PSI3541 2023
SISTEMAS EMBARCADOS DISTRIBUIDOS

Atividade 16 2/06/2023 AZURE EDGE - CLASSIFICAÇÃO DE IMAGEM

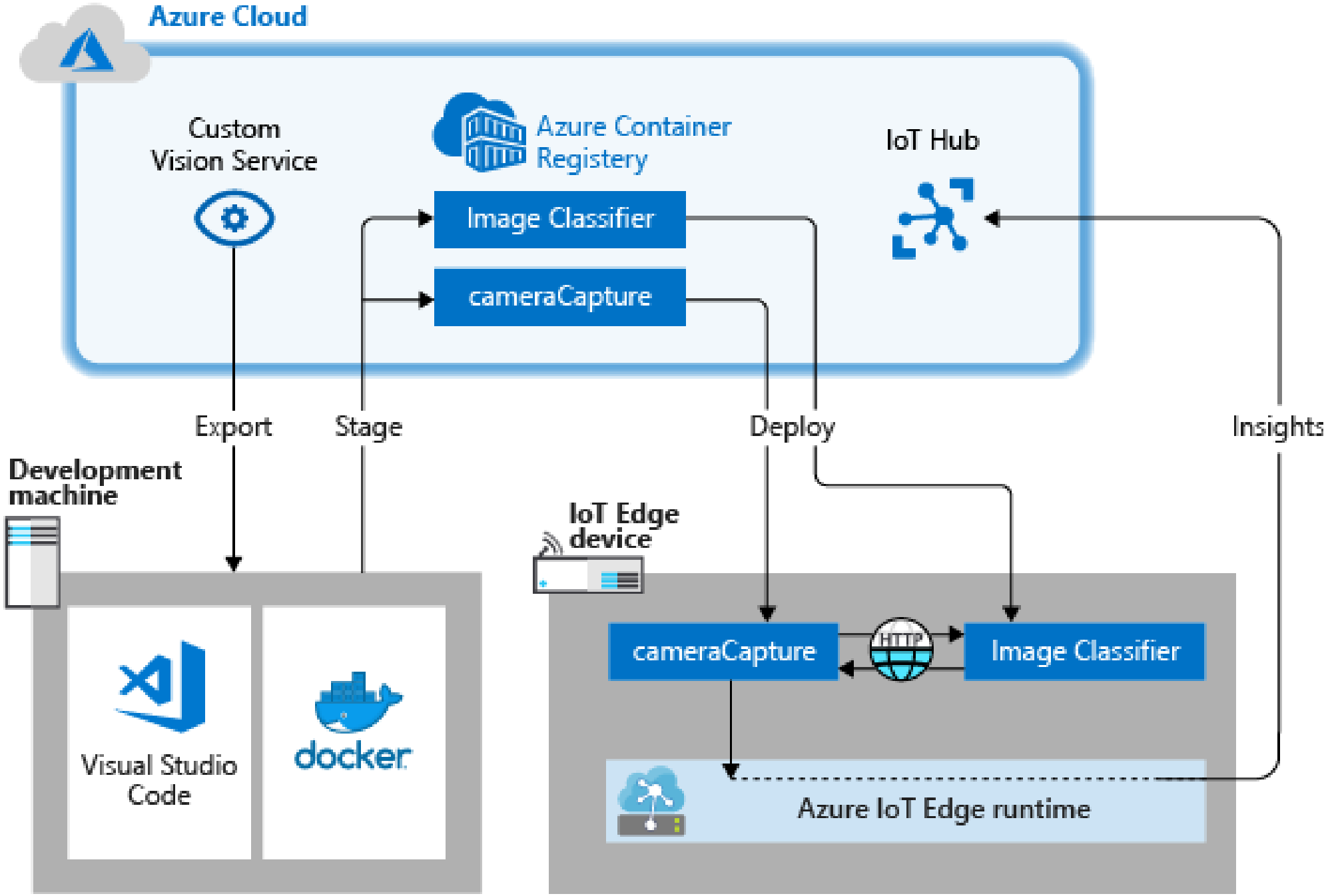
PROF. SERGIO TAKEO KOFUJI - KOFUJI@USP.BR

Objetivos

- ✓Criar um classificador de imagem com a Visão Personalizada.
- ✓Desenvolver um módulo do IoT Edge que consulta o servidor Web da Visão Personalizada em seu dispositivo.
- ✓Enviar os resultados do classificador de imagem para o Hub IoT.

Roteiro

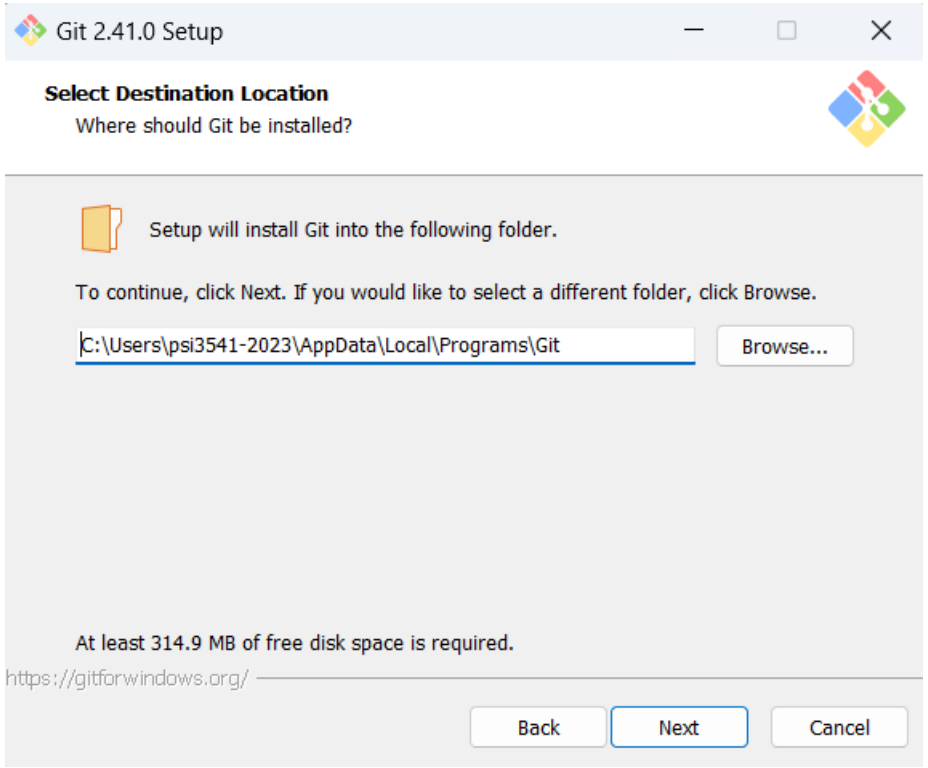
- https://learn.microsoft.com/en-us/azure/iot-edge/tutorial-deploy-custom-vision?view=iotedge-1.4


Azure Cloud
Custom Vision Service
Azure Container Registery
IoT Hub
Image Classifier
cameraCapture
Export
Stage
Deploy
Insights
Development machine
IoT Edge device
Visual Studio Code
docker
cameraCapture
HTTP
Image Classifier
Azure IoT Edge runtime

Preparação da máquina de Desenvolvimento (PC Windows)

INSTALAR GIT (NÃO administrador)

- https://gitforwindows.org/



Clonar o repositório Cognitive-CustomVision na máquina de desenvolvimento

cmd/sh Copy

```
git clone https://github.com/Microsoft/Cognitive-CustomVision-Windows.git
```

INSTALAR Python (NÃO administrador)

- https://www.python.org/downloads/release/python-3113/

WSL (administrador)

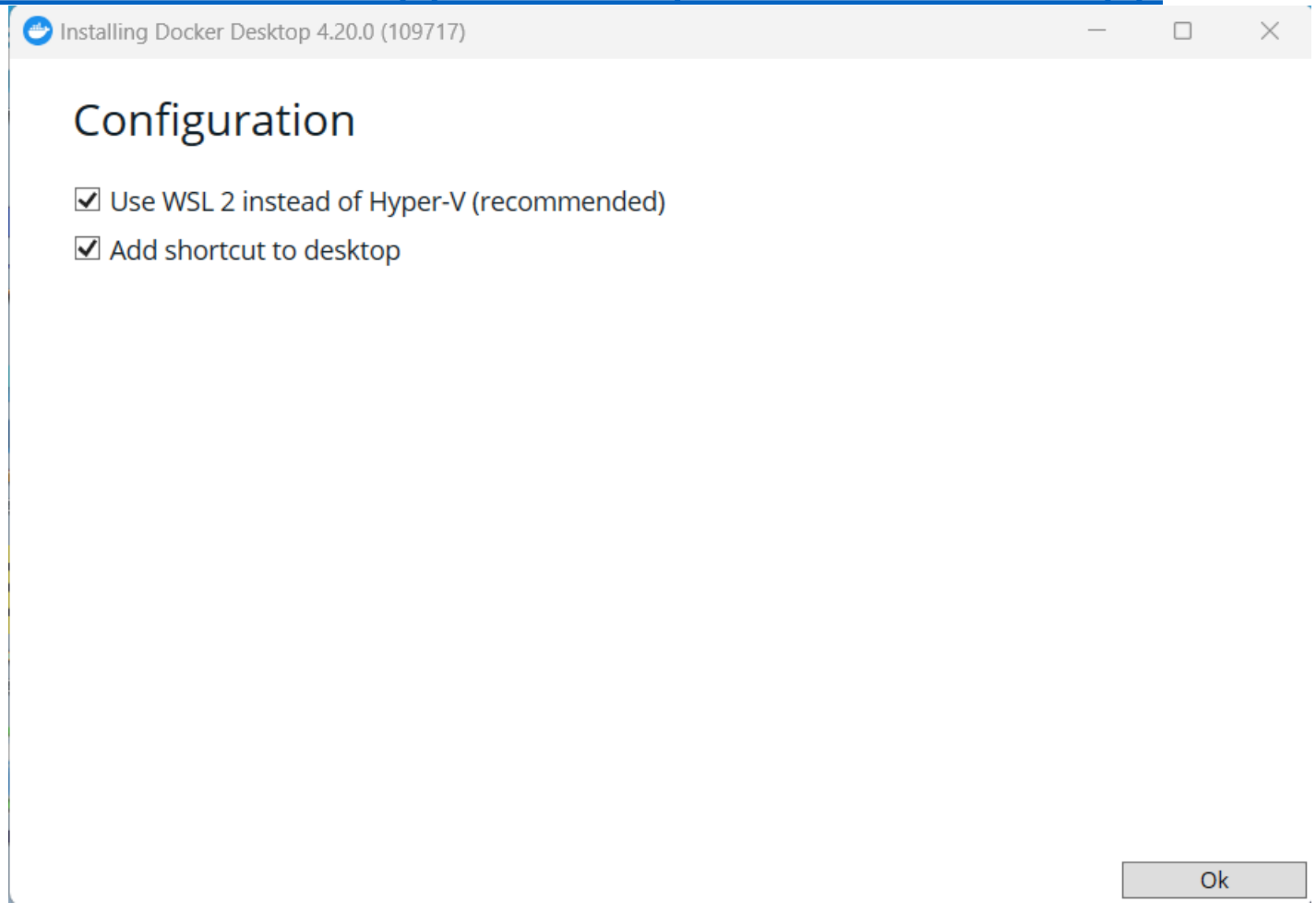
- https://learn.microsoft.com/pt-br/windows/wsl/install

PowerShell Copiar

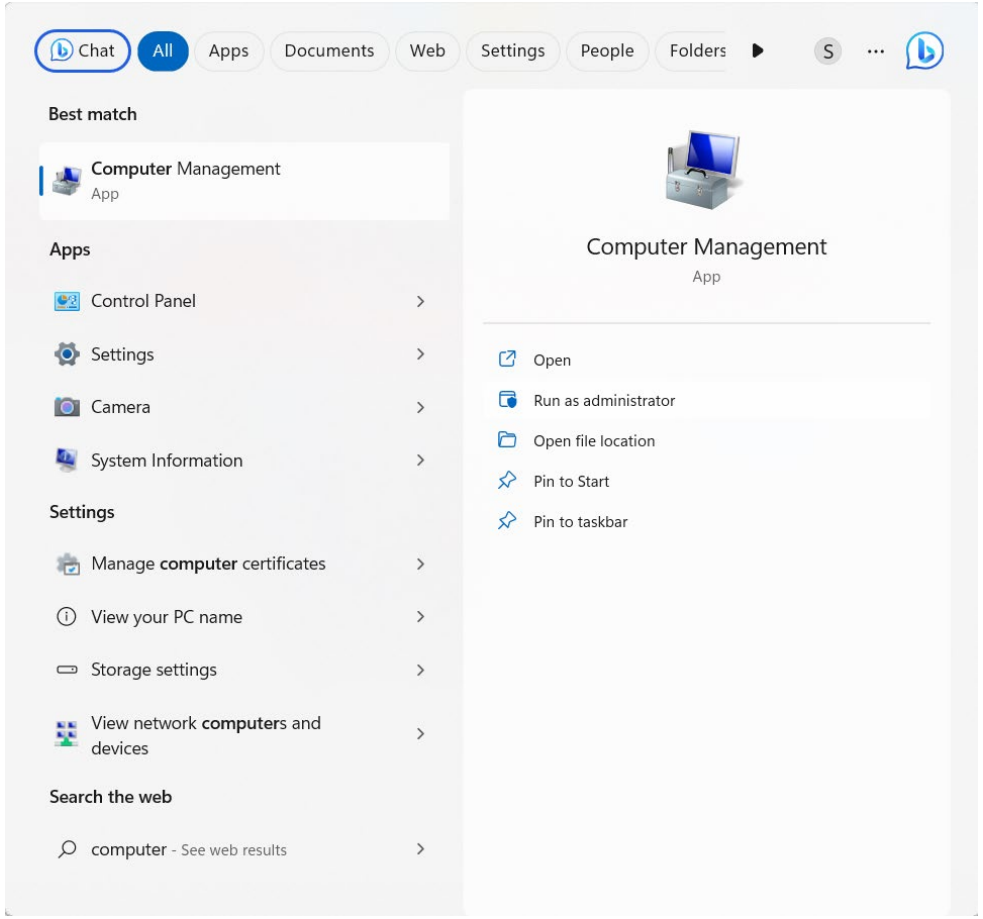
```
wsl --install
```

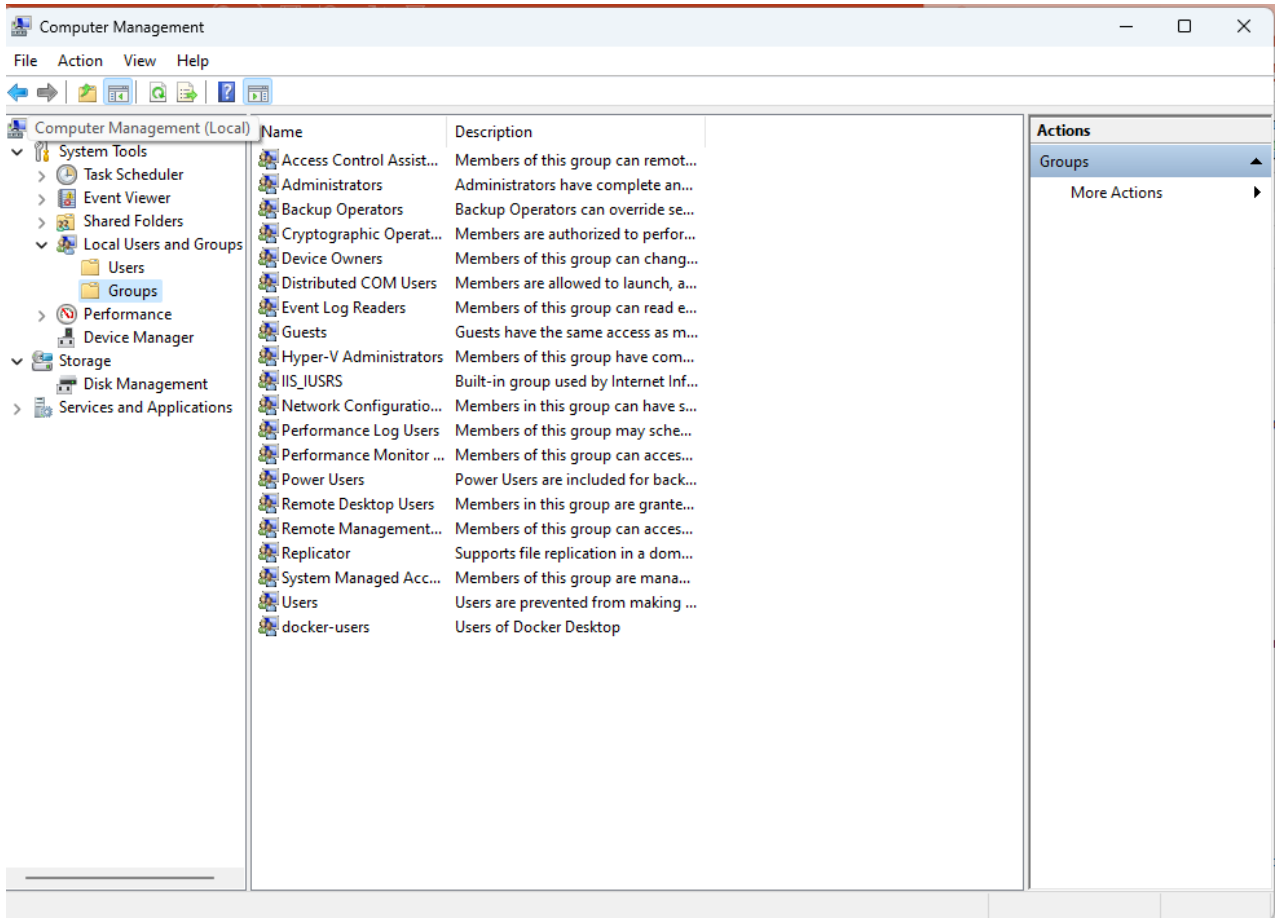
INSTALAR DOCKER (administrador)

- https://www.docker.com/products/docker-desktop/



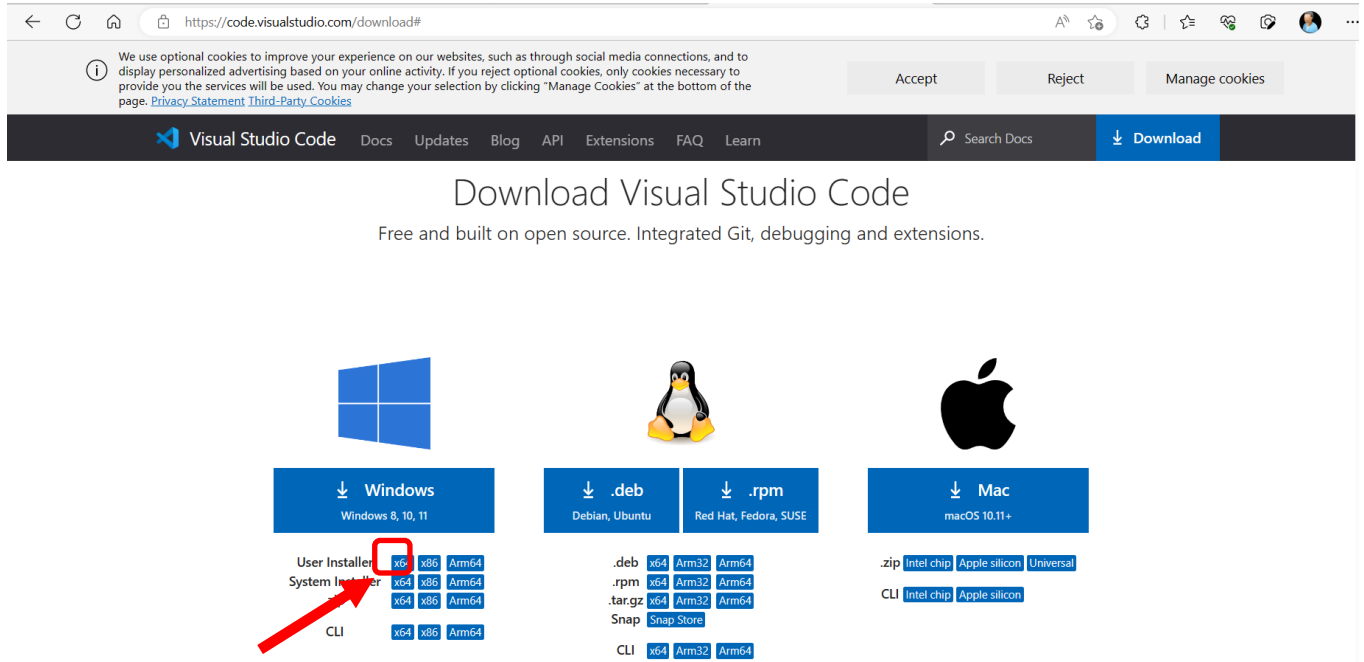
Incluir o usuário windows no grupo docker-group (executar como administrador)

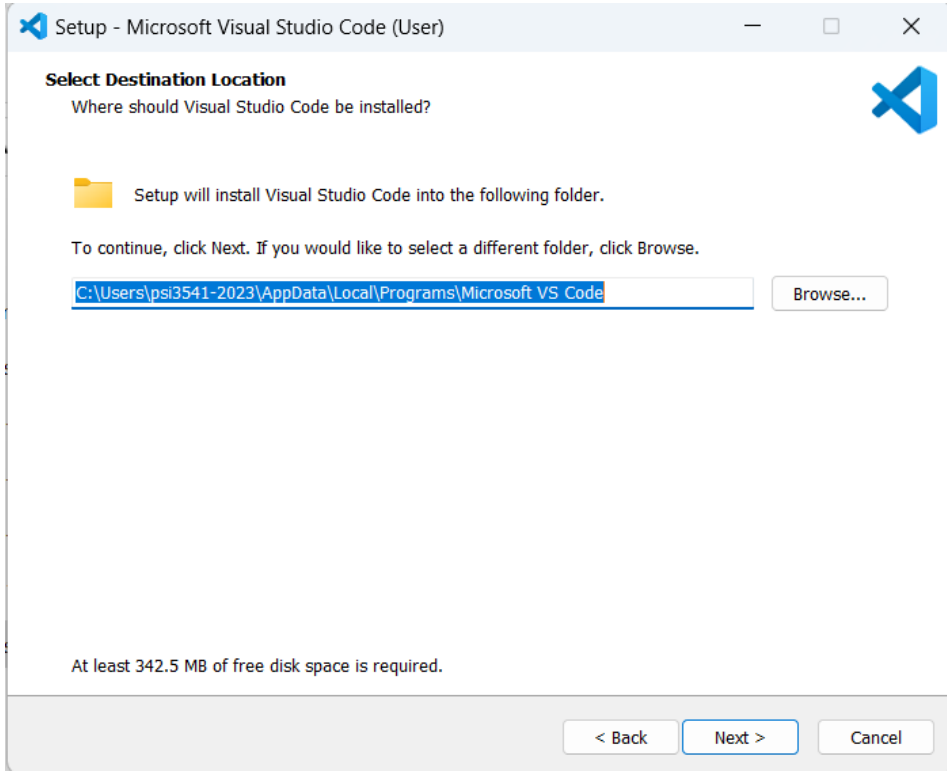




INSTALAR VSCODE (NAO administrador - User installer x64)

