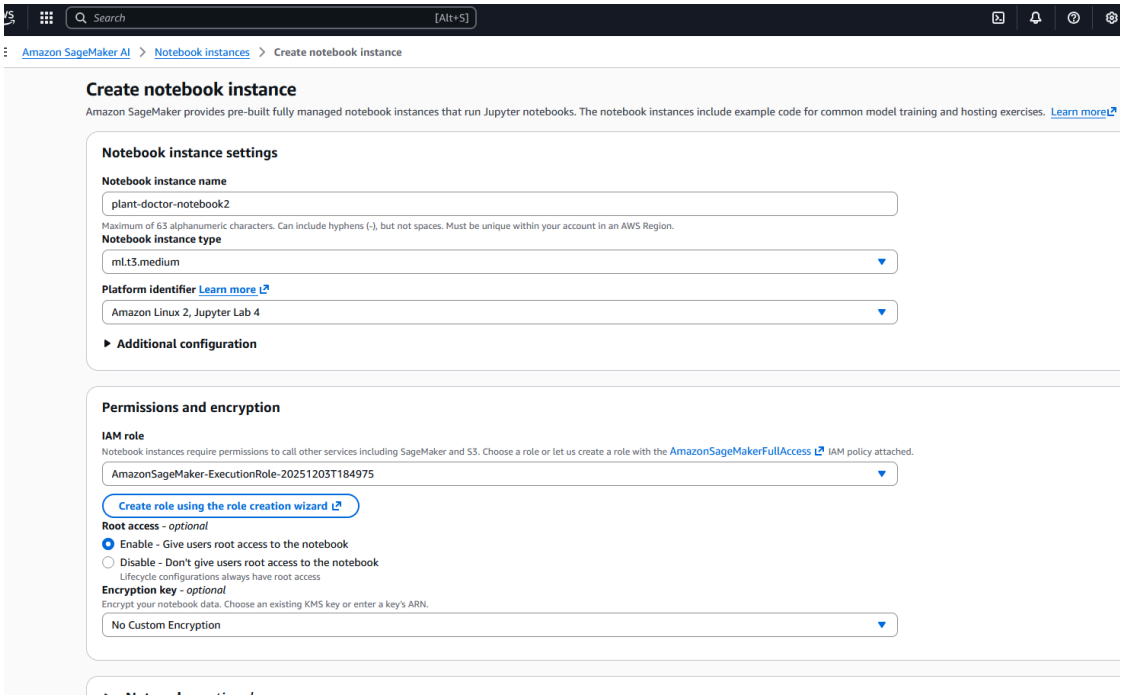
Search Sagemaker Studio



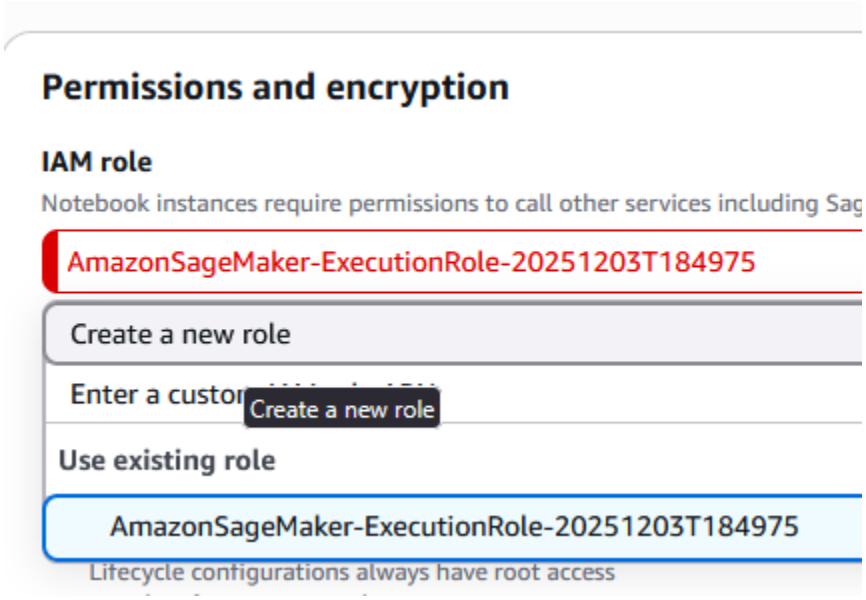
Go to Notebooks from left sidebar > Create notebook instance