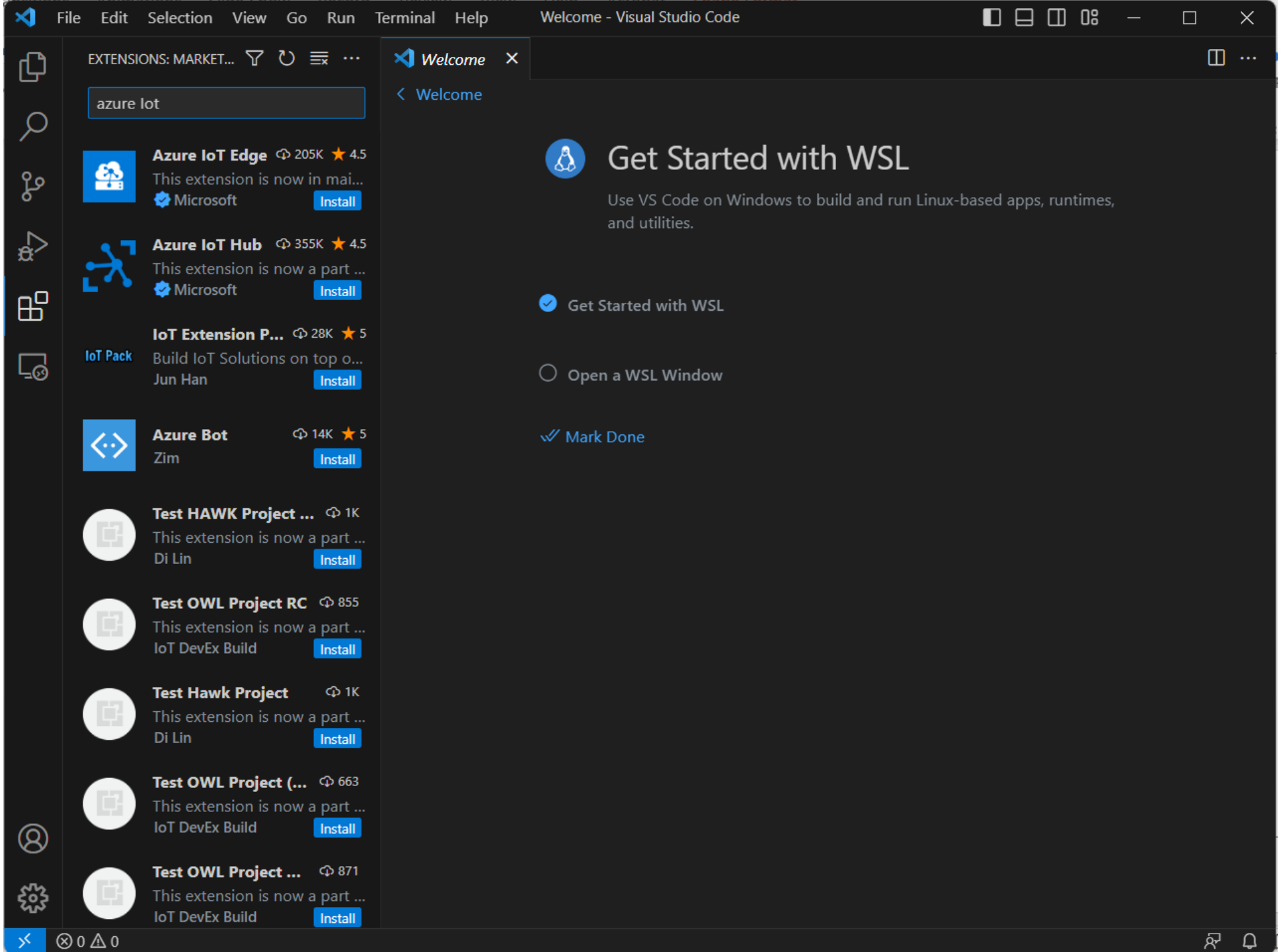
- https://code.visualstudio.com/download#

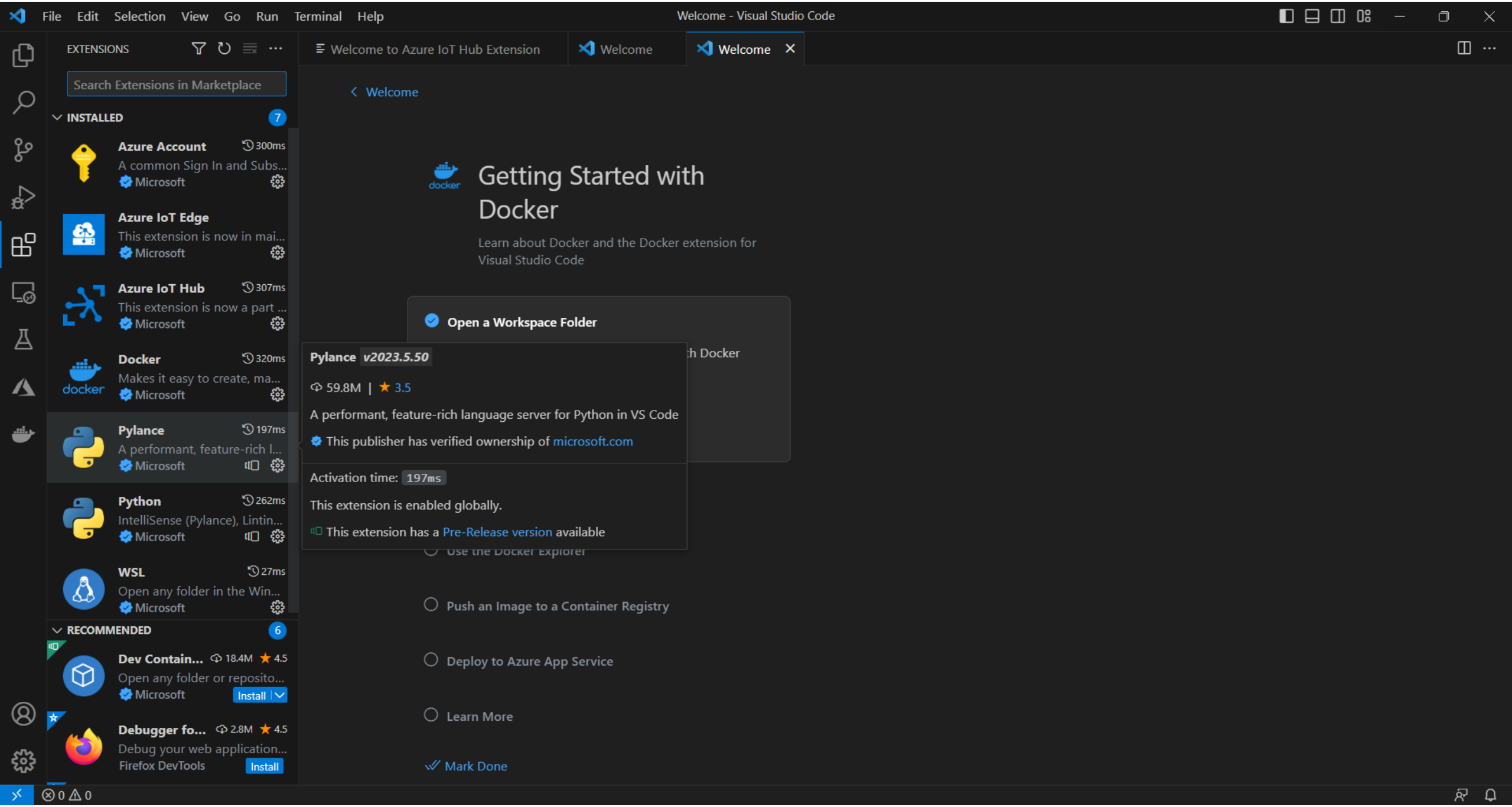


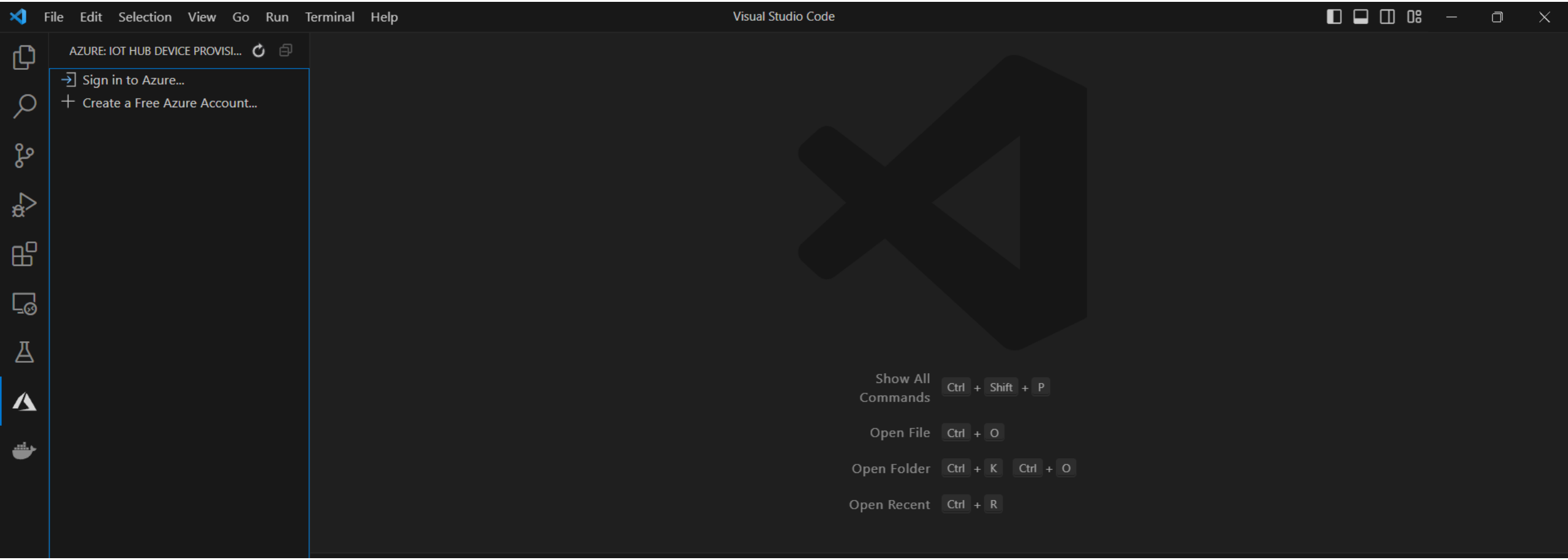


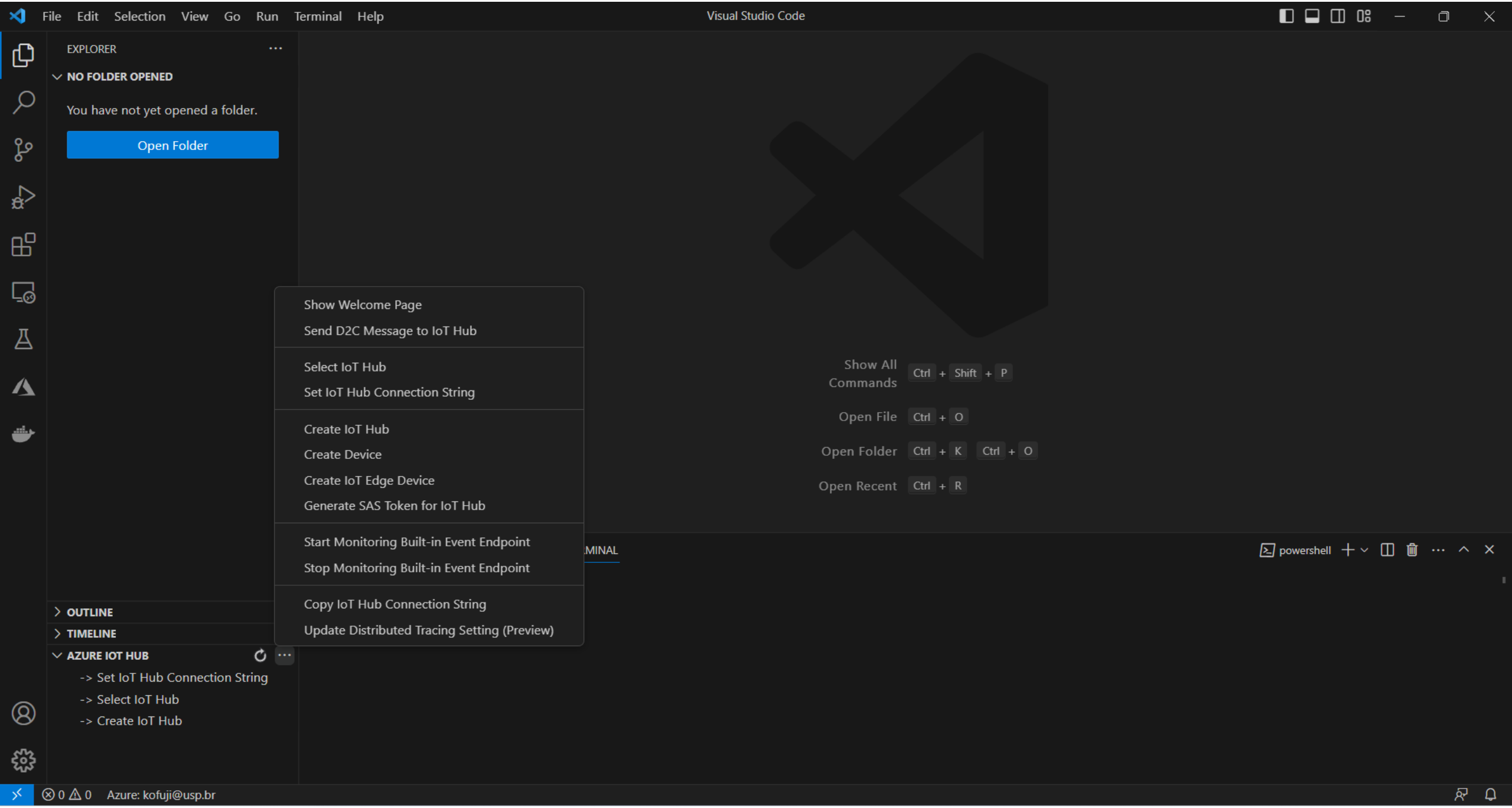
INSTALAR EXTENSÕES DO VSCODE

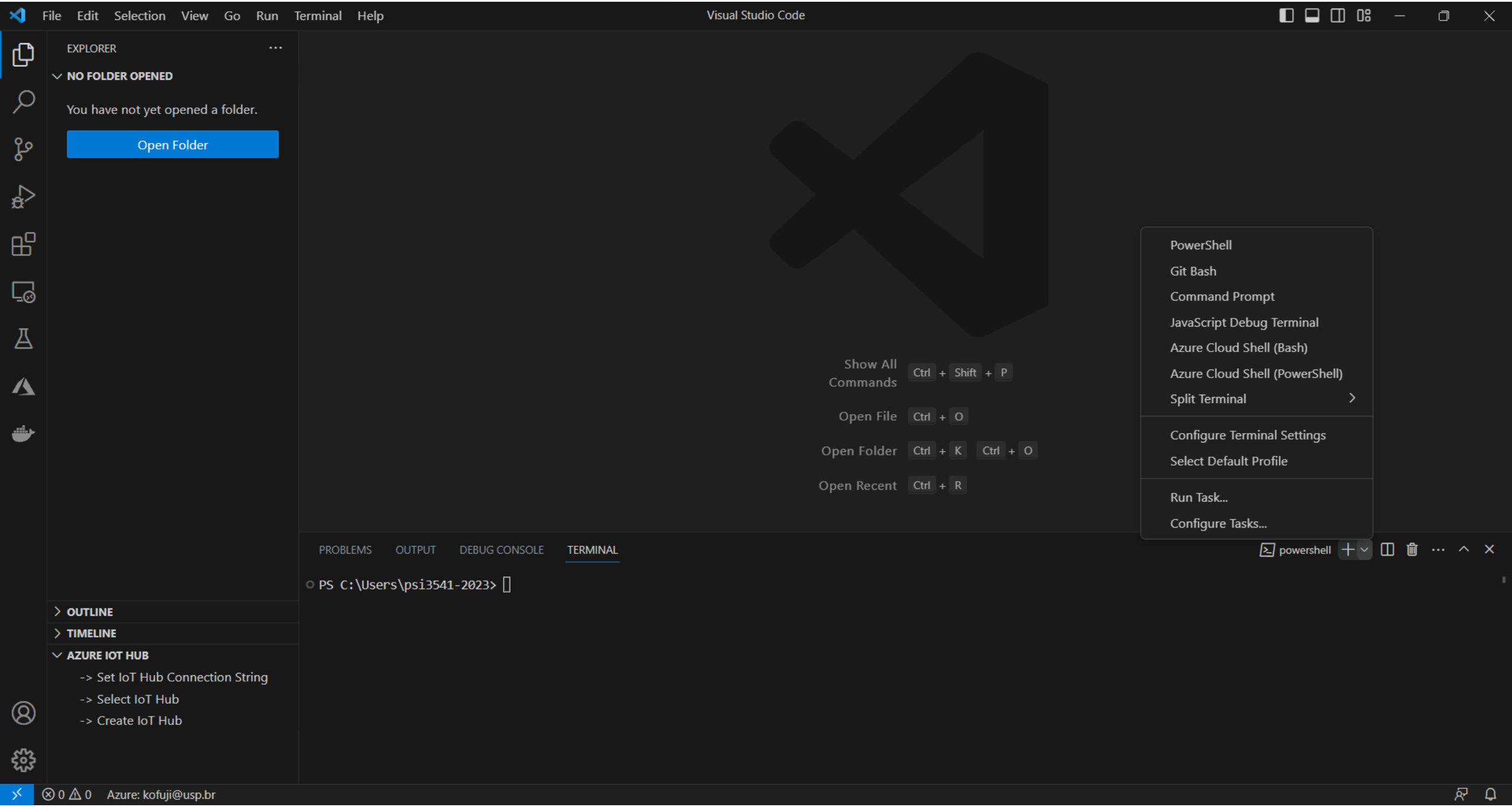
- AZURE IOT HUB
- AZURE IOT EDGE
- Python

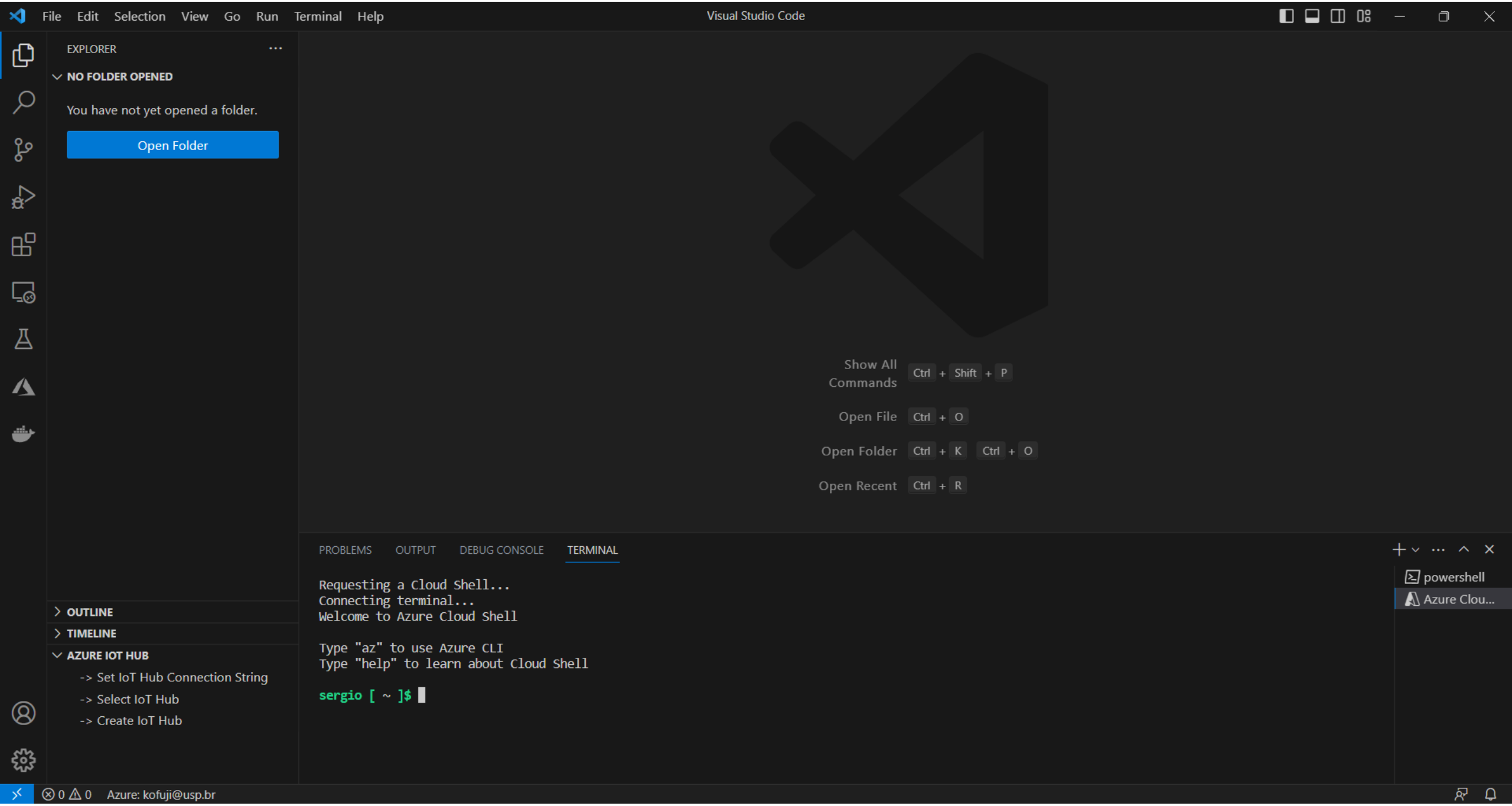

File Edit Selection View Go Run Terminal Help
Welcome - Visual Studio Code
EXTENSIONS: MARKET...
azure iot
Azure IoT Edge 205K 4.5
This extension is now in mai...
Microsoft
Install
Azure IoT Hub 355K 4.5
This extension is now a part ...
Microsoft
Install
IoT Extension P... 28K 5
IoT Pack
Build IoT Solutions on top o...
Jun Han
Install
Azure Bot 14K 5
Zim
Install
Test HAWK Project ... 1K
This extension is now a part ...
Di Lin
Install
Test OWL Project RC 855
This extension is now a part ...
IoT DevEx Build
Install
Test Hawk Project 1K
This extension is now a part ...
Di Lin
Install
Test OWL Project (... 663
This extension is now a part ...
IoT DevEx Build
Install
Test OWL Project ... 871
This extension is now a part ...
IoT DevEx Build
Install
Welcome
Welcome
Get Started with WSL
Use VS Code on Windows to build and run Linux-based apps, runtimes, and utilities.
Get Started with WSL
Open a WSL Window
Mark Done
0 0


File Edit Selection View Go Run Terminal Help
Welcome - Visual Studio Code
EXTENSIONS
Search Extensions in Marketplace
INSTALLED 7
Azure Account 300ms
A common Sign In and Subs...
Microsoft
Azure IoT Edge
This extension is now in mai...
Microsoft
Azure IoT Hub 307ms
This extension is now a part ...
Microsoft
Docker 320ms
Makes it easy to create, ma...
Microsoft
Pylance 197ms
A performant, feature-rich l...
Microsoft
Python 262ms
IntelliSense (Pylance), Lintin...
Microsoft
WSL 27ms
Open any folder in the Win...
Microsoft
RECOMMENDED 6
Dev Contain... 18.4M 4.5
Open any folder or reposito...
Microsoft Install
Debugger fo... 2.8M 4.5
Debug your web application...
Firefox DevTools Install
Welcome to Azure IoT Hub Extension
Welcome
Welcome
Welcome
Getting Started with Docker
Learn about Docker and the Docker extension for Visual Studio Code
Open a Workspace Folder
Pylance v2023.5.50
59.8M | 3.5
A performant, feature-rich language server for Python in VS Code
This publisher has verified ownership of microsoft.com
Activation time: 197ms
This extension is enabled globally.
This extension has a Pre-Release version available
Use the Docker Explorer
Push an Image to a Container Registry
Deploy to Azure App Service
Learn More
Mark Done
0 0


File Edit Selection View Go Run Terminal Help
Visual Studio Code
AZURE: IOT HUB DEVICE PROVISI...
Sign in to Azure...
Create a Free Azure Account...
Show All Commands Ctrl + Shift + P
Open File Ctrl + O
Open Folder Ctrl + K Ctrl + O
Open Recent Ctrl + R


File Edit Selection View Go Run Terminal Help
Visual Studio Code
EXPLORER
NO FOLDER OPENED
You have not yet opened a folder.
Open Folder
Show Welcome Page
Send D2C Message to IoT Hub
Select IoT Hub
Set IoT Hub Connection String
Create IoT Hub
Create Device
Create IoT Edge Device
Generate SAS Token for IoT Hub
Start Monitoring Built-in Event Endpoint
Stop Monitoring Built-in Event Endpoint
Copy IoT Hub Connection String
Update Distributed Tracing Setting (Preview)
Show All Commands Ctrl + Shift + P
Open File Ctrl + O
Open Folder Ctrl + K Ctrl + O
Open Recent Ctrl + R
powershell
OUTLINE
TIMELINE
AZURE IOT HUB
-> Set IoT Hub Connection String
-> Select IoT Hub
-> Create IoT Hub
Azure: kofuji@usp.br


File Edit Selection View Go Run Terminal Help
Visual Studio Code
EXPLORER
NO FOLDER OPENED
You have not yet opened a folder.
Open Folder
Show All Commands Ctrl + Shift + P
Open File Ctrl + O
Open Folder Ctrl + K Ctrl + O
Open Recent Ctrl + R
PowerShell
Git Bash
Command Prompt
JavaScript Debug Terminal
Azure Cloud Shell (Bash)
Azure Cloud Shell (PowerShell)
Split Terminal
Configure Terminal Settings
Select Default Profile
Run Task...
Configure Tasks...
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
powershell
PS C:\Users\psi3541-2023>
OUTLINE
TIMELINE
AZURE IOT HUB
-> Set IoT Hub Connection String
-> Select IoT Hub
-> Create IoT Hub
0 0 Azure: kofuji@usp.br


File Edit Selection View Go Run Terminal Help
Visual Studio Code
EXPLORER
NO FOLDER OPENED
You have not yet opened a folder.
Open Folder
Show All Commands Ctrl + Shift + P
Open File Ctrl + O
Open Folder Ctrl + K Ctrl + O
Open Recent Ctrl + R
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Requesting a Cloud Shell...
Connecting terminal...
Welcome to Azure Cloud Shell
Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell
sergio [~]$
powershell
Azure Clou...
OUTLINE
TIMELINE
AZURE IOT HUB
-> Set IoT Hub Connection String
-> Select IoT Hub
-> Create IoT Hub
0 0 Azure: kofuji@usp.br

Criar dispositivo EDGE em uma VM LINUX

Criar dispositivo EDGE em uma VM LINUX

- ✓ az group create --name atividade16 --location eastus2
- ✓ az iot hub create --resource-group atividade16 --name iothubatividade1681151 --sku F1 --partition-count 2
- ✓ az iot hub device-identity create --device-id myEdgeDevice --edge-enabled --hub-name iothubatividade1681151
- ✓ az iot hub device-identity connection-string show --device-id myEdgeDevice --hub-name iothubatividade1681151
- ✓ az deployment group create \

  --resource-group atividade16 \

  --template-uri "https://raw.githubusercontent.com/Azure/iotedge-vm-deploy/1.4/edgeDeploy.json" \

  --parameters dnsLabelPrefix='my-edge-vm1-81151’ \

  --parameters adminUsername='azureUser’ \

  --parameters deviceConnectionString=$(az iot hub device-identity connection-string show --device-id myEdgeDevice --hub-name iothubatividade1681151 -o tsv) \

  --parameters authenticationType='password’ \

  --parameters adminPasswordOrKey='$c(5#\#KqusK'
- ✓ ssh azureUser@xxxxx.cloudapp.azure.com
- ✓ sudo iotedge system status
- ✓ sudo iotedge list

AZURE CONTAINER REGISTRY

Roteiro container registry

- https://learn.microsoft.com/en-us/azure/container-registry/container-registry-get-started-portal?tabs=azure-cli

Create a resource

Get Started
Recently created

Categories

AI + Machine Learning
Analytics
Blockchain
Compute
Containers
Databases
Developer Tools
DevOps
Identity
Integration
Internet of Things
IT & Management Tools
Media
Migration
Mixed Reality
Monitoring & Diagnostics
Networking
Security
Storage
Web

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Azure Kubernetes Service (AKS)
Create | Docs | MS Learn

Web App for Containers
Create | Docs | MS Learn

Batch Service
Create | Docs | MS Learn

Kubernetes - Azure Arc
Create | Docs | MS Learn

Container App
Create | Docs

Container Instances
Create | Learn more | MS Learn

Container Registry
Create | Docs | MS Learn

Service Fabric Cluster
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Popular Marketplace products

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NVIDIA GPU-Optimized Image for AI & HPC - v21.06.0
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Windows Server 2022 Core Datacenter Minimal OS
Create | Learn more

Basic
Create | Learn more

Hyper-V Server on Windows Server 2016
Create | Learn more

Docker Engine Community on Ubuntu 20.04 LTS
Create | Learn more

Docker Compose Server on Windows Server 2016
Create | Learn more

Pay-as-You-Go
Set up + subscribe | Learn more

Docker 20.10 with Portainer 2.6 on Ubuntu 20.04
Create | Learn more

Docker Compose Server on Ubuntu Server 20.04
Create | Learn more

container
Create | Learn more

Create container registry

Basics | Networking | Encryption | Tags | Review + create

Azure Container Registry allows you to build, store, and manage container images and artifacts in a private registry for all types of container deployments. Use Azure container registries with your existing container development and deployment pipelines. Use Azure Container Registry Tasks to build container images in Azure on-demand, or automate builds triggered by source code updates, updates to a container's base image, or timers. Learn more

Project details

Subscription * : Azure para Estudantes

Resource group * : (New) atividade16

Create new

Instance details

Registry name * : mycontainerregistry81151 .azurecr.io

Location * : East US 2

Availability zones : Enabled

Availability zones are enabled on premium registries and in regions that support availability zones. Learn more

SKU * : Standard

Review + create | < Previous | Next: Networking >

mycontainerregistry81151

Container registry

Search

- Overview
- Activity log
- Access control (IAM)
- Tags
- Quick start
- Events

Settings

- Access keys
- Encryption
- Identity
- Networking
- Microsoft Defender for Cloud
- Locks

Services

- Repositories
- Webhooks
- Replications
- Tasks
- Connected registries (Preview)
- Cache (Preview)

Repository permissions

- Tokens
- Scope maps

Policies

- Content trust
- Retention (Preview)

Move | Delete | Update

Essentials

JSON View

Resource group (move)	: atividade16	Login server	: mycontainerregistry81151.azurecr.io
Location	: East US 2	Creation date	: 5/31/2023, 5:14 PM GMT-3
Subscription (move)	: Azure para Estudantes	SKU	: Standard
Subscription ID	: 833fb4d1-d6a7-48a5-9cdd-27136b0fb6fd	Provisioning state	: Succeeded
		Soft Delete (Preview)	: Disabled

Usage

Included in SKU	Used	Additional storage
100 GiB	0.00 GiB	0.00 GiB

ACR Tasks

Build, Run, Push and Patch containers in Azure with ACR Tasks. Tasks supports Windows, Linux and ARM with QEMU.

Learn more

Container security integrations

Microsoft Defender for Cloud

Vulnerability management, runtime protection, and hardening recommendations for your containers and container environments.

Learn more

Registry metrics

Show data for time period

1 hour | 6 hours | 12 hours | 1 day | 7 days | 30 days

Image pull count

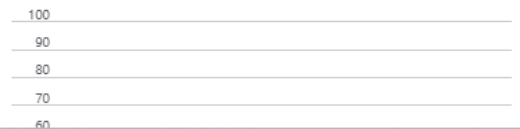
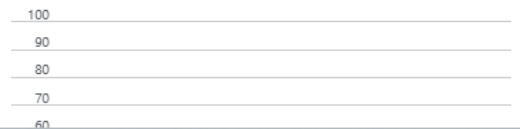
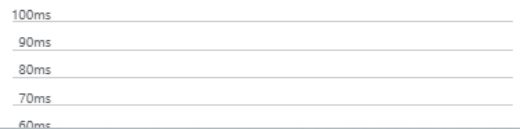


Image push count



Task run duration



mycontainerregistry81151 | Access keys

Container registry

Search
Overview
Activity log
Access control (IAM)
Tags
Quick start
Events

Settings
Access keys
Encryption
Identity
Networking
Microsoft Defender for Cloud
Locks

Services
Repositories
Webhooks
Replications
Tasks
Connected registries (Preview)
Cache (Preview)

Repository permissions
Tokens
Scope maps

Policies
Content trust
Retention (Preview)

Registry name	mycontainerregistry81151
Login server	mycontainerregistry81151.azurecr.io
Admin user	Enabled
Username	mycontainerregistry81151

Name	Password	Regenerate
password	jWcMtbg7quO9ajvF7LjiUY++VNIHIW9msyAL8ZH5De+AC...	
password2	pqz2QDeurRN5J30hoqR+lzia5yQXagkM7YKmMCFHrd+AC...	

Clonar o repositório Cognitive-CustomVision na máquina de desenvolvimento

Clonar o repositório Cognitive-CustomVision na máquina de desenvolvimento

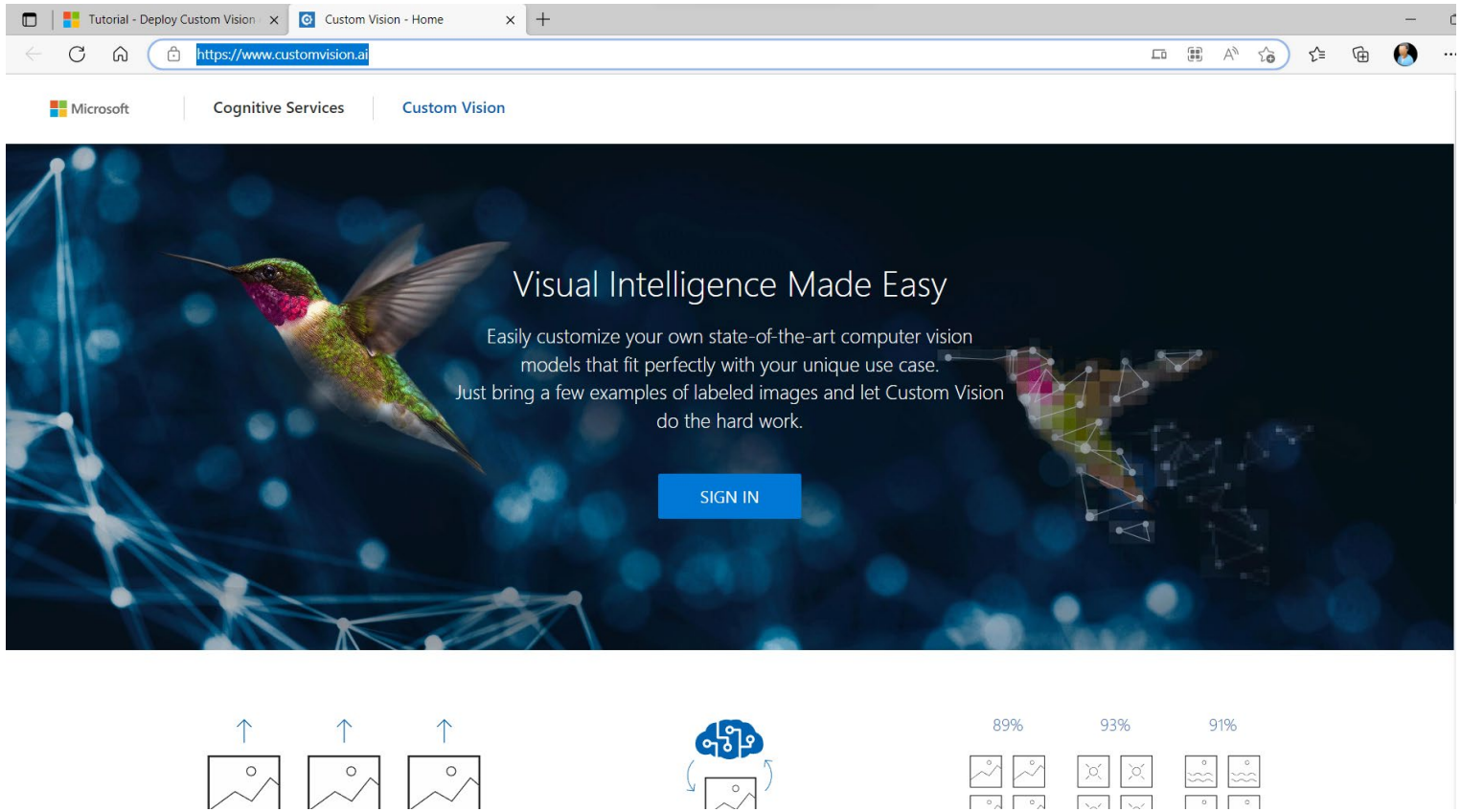
cmd/sh Copy

```
git clone https://github.com/Microsoft/Cognitive-CustomVision-Windows.git
```

Criar um Projeto no serviço CUSTOMVISION

Projeto no CUSTOMVISION

- https://www.customvision.ai/



Campo	Valor
Nome	Forneça um nome para o projeto, como **EdgeTreeClassifier**.
Descrição	Descrição do projeto opcional.
Recurso	Selecione um de seus grupos de recursos do Azure que inclua um recurso do Serviço de Visão Personalizada ou **crie um novo** se você ainda não tiver adicionado um.
Tipos de projeto	**Classificação**
Tipos de classificação	**Multiclasses (uma marca por imagem)**
Domínios	**Geral (compacto)**
Exportar funcionalidades	**Plataformas básicas (Tensorflow, CoreML, ONNX,...)**

Tutorial - Deploy Custom Vision

Custom Vision - Projects

https://www.customvision.ai/projects?mostRecentDirectory

Custom Vision

usp.br

Projects

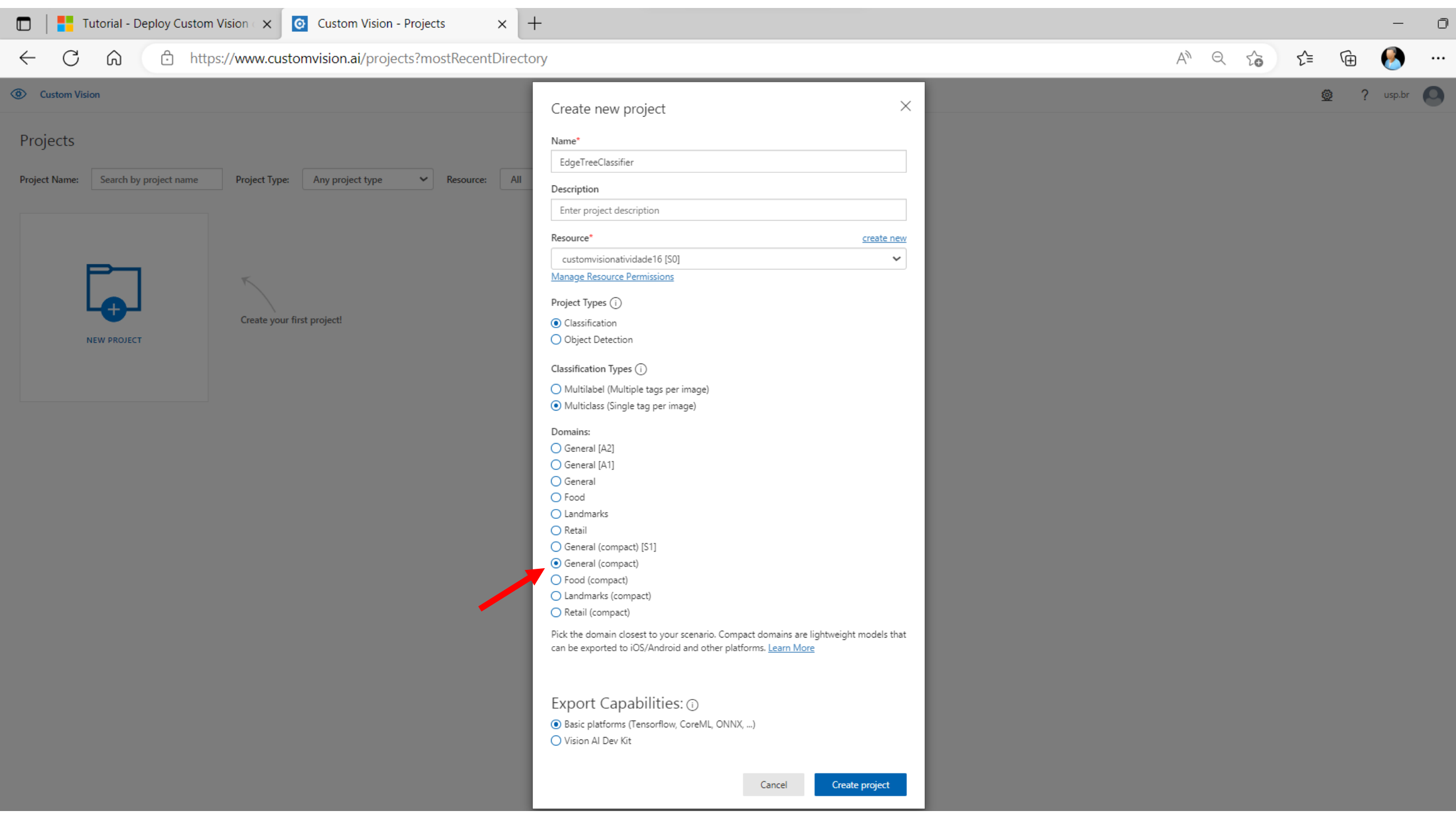
Project Name: Search by project name

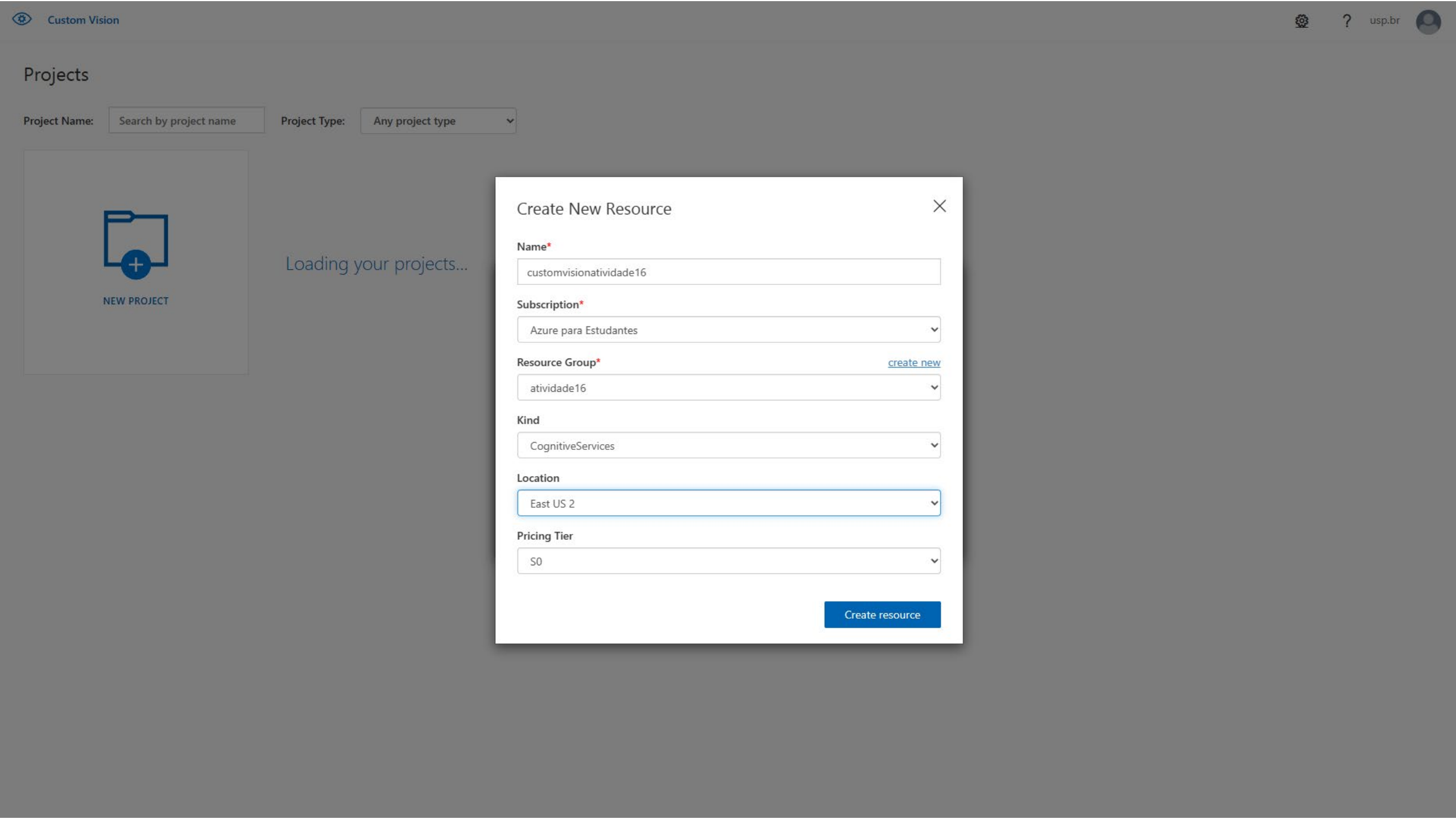
Project Type: Any project type

Resource: All

NEW PROJECT

Create your first project!


Tutorial - Deploy Custom Vision
Custom Vision - Projects
https://www.customvision.ai/projects?mostRecentDirectory
Custom Vision
usp.br
Projects
Project Name:
Search by project name
Project Type:
Any project type
Resource:
All
NEW PROJECT
Create your first project!
Create new project
Name*
EdgeTreeClassifier
Description
Enter project description
Resource*
create new
customvisionatividade16 [S0]
Manage Resource Permissions
Project Types
Classification
Object Detection
Classification Types
Multilabel (Multiple tags per image)
Multiclass (Single tag per image)
Domains:
General [A2]
General [A1]
General
Food
Landmarks
Retail
General (compact) [S1]
General (compact)
Food (compact)
Landmarks (compact)
Retail (compact)
Pick the domain closest to your scenario. Compact domains are lightweight models that can be exported to iOS/Android and other platforms. Learn More
Export Capabilities:
Basic platforms (Tensorflow, CoreML, ONNX, ...)
Vision AI Dev Kit
Cancel
Create project


Custom Vision
usp.br
Projects
Project Name:
Search by project name
Project Type:
Any project type
NEW PROJECT
Loading your projects...
Create New Resource
Name*
customvisionatividade16
Subscription*
Azure para Estudantes
Resource Group*
create new
atividade16
Kind
CognitiveServices
Location
East US 2
Pricing Tier
S0
Create resource

Tutorial - Deploy Custom Vision

Custom Vision: EdgeTreeClassifie

https://www.customvision.ai/projects/b7290108-0820-40b0-a76a-c8c5b50f717f#/manage

EdgeTreeClassifier

Training Images | Performance | Predictions | Train | Quick Test

Filter

Iteration

Workspace

Tags

Tagged | Untagged

Showing: all tagged images

Search For Tags:

Add images | Delete | Tag images | Select all

Looks like you don't have any images here!