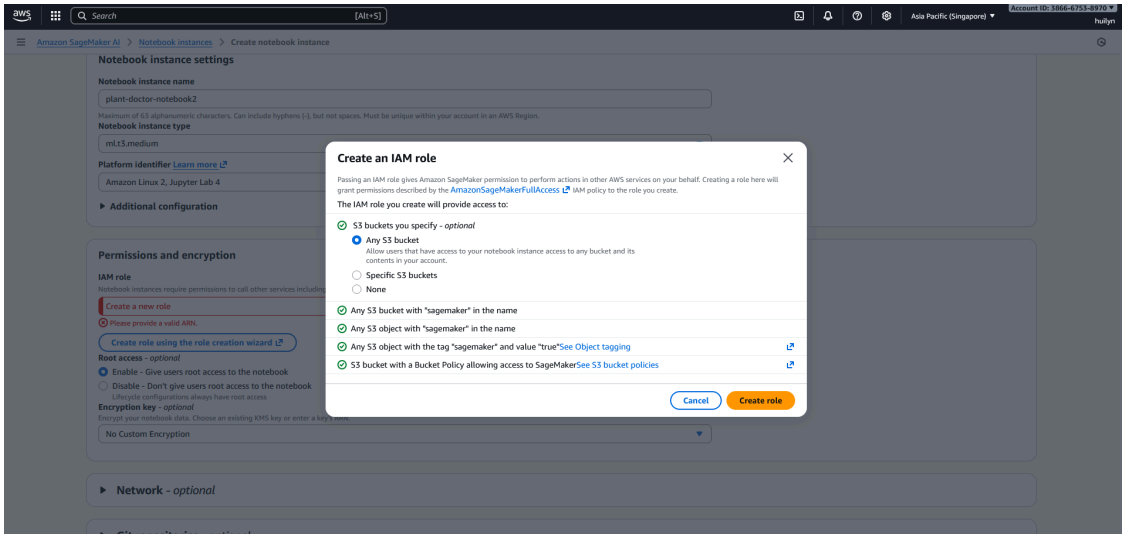

Amazon SageMaker AI
Notebooks and Git Repos
Amazon SageMaker AI
Dashboard
What's new 39
Environment configuration
Domains
Images
Lifecycle configurations
Role manager
Applications and IDEs
SageMaker Studio
Canvas
RStudio
Notebooks
Partner AI Apps
Model training & customization
Training & tuning jobs
JumpStart model hub
HyperPod clusters
Training plans
Deployments & inference
Model governance
AWS Marketplace resources
Notebooks and Git repos
Try the new JupyterLab in SageMaker Studio
Try the new JupyterLab in SageMaker Studio
Launch notebooks in seconds and start coding instantly
Use the similar underlying compute and storage as your notebook instances to enable more features at the same cost
Seamlessly perform comprehensive ML and analytics workflows, all in one notebook
Leverage GenAI-powered coding assistance from Amazon Q Developer and JupyterAI to accelerate development
Collaborate with your peers in real-time on the same notebook for seamless ideation
Get Started
How to access JupyterLab in Studio?
Notebook instances
Git repositories
Notebook instances Info
Actions
Create notebook instance
Search notebook instances
1
Name
Instance
Creation time
Status
Actions
plant-doctor-notebook
ml.t3.medium
12/3/2025, 6:50:05 PM
InService
Open Jupyter | Open JupyterLab

Can use these notebook instance settings.