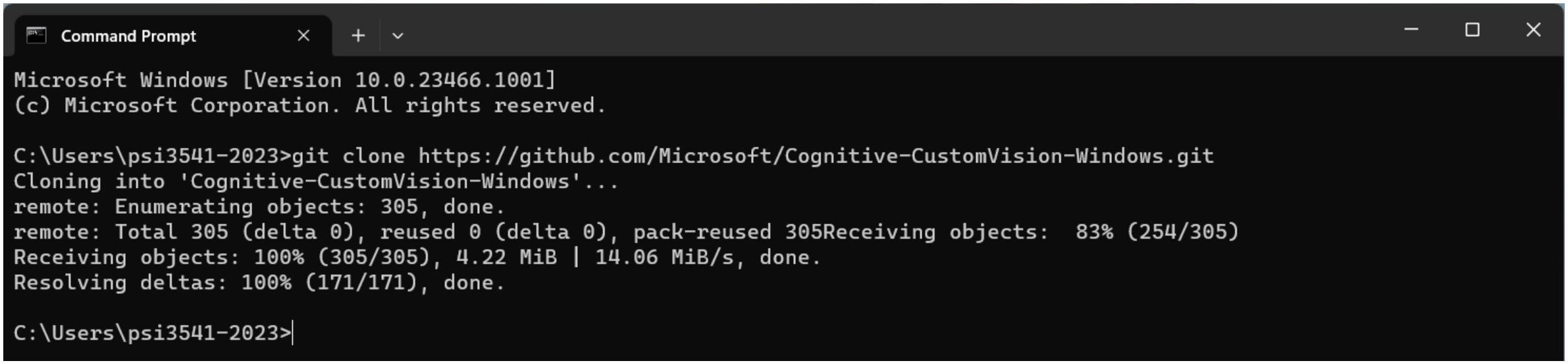
Go ahead and browse for images to upload to your project, tag them, and they will be ready to be trained.

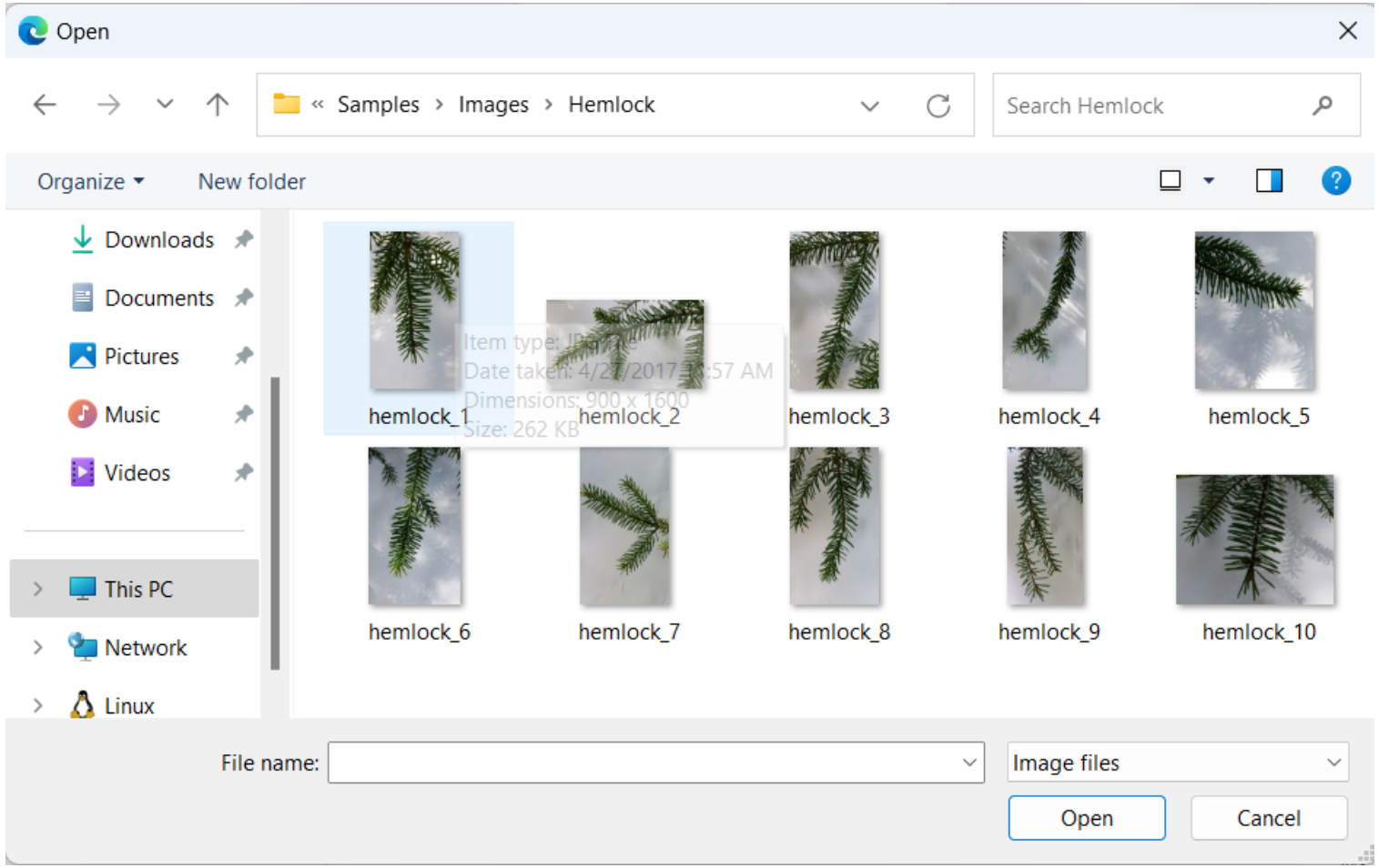
Add images

.JPG, .PNG, .BMP format, up to 6 MB per image

25%

Get started


Command Prompt
Microsoft Windows [Version 10.0.23466.1001]
(c) Microsoft Corporation. All rights reserved.
C:\Users\psi3541-2023>git clone https://github.com/Microsoft/Cognitive-CustomVision-Windows.git
Cloning into 'Cognitive-CustomVision-Windows'...
remote: Enumerating objects: 305, done.
remote: Total 305 (delta 0), reused 0 (delta 0), pack-reused 305Receiving objects: 83% (254/305)
Receiving objects: 100% (305/305), 4.22 MiB | 14.06 MiB/s, done.
Resolving deltas: 100% (171/171), done.
C:\Users\psi3541-2023>


Open
Samples › Images › Hemlock
Search Hemlock
Organize
New folder
Downloads
Documents
Pictures
Music
Videos
This PC
Network
Linux
hemlock_1
hemlock_2
hemlock_3
hemlock_4
hemlock_5
hemlock_6
hemlock_7
hemlock_8
hemlock_9
hemlock_10
Item type: JPG File
Dimensions: 900 x 1600
Size: 262 KB
File name:
Image files
Open
Cancel

Tutorial - Deploy Custom Vision

Custom Vision: EdgeTreeClassifie

https://www.customvision.ai/projects/b7290108-0820-40b0-a76a-c8c5b50f717f#/manage

EdgeTreeClassifier

Training Images | Performance | Predictions | Train | Quick Test

Filter

Iteration

Workspace

Tags

Tagged | Untagged

Showing: all tagged images

Search For Tags:

Add images | Delete | Tag images | Select all

Image upload

Add Tags — Uploading — Summary

10 images will be added...

Add some tags to this batch of images...

My Tags

hemlock

Upload 10 files

here!

will be ready to be trained.

25%

Get started

Tutorial - Deploy Custom Vision

Custom Vision: EdgeTreeClassifie

https://www.customvision.ai/projects/b7290108-0820-40b0-a76a-c8c5b50f717f#/manage

EdgeTreeClassifier

Training Images | Performance | Predictions | Train | Quick Test

Filter

Iteration

Workspace

Tags

Tagged | Untagged

Showing:

hemlock

Search For Tags:

hemlock 10

Add images | Delete | Tag images | Select all

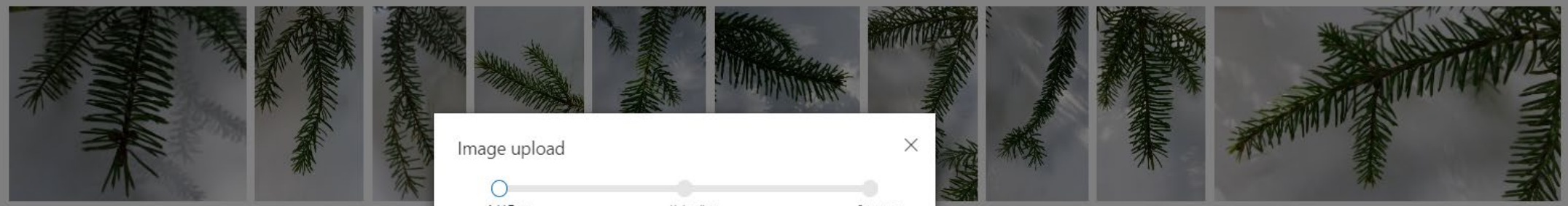


Image upload

Add Tags — Uploading — Summary

10 images will be added...

Add some tags to this batch of images...

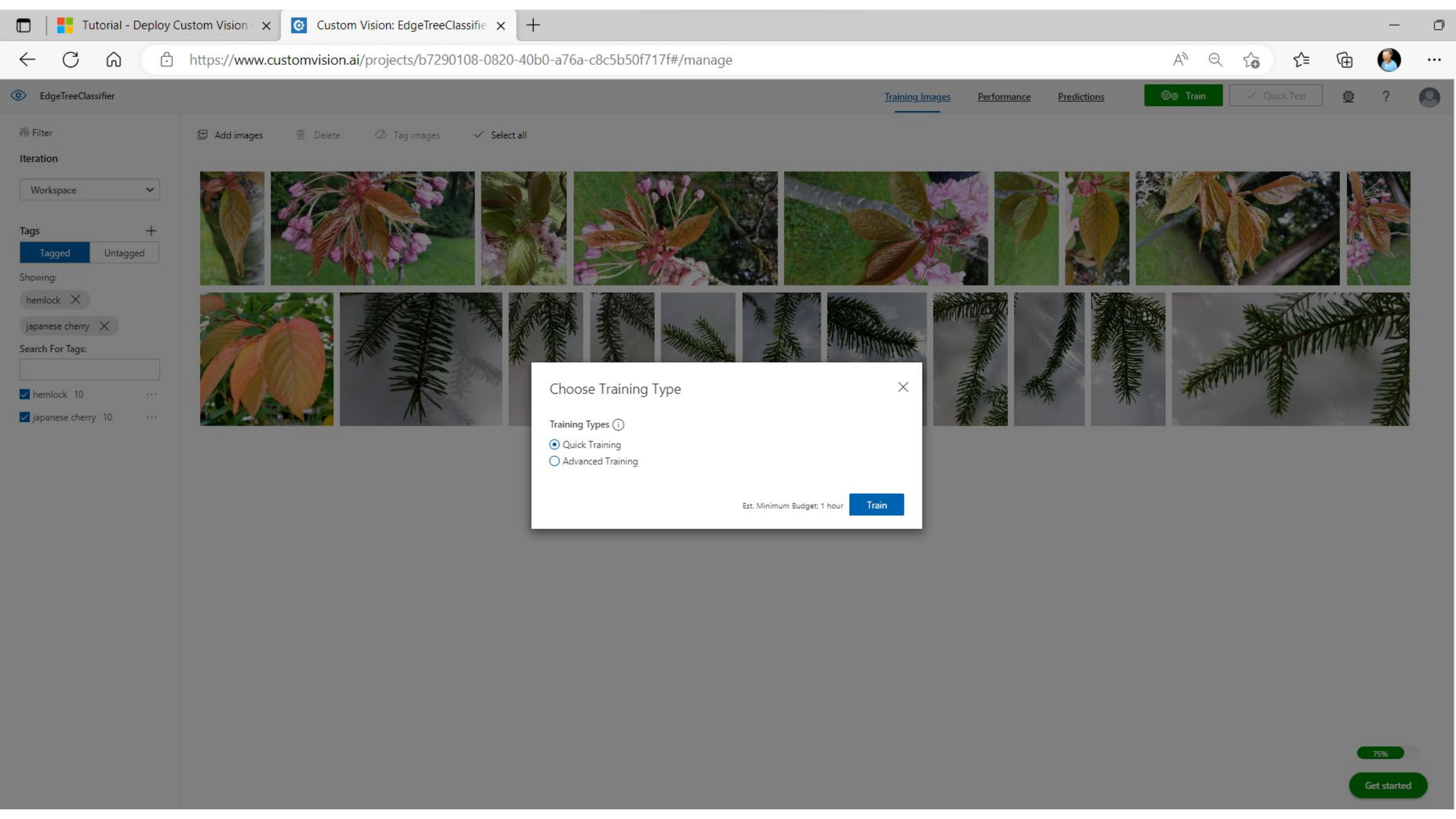
My Tags

japanese cherry

Upload 10 files

25%

Get started


Tutorial - Deploy Custom Vision
Custom Vision: EdgeTreeClassifie
https://www.customvision.ai/projects/b7290108-0820-40b0-a76a-c8c5b50f717f#/manage
EdgeTreeClassifier
Training Images
Performance
Predictions
Train
Quick Test
Filter
Iteration
Workspace
Tags
Tagged
Untagged
Showing:
hemlock
japanese cherry
Search For Tags:
hemlock 10
japanese cherry 10
Add images
Delete
Tag images
Select all
Choose Training Type
Training Types
Quick Training
Advanced Training
Est. Minimum Budget: 1 hour
Train
75%
Get started

Tutorial - Deploy Custom Vision | Custom Vision: EdgeTreeClassifie

https://www.customvision.ai/projects/b7290108-0820-40b0-a76a-c8c5b50f717f#/performance

EdgeTreeClassifier

Training Images | Performance | Predictions | Train | Quick Test

Iterations

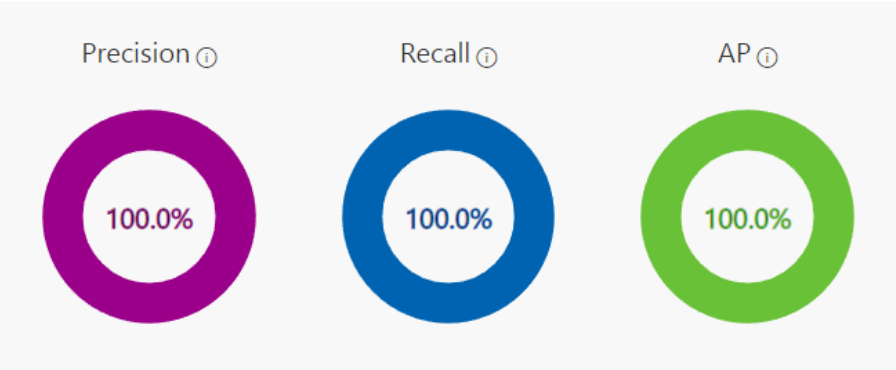
Probability Threshold: 50%

Iteration 1
Trained : moments ago with General (compact) domain

Publish | Prediction URL | Delete | Export

Iteration 1

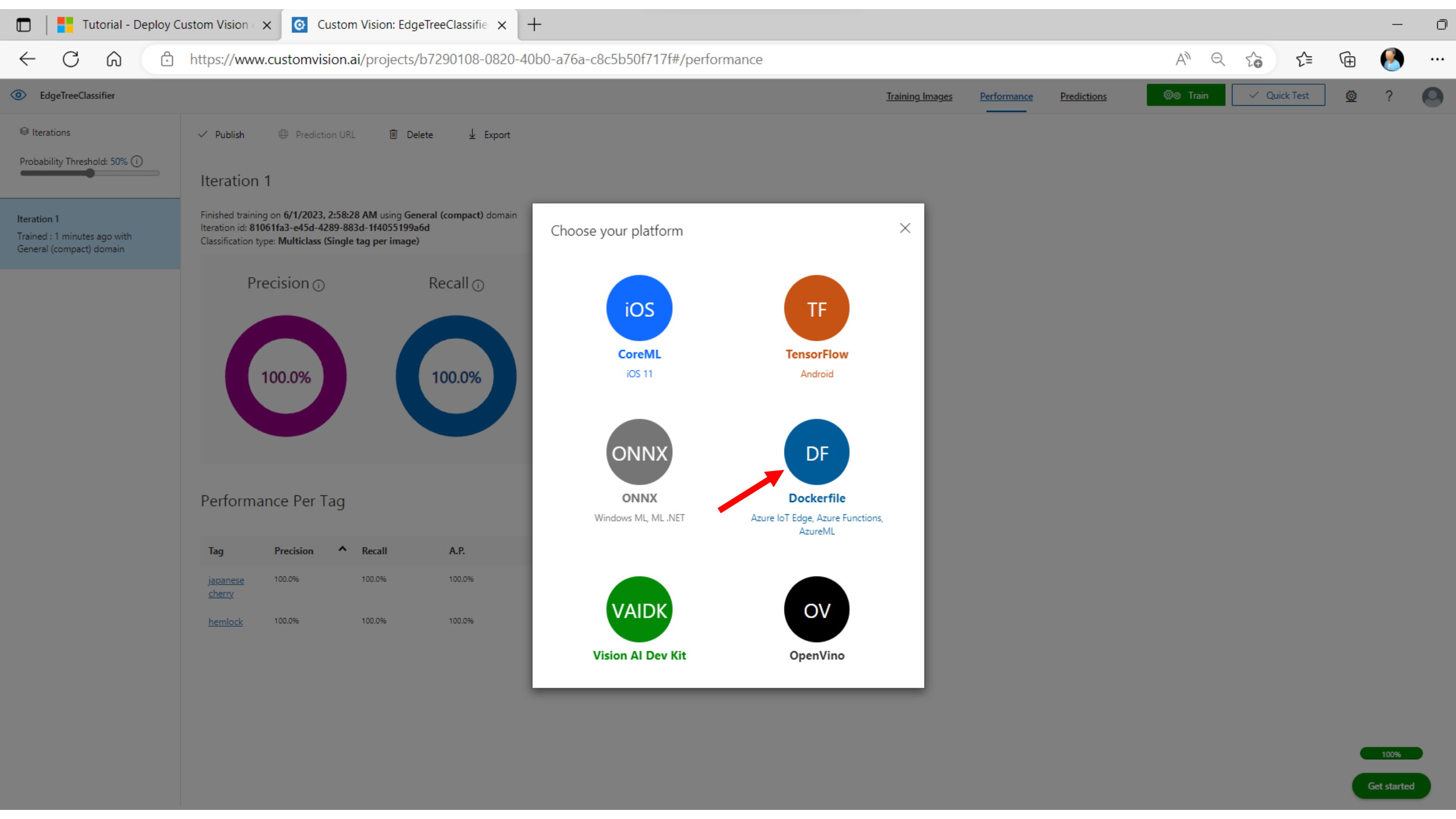
Finished training on **6/1/2023, 2:58:28 AM** using **General (compact)** domain
Iteration id: **81061fa3-e45d-4289-883d-1f4055199a6d**
Classification type: **Multiclass (Single tag per image)**

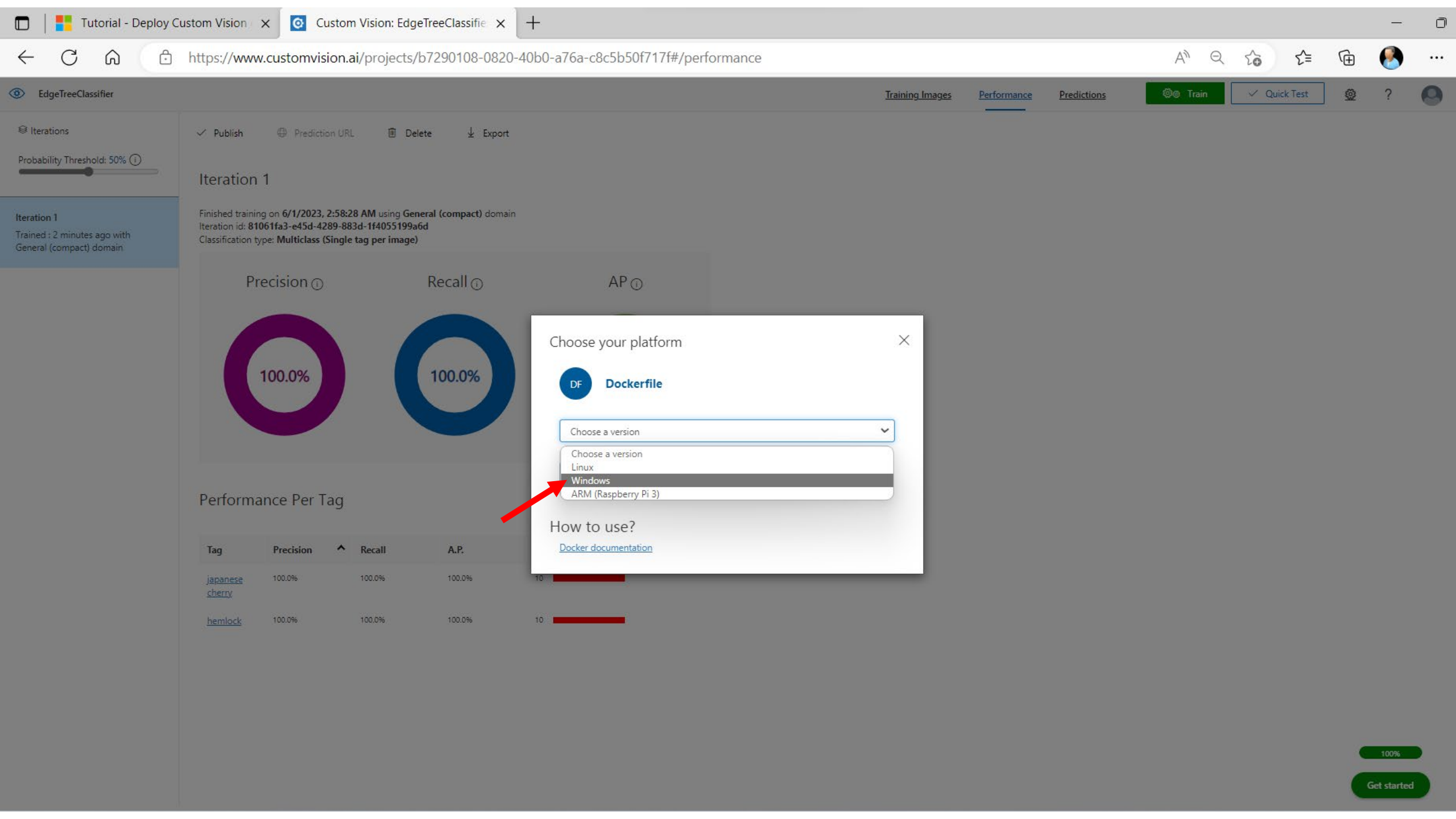


Performance Per Tag

Tag	Precision	Recall	A.P.	Image count
japanese cherry	100.0%	100.0%	100.0%	10
hemlock	100.0%	100.0%	100.0%	10

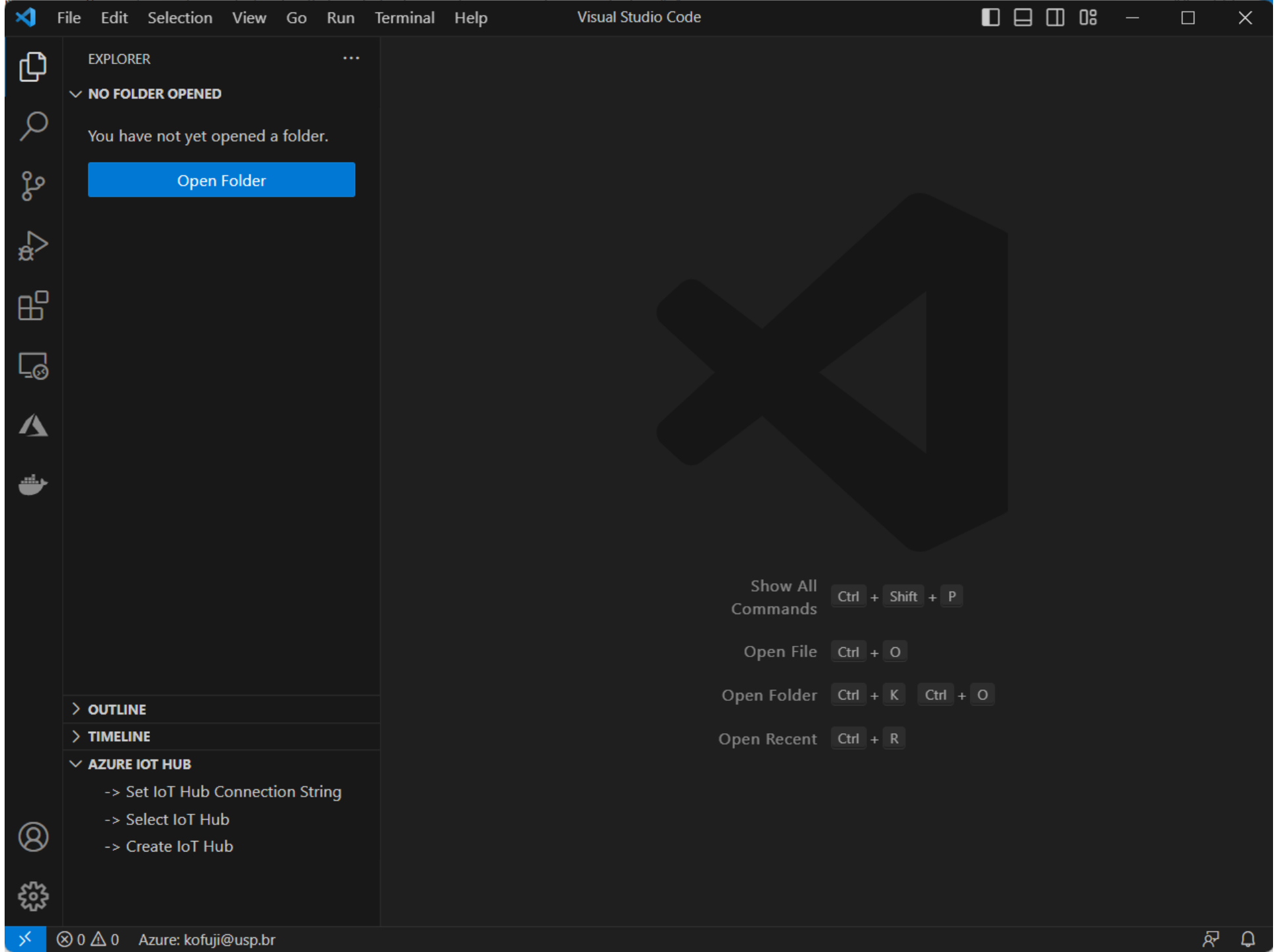
100%
Get started

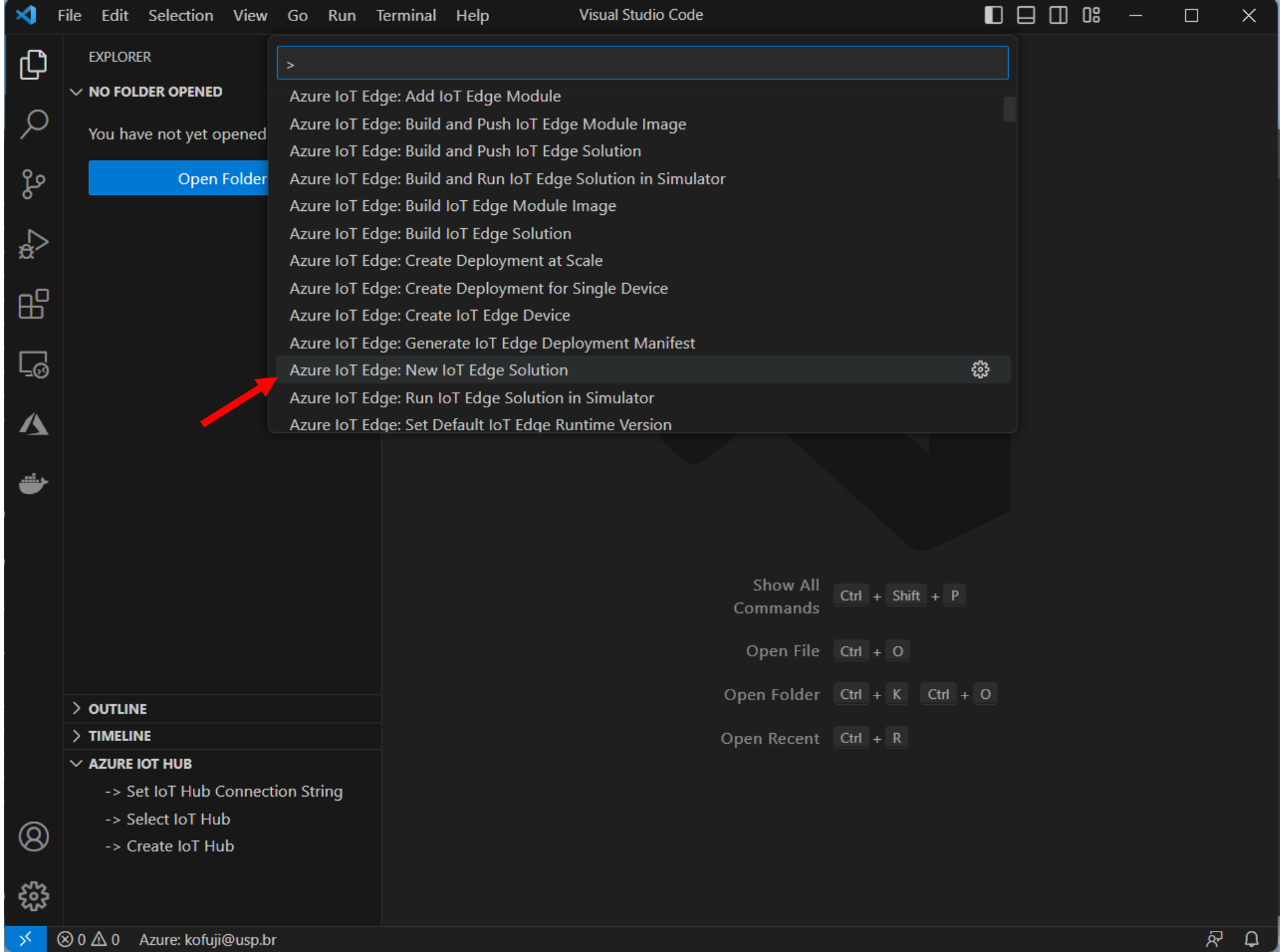

Tutorial - Deploy Custom Vision
Custom Vision: EdgeTreeClassifie
https://www.customvision.ai/projects/b7290108-0820-40b0-a76a-c8c5b50f717f#/performance
EdgeTreeClassifier
Training Images
Performance
Predictions
Train
Quick Test
Iterations
Probability Threshold: 50%
Iteration 1
Trained : 1 minutes ago with General (compact) domain
Publish
Prediction URL
Delete
Export
Iteration 1
Finished training on 6/1/2023, 2:58:28 AM using General (compact) domain
Iteration id: 81061fa3-e45d-4289-883d-1f4055199a6d
Classification type: Multiclass (Single tag per image)
Precision
Recall
100.0%
100.0%
Performance Per Tag
Tag
Precision
Recall
A.P.
japanese cherry
100.0%
100.0%
100.0%
hemlock
100.0%
100.0%
100.0%
Choose your platform
iOS
CoreML
iOS 11
TF
TensorFlow
Android
ONNX
ONNX
Windows ML, ML .NET
DF
Dockerfile
Azure IoT Edge, Azure Functions, AzureML
VAIDK
Vision AI Dev Kit
OV
OpenVino
100%
Get started

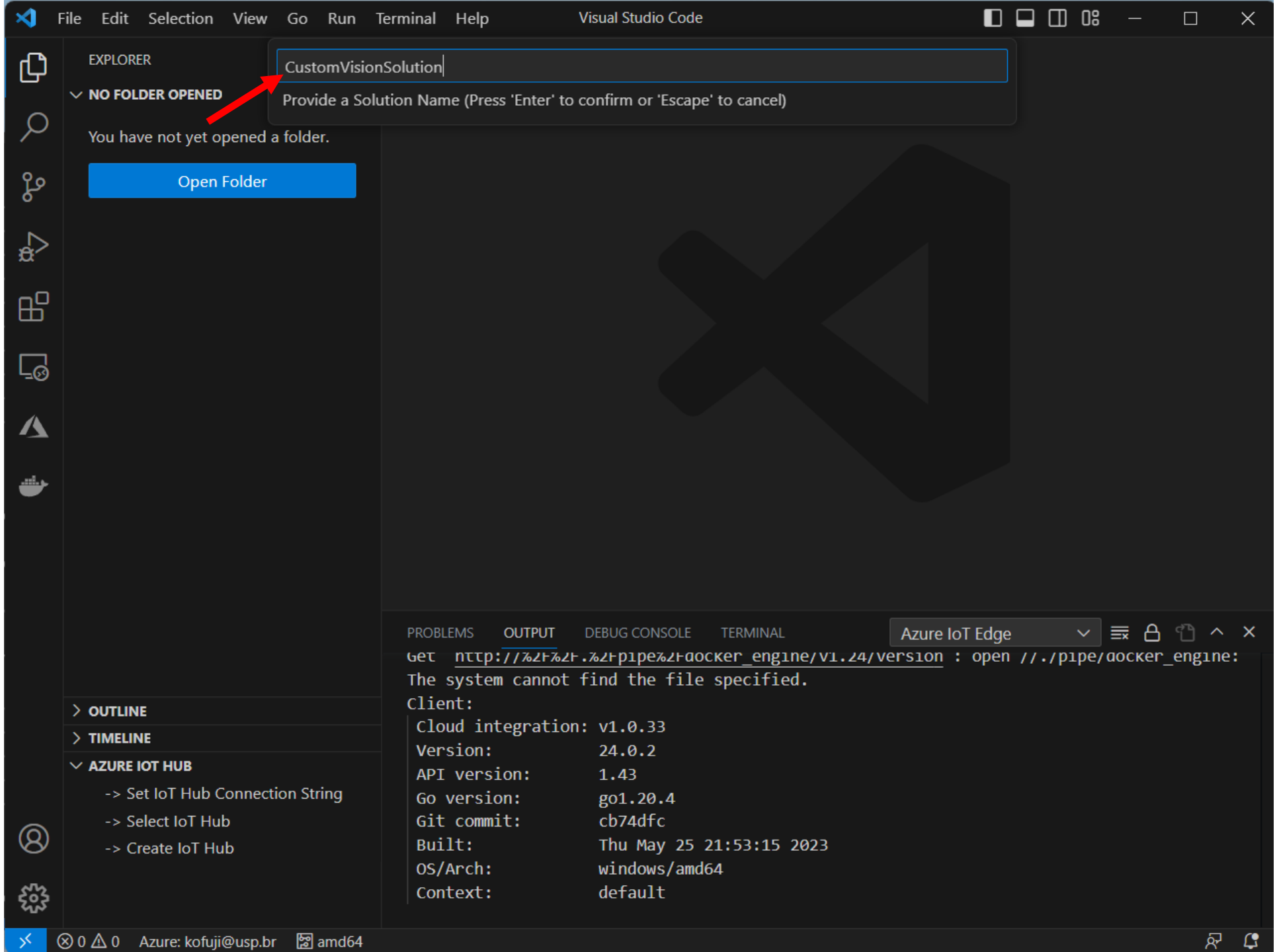

Tutorial - Deploy Custom Vision
Custom Vision: EdgeTreeClassifie
https://www.customvision.ai/projects/b7290108-0820-40b0-a76a-c8c5b50f717f#/performance
EdgeTreeClassifier
Training Images
Performance
Predictions
Train
Quick Test
Iterations
Probability Threshold: 50%
Publish
Prediction URL
Delete
Export
Iteration 1
Iteration 1
Trained : 2 minutes ago with General (compact) domain
Finished training on 6/1/2023, 2:58:28 AM using General (compact) domain
Iteration id: 81061fa3-e45d-4289-883d-1f4055199a6d
Classification type: Multiclass (Single tag per image)
Precision
Recall
AP
100.0%
100.0%
Performance Per Tag
Tag
Precision
Recall
A.P.
japanese cherry
100.0%
100.0%
100.0%
10
hemlock
100.0%
100.0%
100.0%
10
Choose your platform
DF
Dockerfile
Choose a version
Choose a version
Linux
Windows
ARM (Raspberry Pi 3)
How to use?
Docker documentation
100%
Get started

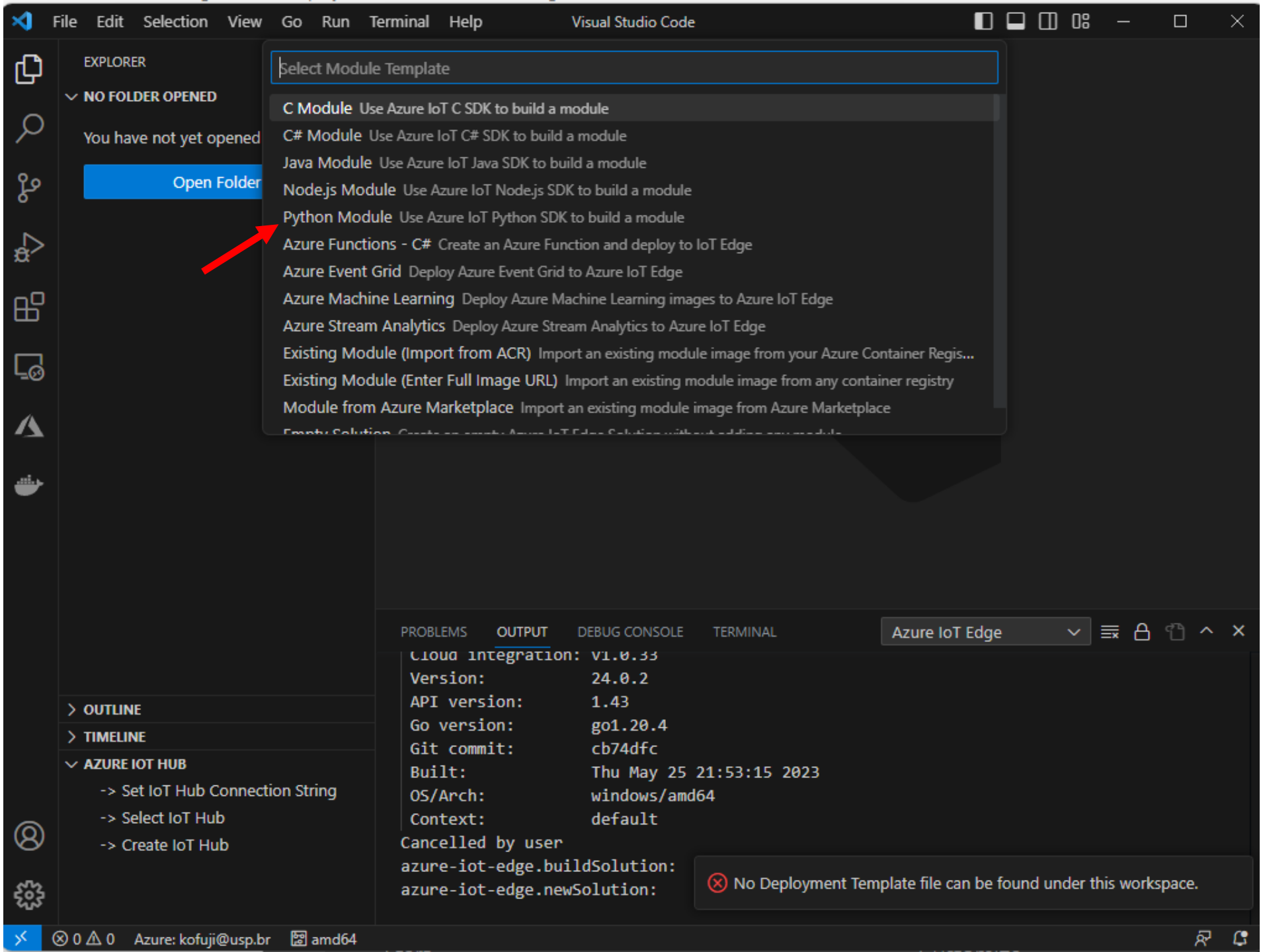
Criar uma EDGE SOLUTION no VSCode

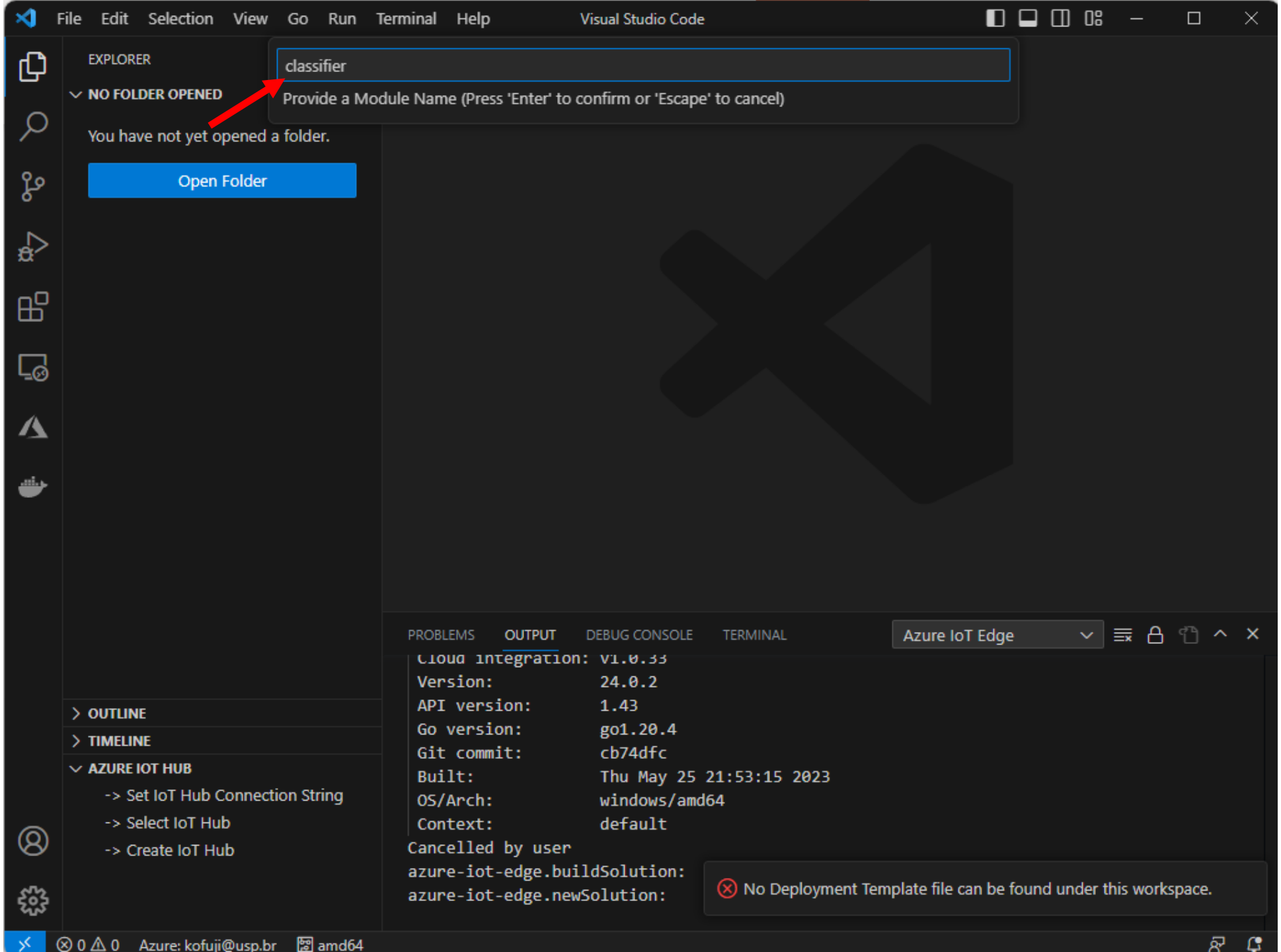
Campo	Valor
Selecionar pasta	Escolha o local em seu computador de desenvolvimento para o Visual Studio Code criar os arquivos da solução.
Fornecer um nome para a solução	Insira um nome descritivo para a solução, como **CustomVisionSolution**, ou aceite o padrão.
Selecionar modelo do módulo	Escolha **Módulo de Python**.
Fornecer um nome de módulo	Nomeie seu módulo **classifier**. É importante que esse nome de módulo esteja em letras minúsculas. O IoT Edge diferencia maiúsculas de minúsculas ao fazer referência a módulos, e essa solução usa uma biblioteca que formata todas as solicitações em letras minúsculas.
Fornecer o repositório de imagem do Docker para o módulo	Um repositório de imagem inclui o nome do registro de contêiner e o nome da imagem de contêiner. Sua imagem de contêiner foi preenchida automaticamente na última etapa. Substitua **localhost:5000** pelo valor do **Servidor de logon** do seu Registro de Contêiner do Azure. Você pode recuperar o servidor de Logon da página Visão Geral do seu registro de contêiner no portal do Azure. A cadeia de caracteres final se parece com **<nome do Registro>.azurecr.io/classifier**.