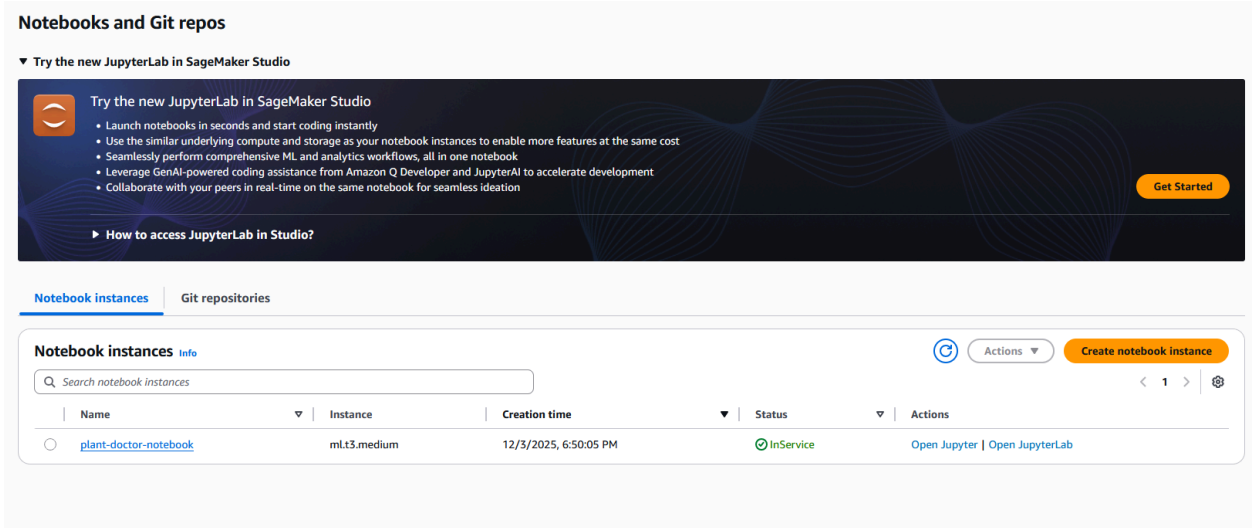


For IAM role, select “Create a new role” and click Any S3 bucket and create role

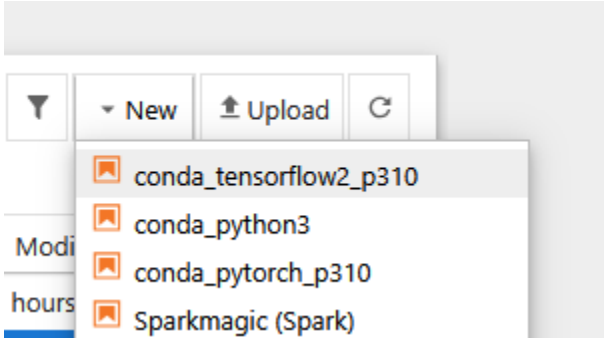




Once created, click “Open Jupyter”



Create a new tensorflow2 ipynb in jupyter and name it something like plant-doctor



Paste into the first cell and run:

```
%%writefile inference.py
import tensorflow as tf
import json
import numpy as np

def model_fn(model_dir):
    return tf.saved_model.load(model_dir)

def input_fn(request_body, content_type):
    data = json.loads(request_body)
    return tf.convert_to_tensor(data["instances"], dtype=tf.float32)

def predict_fn(input_data, model):
    infer = model.signatures["serving_default"]
    output = infer(input_data)
    return {k: v.numpy().tolist() for k, v in output.items()}

def output_fn(prediction, accept):
    return json.dumps(prediction)
```