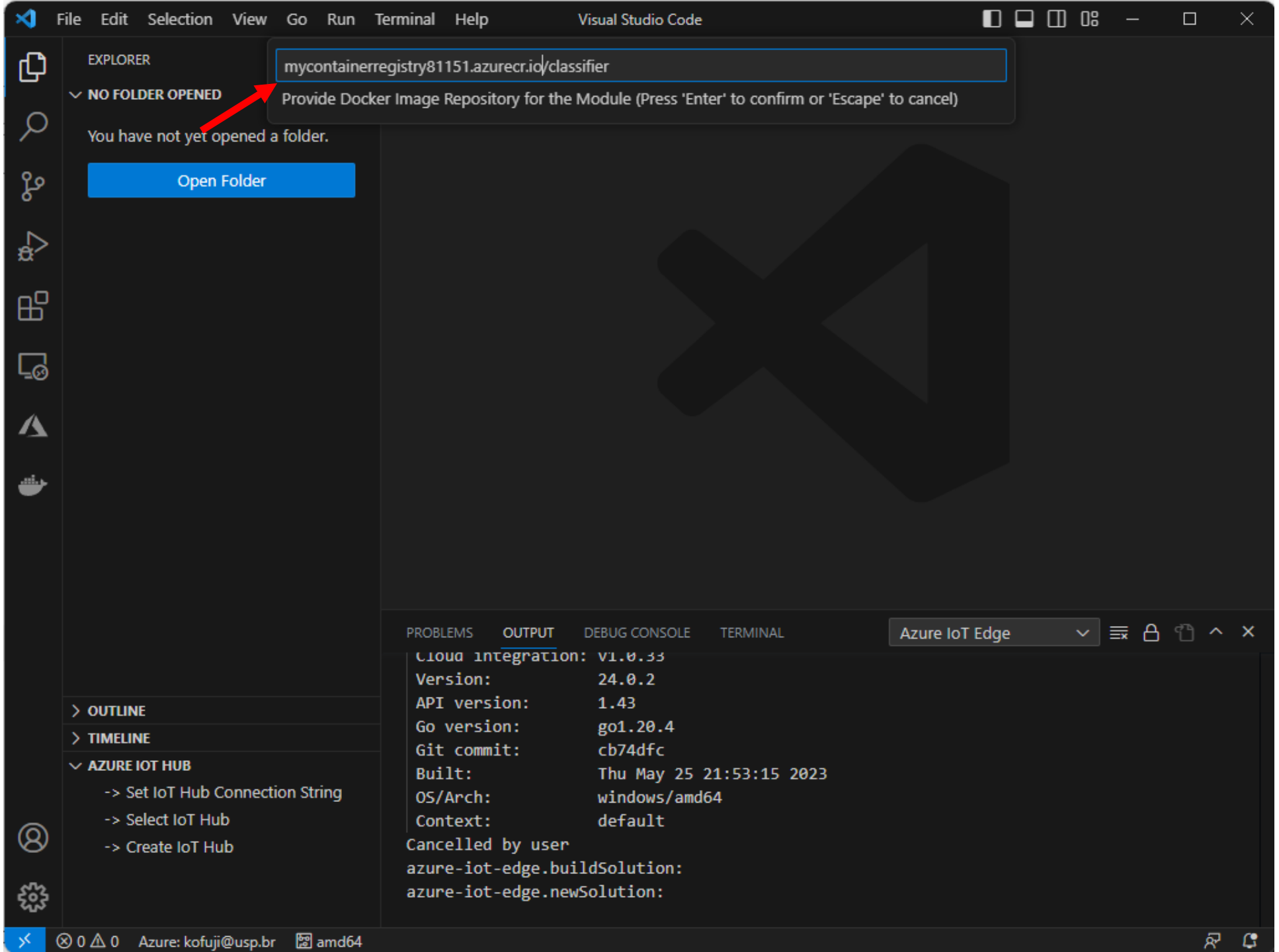

File Edit Selection View Go Run Terminal Help
Visual Studio Code
EXPLORER
NO FOLDER OPENED
You have not yet opened a folder.
Open Folder
OUTLINE
TIMELINE
AZURE IOT HUB
-> Set IoT Hub Connection String
-> Select IoT Hub
-> Create IoT Hub
Show All Commands Ctrl + Shift + P
Open File Ctrl + O
Open Folder Ctrl + K Ctrl + O
Open Recent Ctrl + R
0 0
Azure: kofuji@usp.br

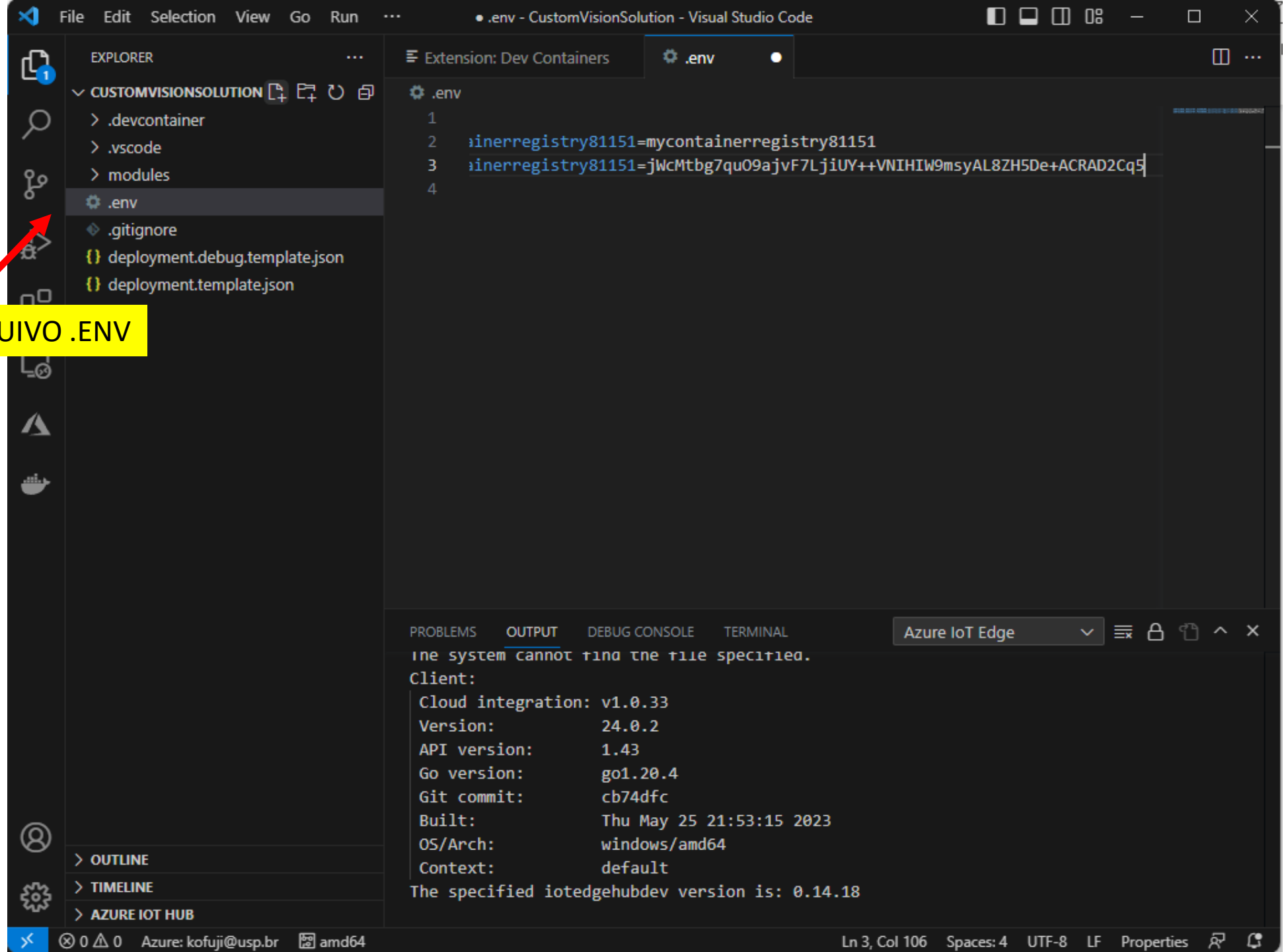

File Edit Selection View Go Run Terminal Help
Visual Studio Code
EXPLORER
NO FOLDER OPENED
You have not yet opened
Open Folder
>
Azure IoT Edge: Add IoT Edge Module
Azure IoT Edge: Build and Push IoT Edge Module Image
Azure IoT Edge: Build and Push IoT Edge Solution
Azure IoT Edge: Build and Run IoT Edge Solution in Simulator
Azure IoT Edge: Build IoT Edge Module Image
Azure IoT Edge: Build IoT Edge Solution
Azure IoT Edge: Create Deployment at Scale
Azure IoT Edge: Create Deployment for Single Device
Azure IoT Edge: Create IoT Edge Device
Azure IoT Edge: Generate IoT Edge Deployment Manifest
Azure IoT Edge: New IoT Edge Solution
Azure IoT Edge: Run IoT Edge Solution in Simulator
Azure IoT Edge: Set Default IoT Edge Runtime Version
Show All Commands Ctrl + Shift + P
Open File Ctrl + O
Open Folder Ctrl + K Ctrl + O
Open Recent Ctrl + R
OUTLINE
TIMELINE
AZURE IOT HUB
-> Set IoT Hub Connection String
-> Select IoT Hub
-> Create IoT Hub
Azure: kofuji@usp.br


File Edit Selection View Go Run Terminal Help
Visual Studio Code
EXPLORER
NO FOLDER OPENED
You have not yet opened a folder.
Open Folder
CustomVisionSolution
Provide a Solution Name (Press 'Enter' to confirm or 'Escape' to cancel)
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Azure IoT Edge
Get http://%2F%2F.%2Fpipe%2Fdocker_engine/v1.24/version : open //./pipe/docker_engine:
The system cannot find the file specified.
Client:
Cloud integration: v1.0.33
Version: 24.0.2
API version: 1.43
Go version: go1.20.4
Git commit: cb74dfc
Built: Thu May 25 21:53:15 2023
OS/Arch: windows/amd64
Context: default
OUTLINE
TIMELINE
AZURE IOT HUB
-> Set IoT Hub Connection String
-> Select IoT Hub
-> Create IoT Hub
0 0
Azure: kofuji@usp.br
amd64

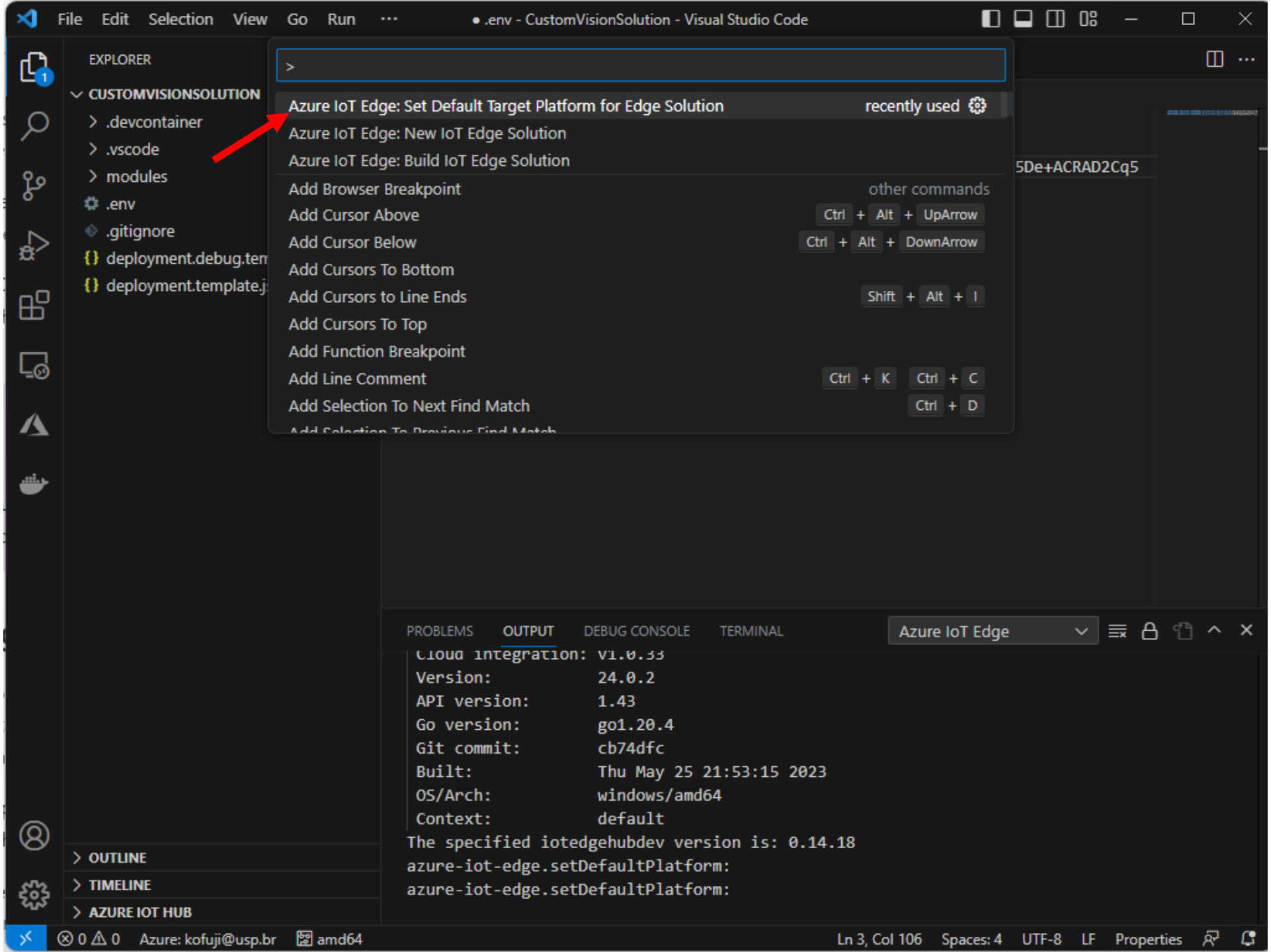

File Edit Selection View Go Run Terminal Help
Visual Studio Code
EXPLORER
NO FOLDER OPENED
You have not yet opened
Open Folder
Select Module Template
C Module Use Azure IoT C SDK to build a module
C# Module Use Azure IoT C# SDK to build a module
Java Module Use Azure IoT Java SDK to build a module
Node.js Module Use Azure IoT Node.js SDK to build a module
Python Module Use Azure IoT Python SDK to build a module
Azure Functions - C# Create an Azure Function and deploy to IoT Edge
Azure Event Grid Deploy Azure Event Grid to Azure IoT Edge
Azure Machine Learning Deploy Azure Machine Learning images to Azure IoT Edge
Azure Stream Analytics Deploy Azure Stream Analytics to Azure IoT Edge
Existing Module (Import from ACR) Import an existing module image from your Azure Container Regis...
Existing Module (Enter Full Image URL) Import an existing module image from any container registry
Module from Azure Marketplace Import an existing module image from Azure Marketplace
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Azure IoT Edge
Version: 24.0.2
API version: 1.43
Go version: go1.20.4
Git commit: cb74dfc
Built: Thu May 25 21:53:15 2023
OS/Arch: windows/amd64
Context: default
Cancelled by user
azure-iot-edge.buildSolution:
azure-iot-edge.newSolution:
No Deployment Template file can be found under this workspace.
OUTLINE
TIMELINE
AZURE IOT HUB
-> Set IoT Hub Connection String
-> Select IoT Hub
-> Create IoT Hub
Azure: kofuji@usp.br
amd64

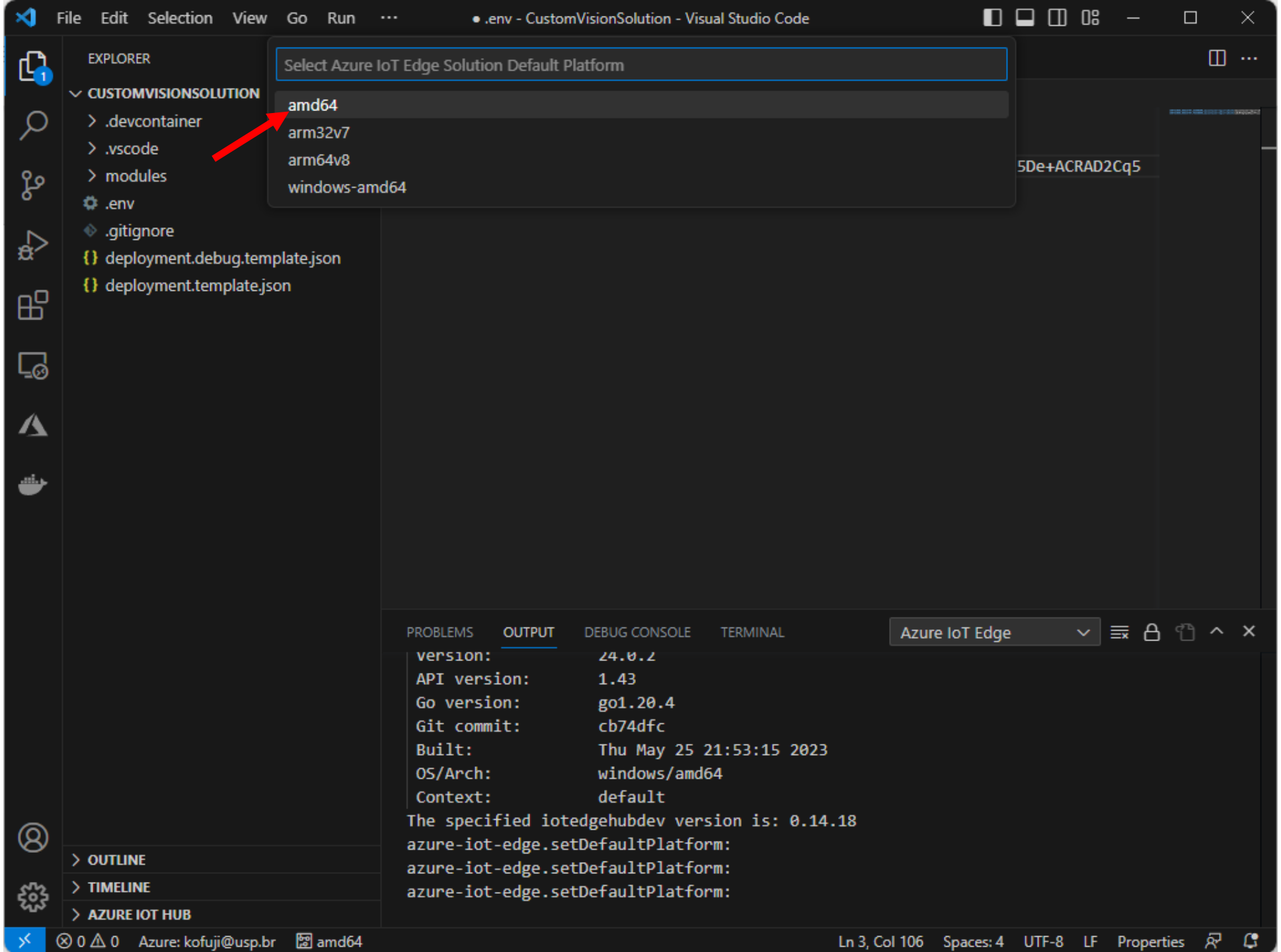

File Edit Selection View Go Run Terminal Help
Visual Studio Code
EXPLORER
NO FOLDER OPENED
You have not yet opened a folder.
Open Folder
classifier
Provide a Module Name (Press 'Enter' to confirm or 'Escape' to cancel)
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Azure IoT Edge
Cloud integration: v1.0.33
Version: 24.0.2
API version: 1.43
Go version: go1.20.4
Git commit: cb74dfc
Built: Thu May 25 21:53:15 2023
OS/Arch: windows/amd64
Context: default
Cancelled by user
azure-iot-edge.buildSolution:
azure-iot-edge.newSolution:
No Deployment Template file can be found under this workspace.
OUTLINE
TIMELINE
AZURE IOT HUB
-> Set IoT Hub Connection String
-> Select IoT Hub
-> Create IoT Hub
Azure: kofuji@usp.br
amd64

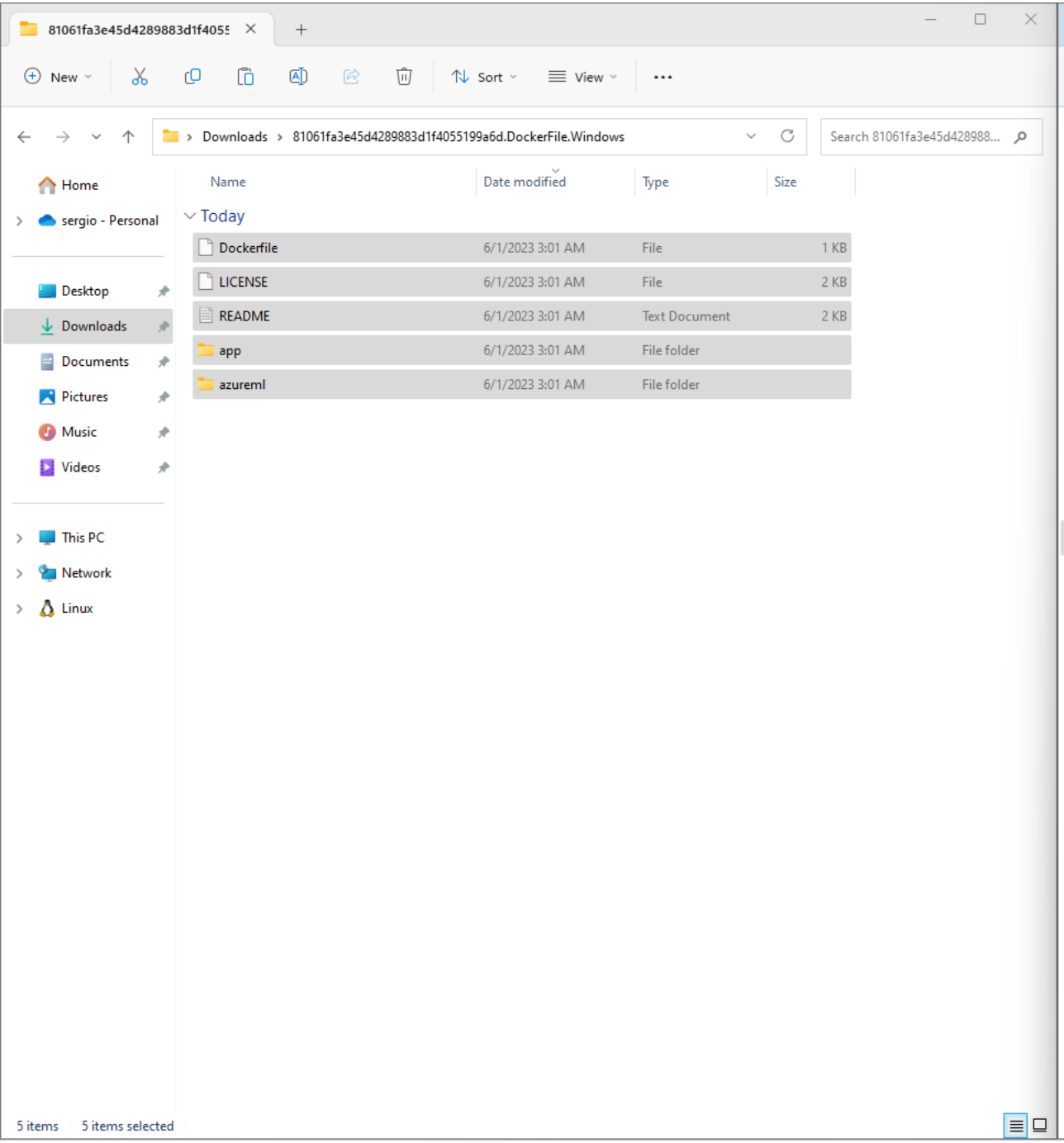

File Edit Selection View Go Run Terminal Help
Visual Studio Code
EXPLORER
NO FOLDER OPENED
You have not yet opened a folder.
Open Folder
mycontainerregistry81151.azurecr.io/classifier
Provide Docker Image Repository for the Module (Press 'Enter' to confirm or 'Escape' to cancel)
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Azure IoT Edge
Cloud integration: v1.0.33
Version: 24.0.2
API version: 1.43
Go version: go1.20.4
Git commit: cb74dfc
Built: Thu May 25 21:53:15 2023
OS/Arch: windows/amd64
Context: default
Cancelled by user
azure-iot-edge.buildSolution:
azure-iot-edge.newSolution:
OUTLINE
TIMELINE
AZURE IOT HUB
-> Set IoT Hub Connection String
-> Select IoT Hub
-> Create IoT Hub
Azure: kofuji@usp.br
amd64

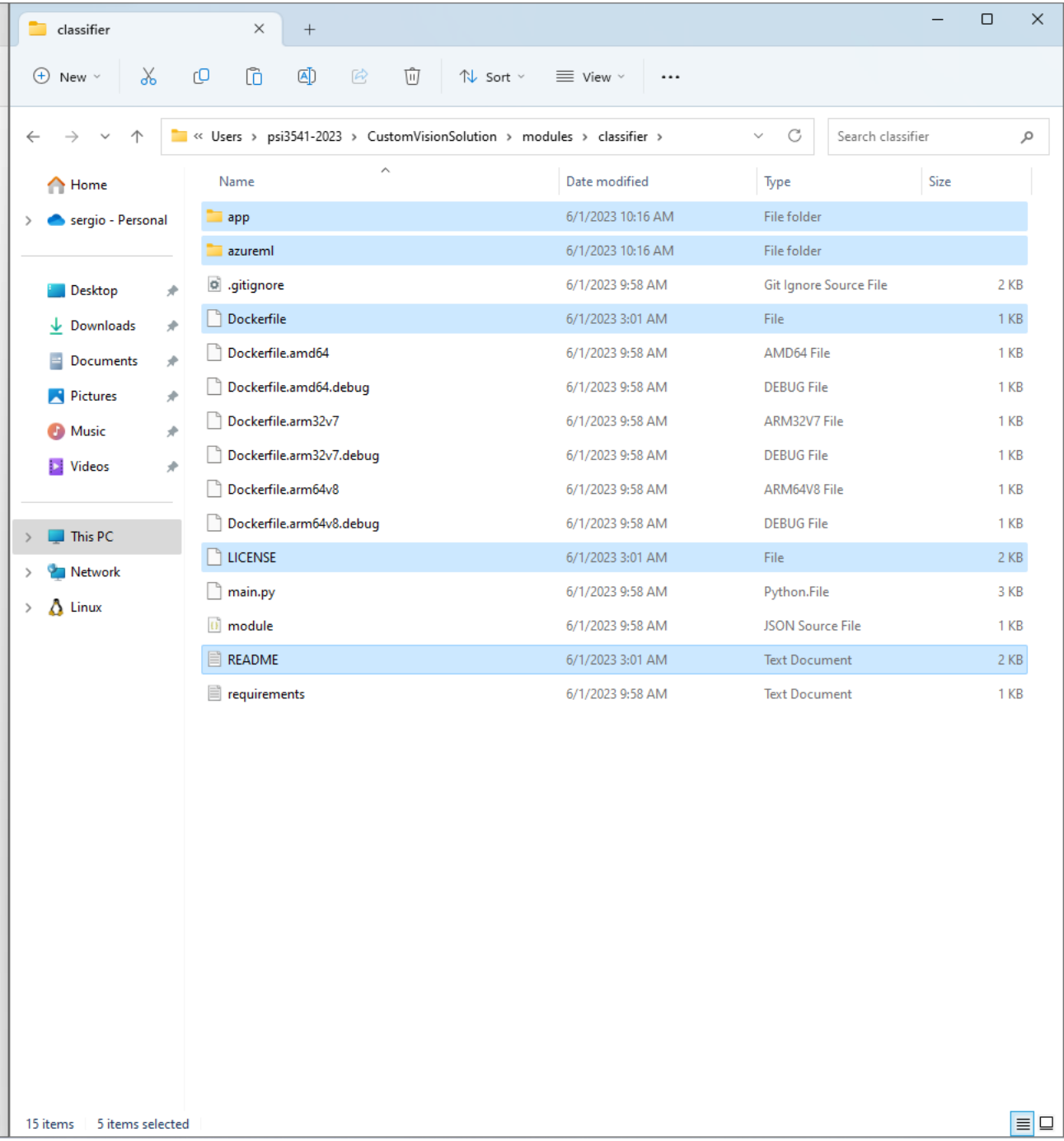


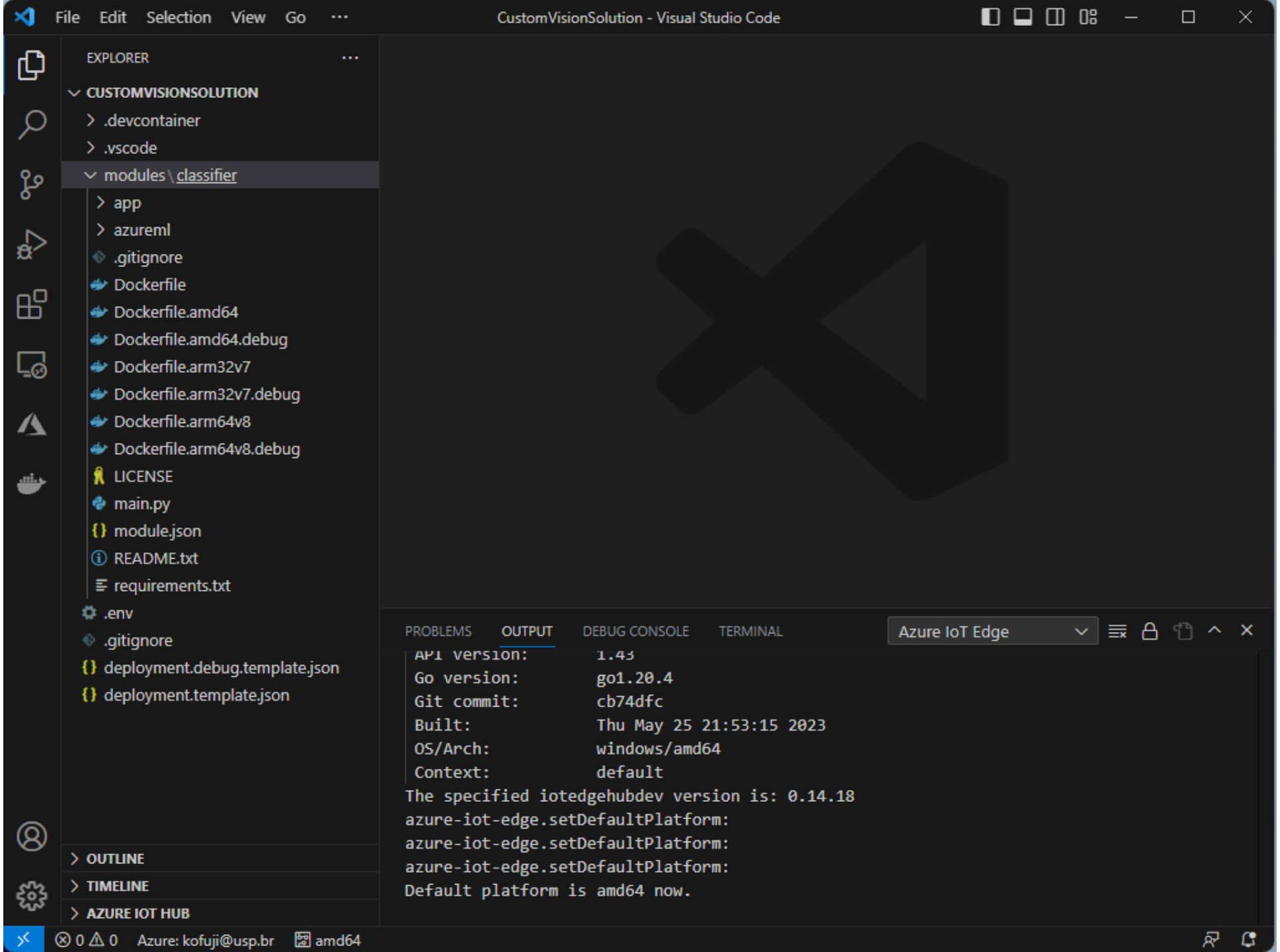
EDITAR O ARQUIVO .ENV

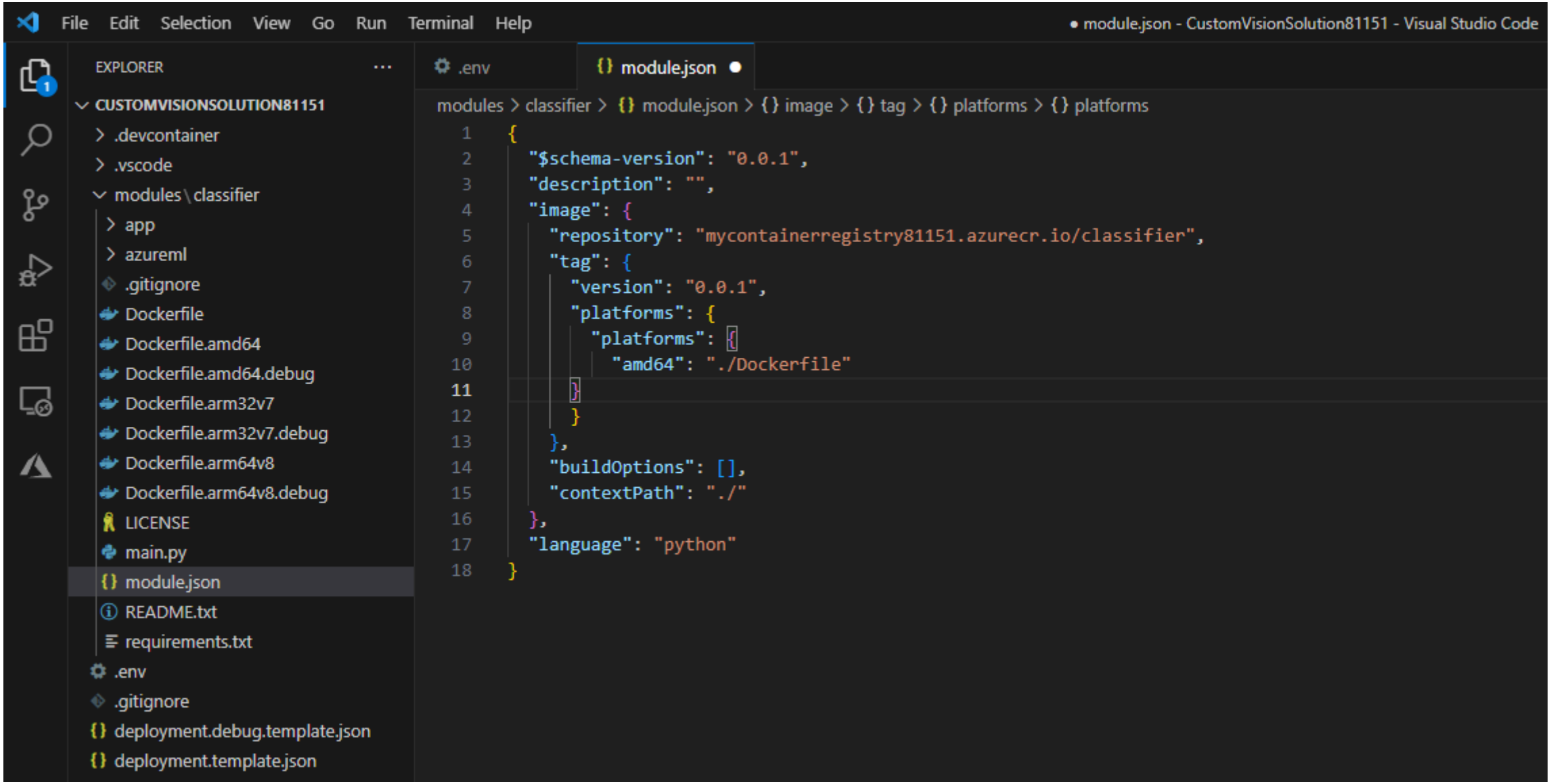

File Edit Selection View Go Run ...
• .env - CustomVisionSolution - Visual Studio Code
EXPLORER
CUSTOMVISIONSOLUTION
.devcontainer
.vscode
modules
.env
.gitignore
deployment.debug.tem
deployment.template.j
>
Azure IoT Edge: Set Default Target Platform for Edge Solution recently used
Azure IoT Edge: New IoT Edge Solution
Azure IoT Edge: Build IoT Edge Solution
Add Browser Breakpoint other commands
Add Cursor Above Ctrl + Alt + UpArrow
Add Cursor Below Ctrl + Alt + DownArrow
Add Cursors To Bottom
Add Cursors to Line Ends Shift + Alt + I
Add Cursors To Top
Add Function Breakpoint
Add Line Comment Ctrl + K Ctrl + C
Add Selection To Next Find Match Ctrl + D
5De+ACRAD2Cq5
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Azure IoT Edge
Cloud integration: v1.0.33
Version: 24.0.2
API version: 1.43
Go version: go1.20.4
Git commit: cb74dfc
Built: Thu May 25 21:53:15 2023
OS/Arch: windows/amd64
Context: default
The specified iotedgehubdev version is: 0.14.18
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
OUTLINE
TIMELINE
AZURE IOT HUB
Azure: kofuji@usp.br
amd64
Ln 3, Col 106 Spaces: 4 UTF-8 LF Properties


File Edit Selection View Go Run ···
• .env - CustomVisionSolution - Visual Studio Code
EXPLORER
CUSTOMVISIONSOLUTION
.devcontainer
.vscode
modules
.env
.gitignore
deployment.debug.template.json
deployment.template.json
Select Azure IoT Edge Solution Default Platform
amd64
arm32v7
arm64v8
windows-amd64
5De+ACRAD2Cq5
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Azure IoT Edge
version: 24.0.2
API version: 1.43
Go version: go1.20.4
Git commit: cb74dfc
Built: Thu May 25 21:53:15 2023
OS/Arch: windows/amd64
Context: default
The specified iotedgehubdev version is: 0.14.18
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
OUTLINE
TIMELINE
AZURE IOT HUB
0 0
Azure: kofuji@usp.br
amd64
Ln 3, Col 106
Spaces: 4
UTF-8
LF
Properties

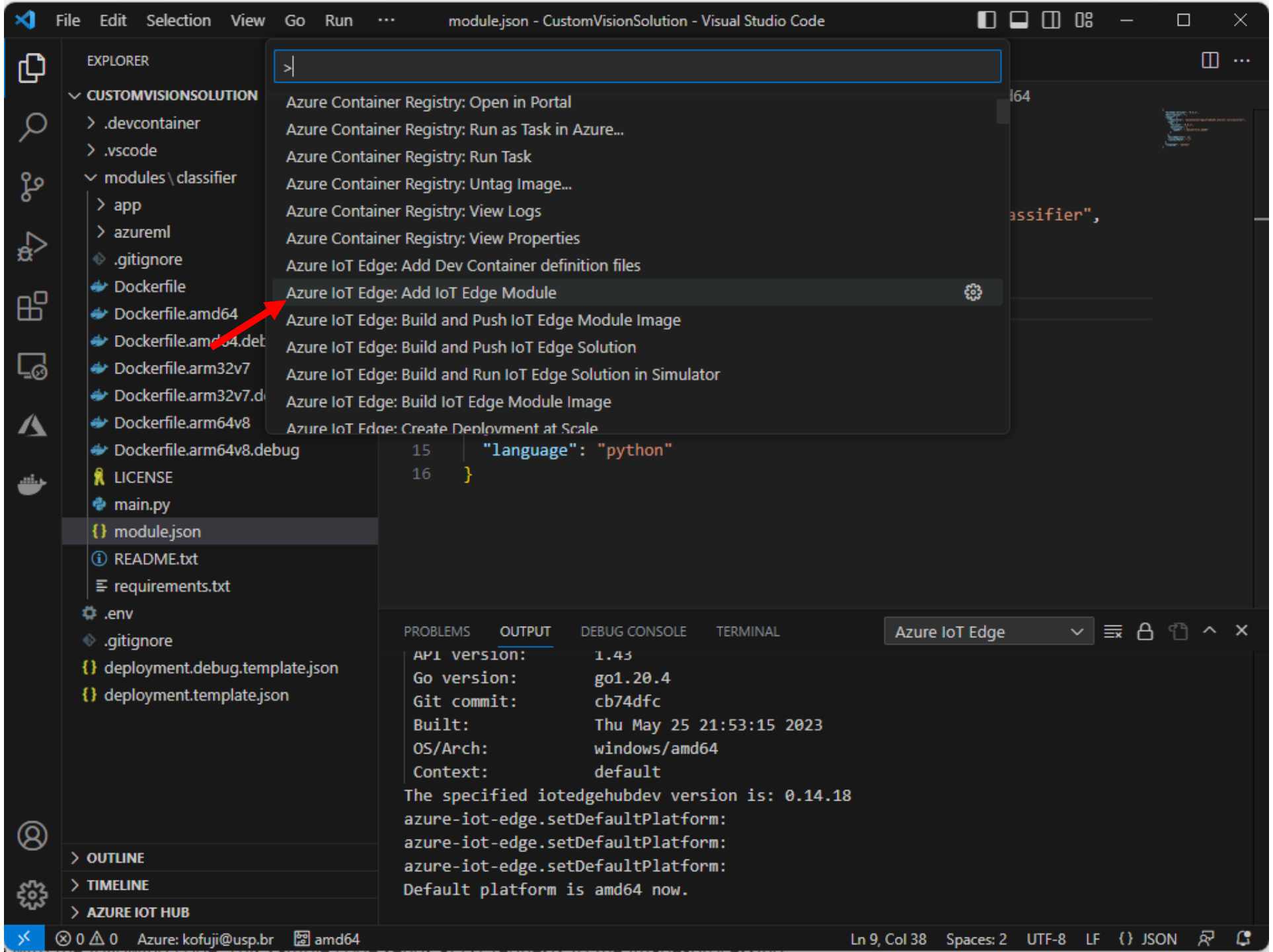

81061fa3e45d4289883d1f4055
New
Sort
View
Downloads › 81061fa3e45d4289883d1f4055199a6d.DockerFile.Windows
Search 81061fa3e45d428988...
Home
sergio - Personal
Desktop
Downloads
Documents
Pictures
Music
Videos
This PC
Network
Linux
Name
Date modified
Type
Size
Today
Dockerfile 6/1/2023 3:01 AM File 1 KB
LICENSE 6/1/2023 3:01 AM File 2 KB
README 6/1/2023 3:01 AM Text Document 2 KB
app 6/1/2023 3:01 AM File folder
azureml 6/1/2023 3:01 AM File folder
5 items
5 items selected

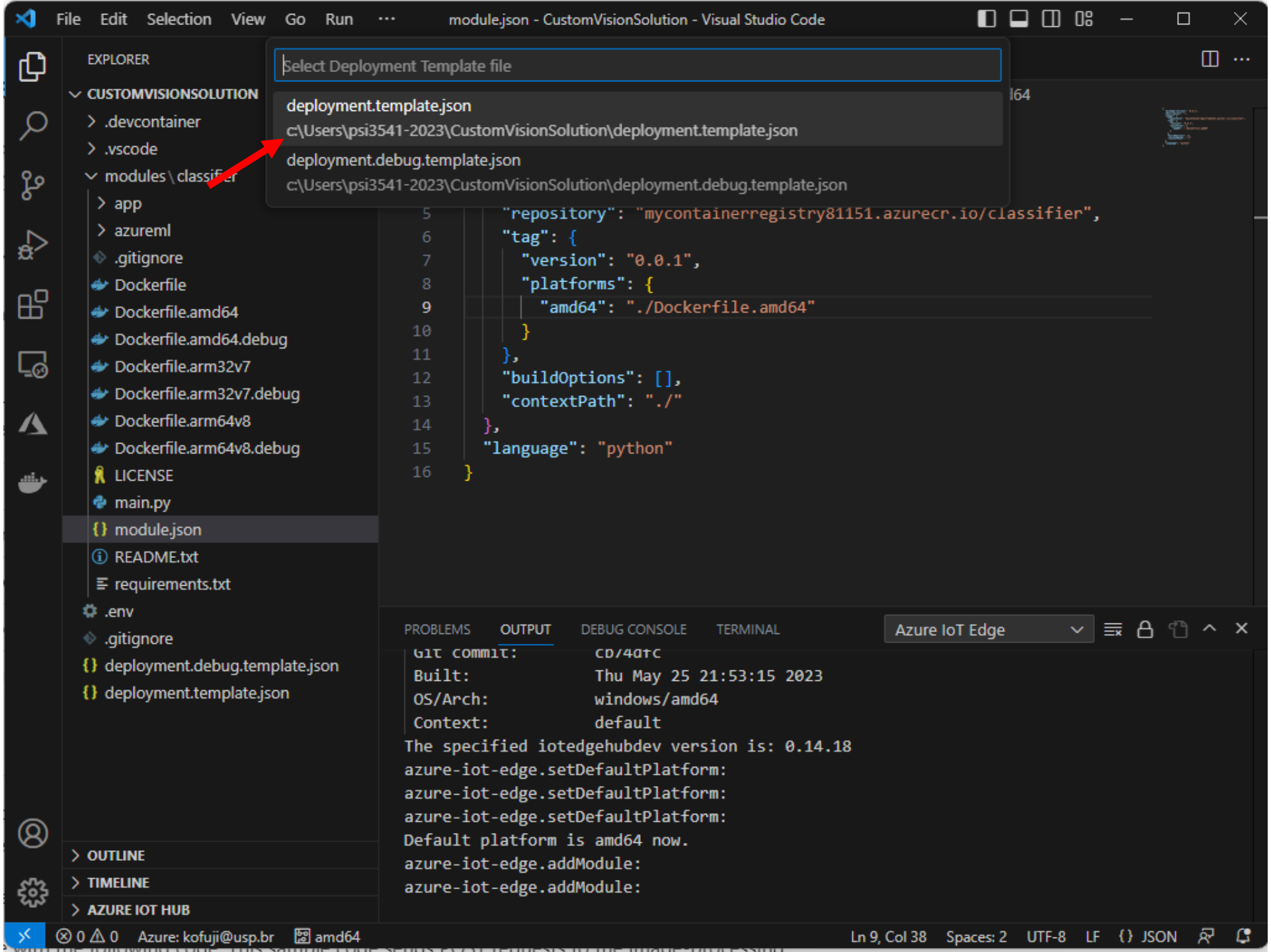

classifier
New
Sort
View
« Users › psi3541-2023 › CustomVisionSolution › modules › classifier ›
Search classifier
Home
sergio - Personal
Desktop
Downloads
Documents
Pictures
Music
Videos
This PC
Network
Linux
Name
Date modified
Type
Size
app 6/1/2023 10:16 AM File folder
azureml 6/1/2023 10:16 AM File folder
.gitignore 6/1/2023 9:58 AM Git Ignore Source File 2 KB
Dockerfile 6/1/2023 3:01 AM File 1 KB
Dockerfile.amd64 6/1/2023 9:58 AM AMD64 File 1 KB
Dockerfile.amd64.debug 6/1/2023 9:58 AM DEBUG File 1 KB
Dockerfile.arm32v7 6/1/2023 9:58 AM ARM32V7 File 1 KB
Dockerfile.arm32v7.debug 6/1/2023 9:58 AM DEBUG File 1 KB
Dockerfile.arm64v8 6/1/2023 9:58 AM ARM64V8 File 1 KB
Dockerfile.arm64v8.debug 6/1/2023 9:58 AM DEBUG File 1 KB
LICENSE 6/1/2023 3:01 AM File 2 KB
main.py 6/1/2023 9:58 AM Python.File 3 KB
module 6/1/2023 9:58 AM JSON Source File 1 KB
README 6/1/2023 3:01 AM Text Document 2 KB
requirements 6/1/2023 9:58 AM Text Document 1 KB
15 items
5 items selected