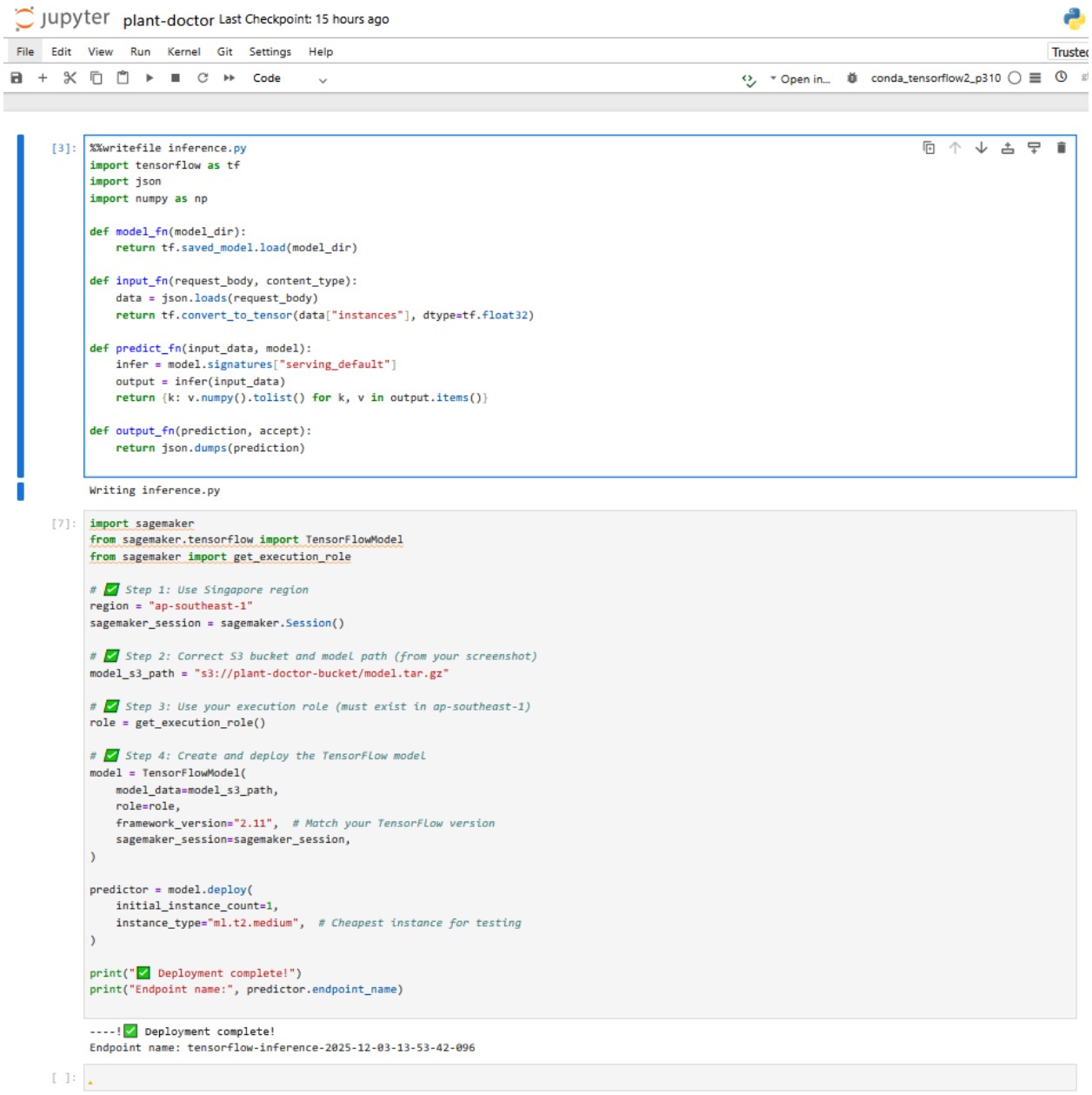
This makes a inference.py in your jupyter which helps run the plant-doctor model

Paste into the second file
NOTE: replace plant-doctor-bucket with your s3 bucket name. Ours is plant-doctor-bucket, but change the name based on what u called ur s3

```
import sagemaker
from sagemaker.tensorflow import TensorFlowModel
from sagemaker import get_execution_role

# ✅ Step 1: Use Singapore region
region = "ap-southeast-1"
sagemaker_session = sagemaker.Session()

# ✅ Step 2: Correct S3 bucket and model path
model_s3_path = "s3://plant-doctor-bucket/model.tar.gz"

# ✅ Step 3: Use your execution role (must exist in ap-southeast-1)
role = get_execution_role()

# ✅ Step 4: Create and deploy the TensorFlow model
model = TensorFlowModel(
    model_data=model_s3_path,
    role=role,
    framework_version="2.11",  # Match your TensorFlow version
```

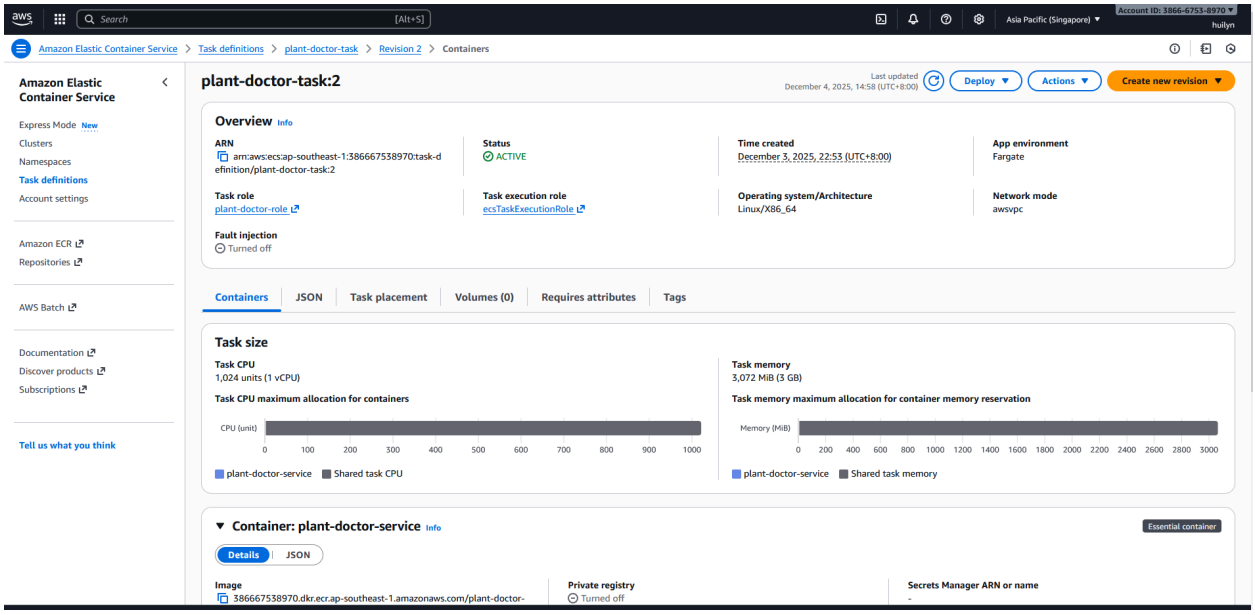
```
    sagemaker_session=sagemaker_session,
)

predictor = model.deploy(
    initial_instance_count=1,
    instance_type="ml.t2.medium",  # Cheapest instance for testing
)

print("✅ Deployment complete!")
print("Endpoint name:", predictor.endpoint_name)
```

The final file should look like this



ADDITIONAL NOTES!

For plant-doctor-service task, do check if you have the following env values
AWS_REGION=ap-southeast-1
SAGEMAKER_ENDPOINT={Endpoint generated from plant-doctor}
[ie, tensorflow-inference-2025-12-03-13-53-42-096]



Container: plant-doctor-service Info

Details | JSON

Image
386667538970.dkr.ecr.ap-southeast-1.amazonaws.com/plant-doctor-service@sha256:a5fd08d0c5de93360ea8b0b5565764143dff4e2549ac3350b7b5a69376f5e847

Private registry
Turned off

CPU
0

Memory hard/soft limit
-/-

Environment and secrets | Network settings | Security and permissions | Lifecycle and dependencies | M

Environment variables (2)

Key	Type	Value
AWS_REGION	value	ap-southeast-1
SAGEMAKER_ENDPOINT	value	tensorflow-inference-2025-12-03-13-53-42-096

Environment files (S3 ARN)

-