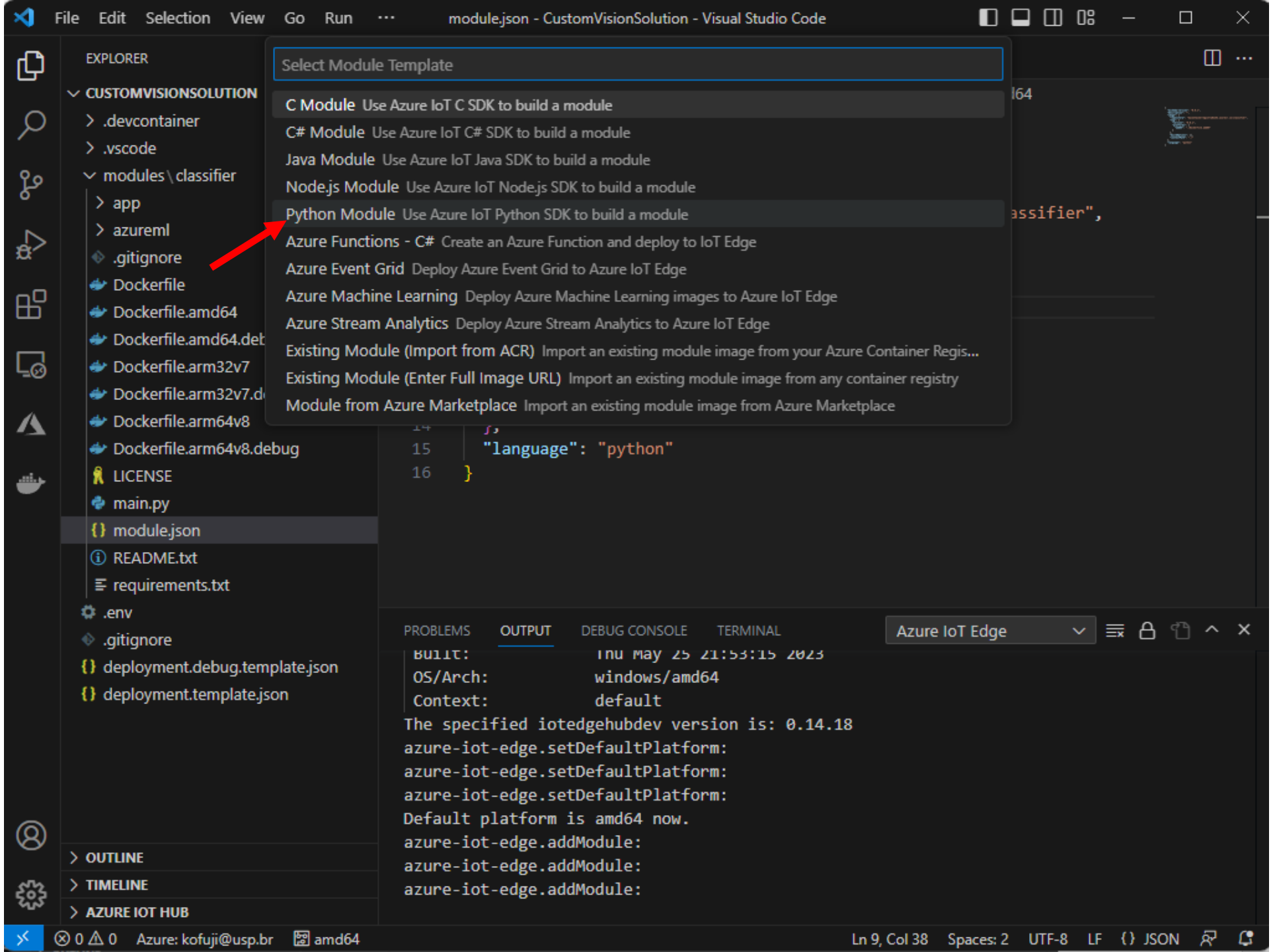

File Edit Selection View Go ···
CustomVisionSolution - Visual Studio Code
EXPLORER
CUSTOMVISIONSOLUTION
.devcontainer
.vscode
modules \ classifier
app
azureml
.gitignore
Dockerfile
Dockerfile.amd64
Dockerfile.amd64.debug
Dockerfile.arm32v7
Dockerfile.arm32v7.debug
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
LICENSE
main.py
module.json
README.txt
requirements.txt
.env
.gitignore
deployment.debug.template.json
deployment.template.json
OUTLINE
TIMELINE
AZURE IOT HUB
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Azure IoT Edge
API version: 1.43
Go version: go1.20.4
Git commit: cb74dfc
Built: Thu May 25 21:53:15 2023
OS/Arch: windows/amd64
Context: default
The specified iotedgehubdev version is: 0.14.18
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
Default platform is amd64 now.
0 0
Azure: kofuji@usp.br
amd64

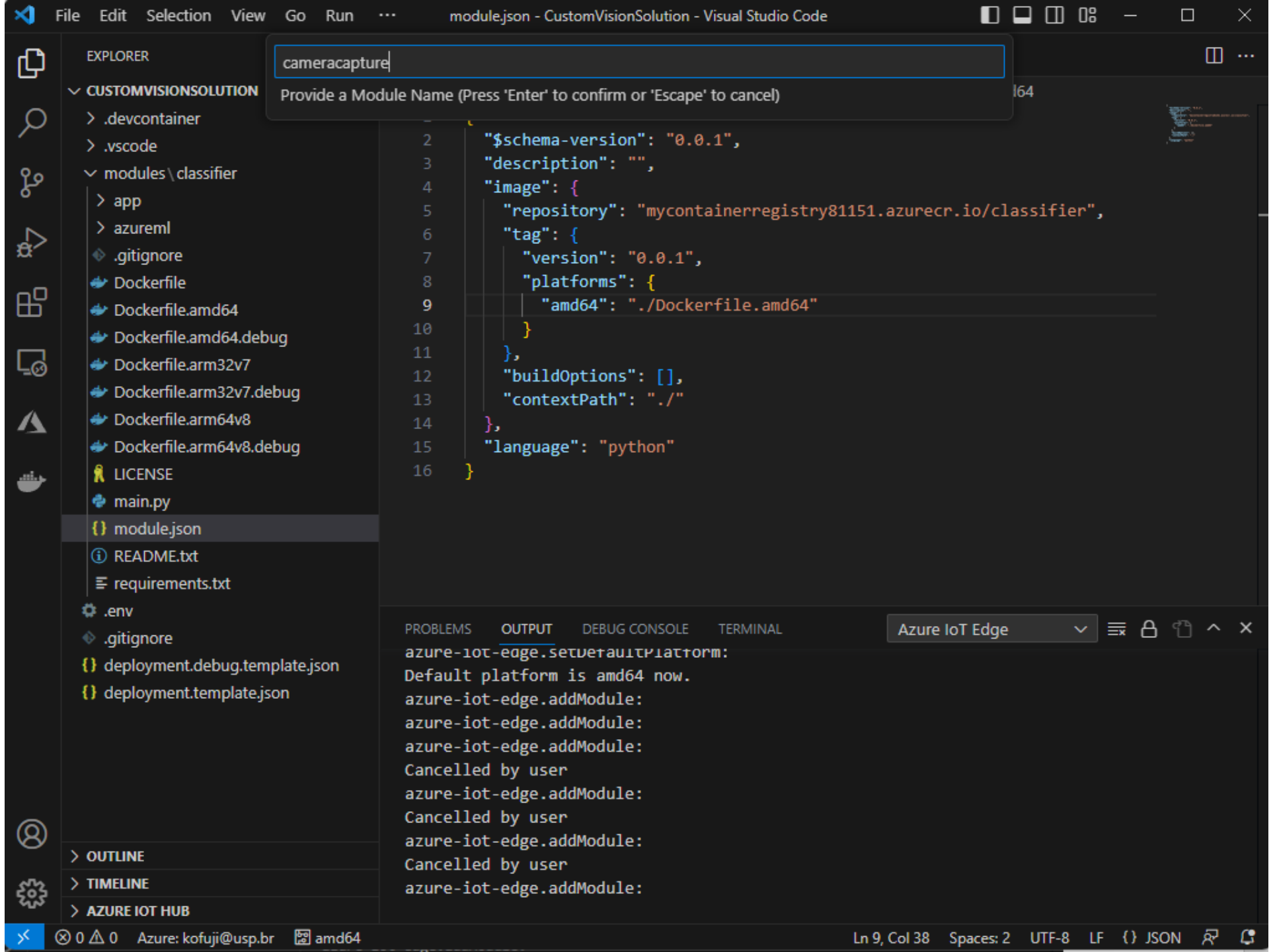

File Edit Selection View Go Run Terminal Help
• module.json - CustomVisionSolution81151 - Visual Studio Code
EXPLORER
CUSTOMVISIONSOLUTION81151
.devcontainer
.vscode
modules \ classifier
app
azureml
.gitignore
Dockerfile
Dockerfile.amd64
Dockerfile.amd64.debug
Dockerfile.arm32v7
Dockerfile.arm32v7.debug
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
LICENSE
main.py
module.json
README.txt
requirements.txt
.env
.gitignore
deployment.debug.template.json
deployment.template.json
.env
module.json
modules > classifier > module.json > image > tag > platforms > platforms
{
"$schema-version": "0.0.1",
"description": "",
"image": {
"repository": "mycontainerregistry81151.azurecr.io/classifier",
"tag": {
"version": "0.0.1",
"platforms": {
"platforms": {
"amd64": "./Dockerfile"
}
}
},
"buildOptions": [],
"contextPath": "./"
},
"language": "python"
}

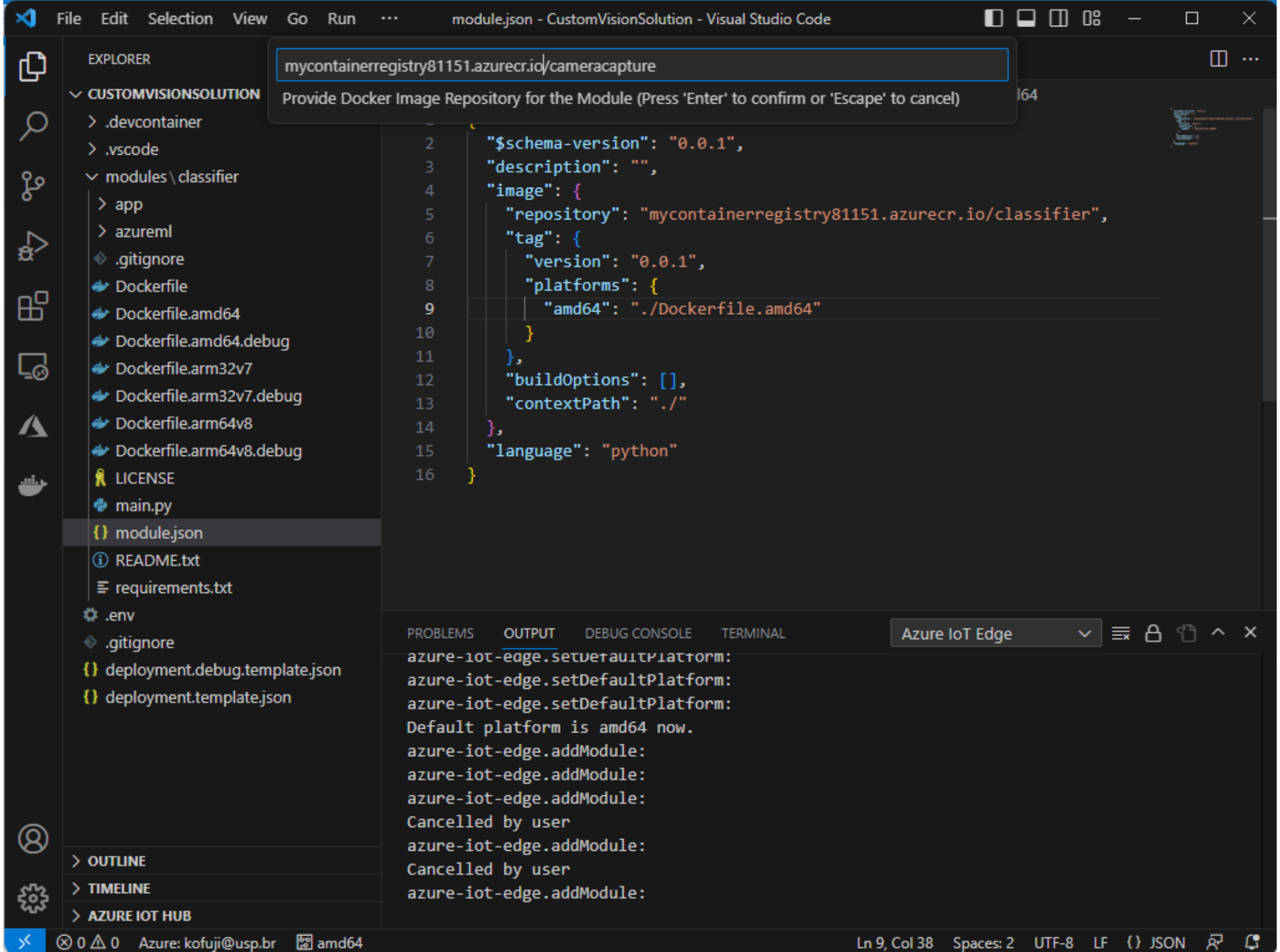
CRIAR MÓDULO CAMERA CAPTURE

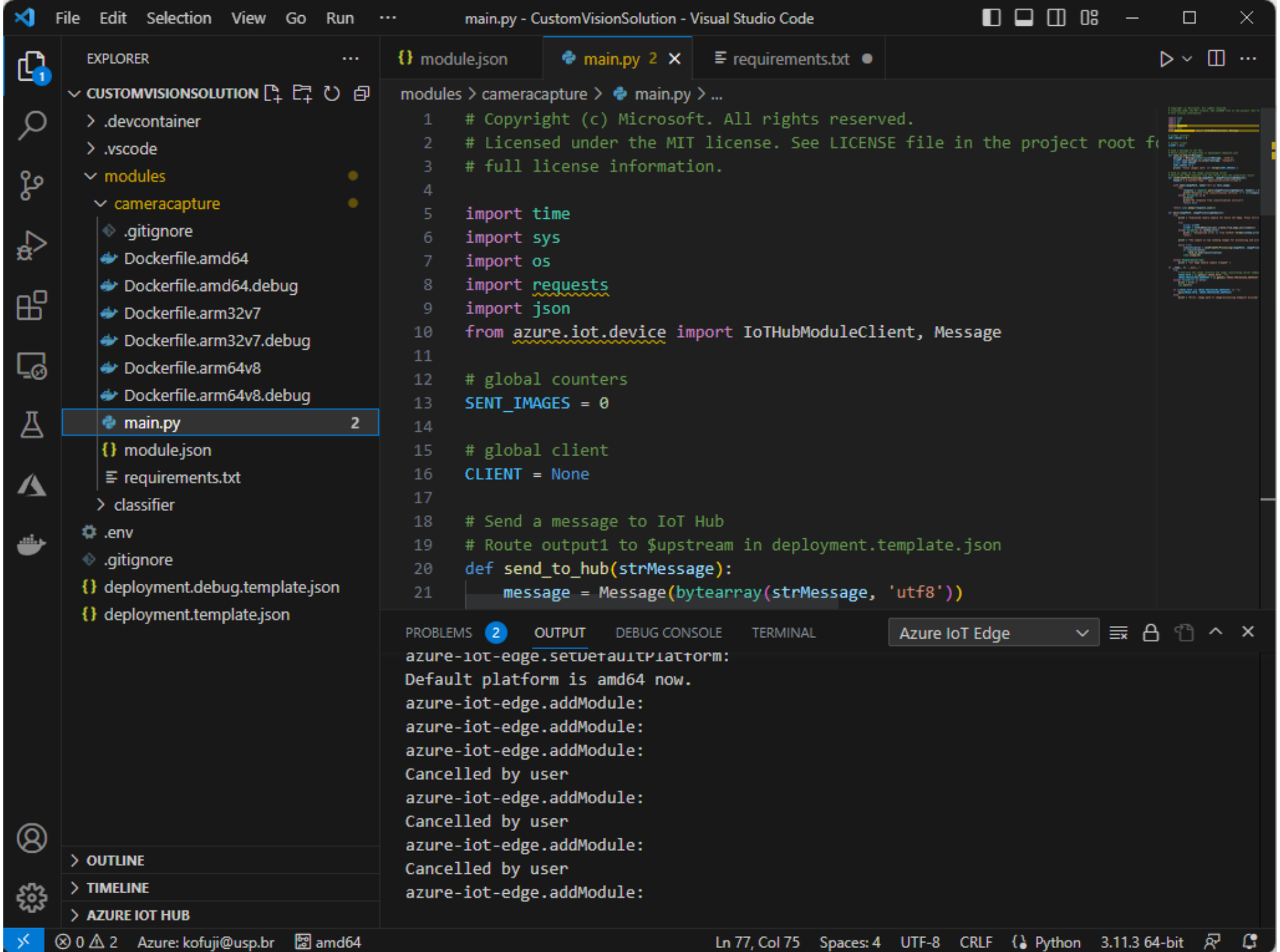

File Edit Selection View Go Run ···
module.json - CustomVisionSolution - Visual Studio Code
EXPLORER
CUSTOMVISIONSOLUTION
.devcontainer
.vscode
modules \ classifier
app
azureml
.gitignore
Dockerfile
Dockerfile.amd64
Dockerfile.arm32v7
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
LICENSE
main.py
module.json
README.txt
requirements.txt
.env
.gitignore
deployment.debug.template.json
deployment.template.json
>
Azure Container Registry: Open in Portal
Azure Container Registry: Run as Task in Azure...
Azure Container Registry: Run Task
Azure Container Registry: Untag Image...
Azure Container Registry: View Logs
Azure Container Registry: View Properties
Azure IoT Edge: Add Dev Container definition files
Azure IoT Edge: Add IoT Edge Module
Azure IoT Edge: Build and Push IoT Edge Module Image
Azure IoT Edge: Build and Push IoT Edge Solution
Azure IoT Edge: Build and Run IoT Edge Solution in Simulator
Azure IoT Edge: Build IoT Edge Module Image
Azure IoT Edge: Create Deployment at Scale
"language": "python"
}
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Azure IoT Edge
API version: 1.43
Go version: go1.20.4
Git commit: cb74dfc
Built: Thu May 25 21:53:15 2023
OS/Arch: windows/amd64
Context: default
The specified iotedgehubdev version is: 0.14.18
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
Default platform is amd64 now.
OUTLINE
TIMELINE
AZURE IOT HUB
Azure: kofuji@usp.br
amd64
Ln 9, Col 38 Spaces: 2 UTF-8 LF JSON

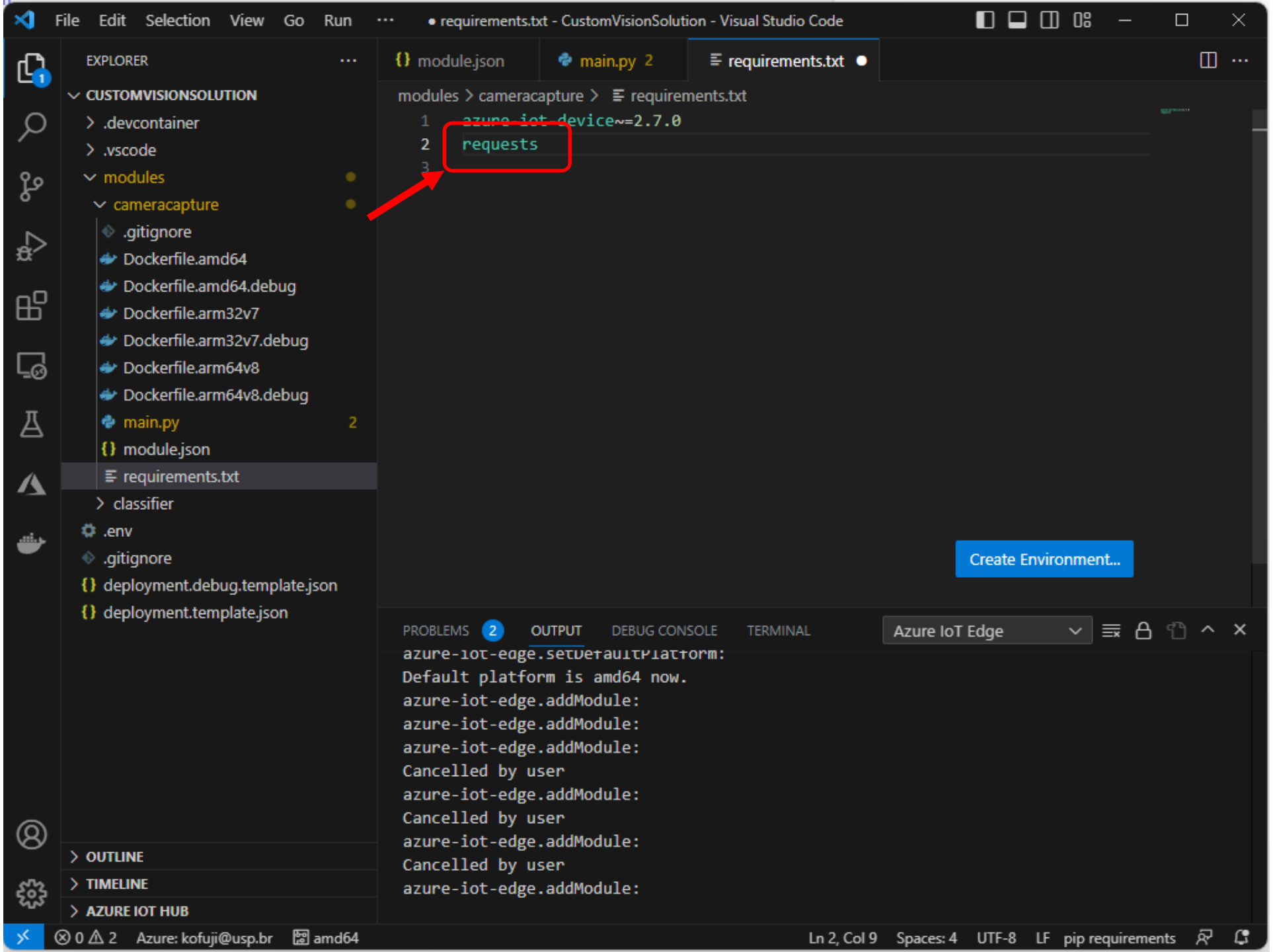

File Edit Selection View Go Run ···
module.json - CustomVisionSolution - Visual Studio Code
EXPLORER
CUSTOMVISIONSOLUTION
.devcontainer
.vscode
modules \ classifier
app
azureml
.gitignore
Dockerfile
Dockerfile.amd64
Dockerfile.amd64.debug
Dockerfile.arm32v7
Dockerfile.arm32v7.debug
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
LICENSE
main.py
module.json
README.txt
requirements.txt
.env
.gitignore
deployment.debug.template.json
deployment.template.json
Select Deployment Template file
deployment.template.json
c:\Users\psi3541-2023\CustomVisionSolution\deployment.template.json
deployment.debug.template.json
c:\Users\psi3541-2023\CustomVisionSolution\deployment.debug.template.json
"repository": "mycontainerregistry81151.azurecr.io/classifier",
"tag": {
"version": "0.0.1",
"platforms": {
"amd64": "./Dockerfile.amd64"
}
},
"buildOptions": [],
"contextPath": "./"
},
"language": "python"
}
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Azure IoT Edge
Built: Thu May 25 21:53:15 2023
OS/Arch: windows/amd64
Context: default
The specified iotedgehubdev version is: 0.14.18
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
Default platform is amd64 now.
azure-iot-edge.addModule:
azure-iot-edge.addModule:
OUTLINE
TIMELINE
AZURE IOT HUB
Azure: kofuji@usp.br
amd64
Ln 9, Col 38 Spaces: 2 UTF-8 LF JSON

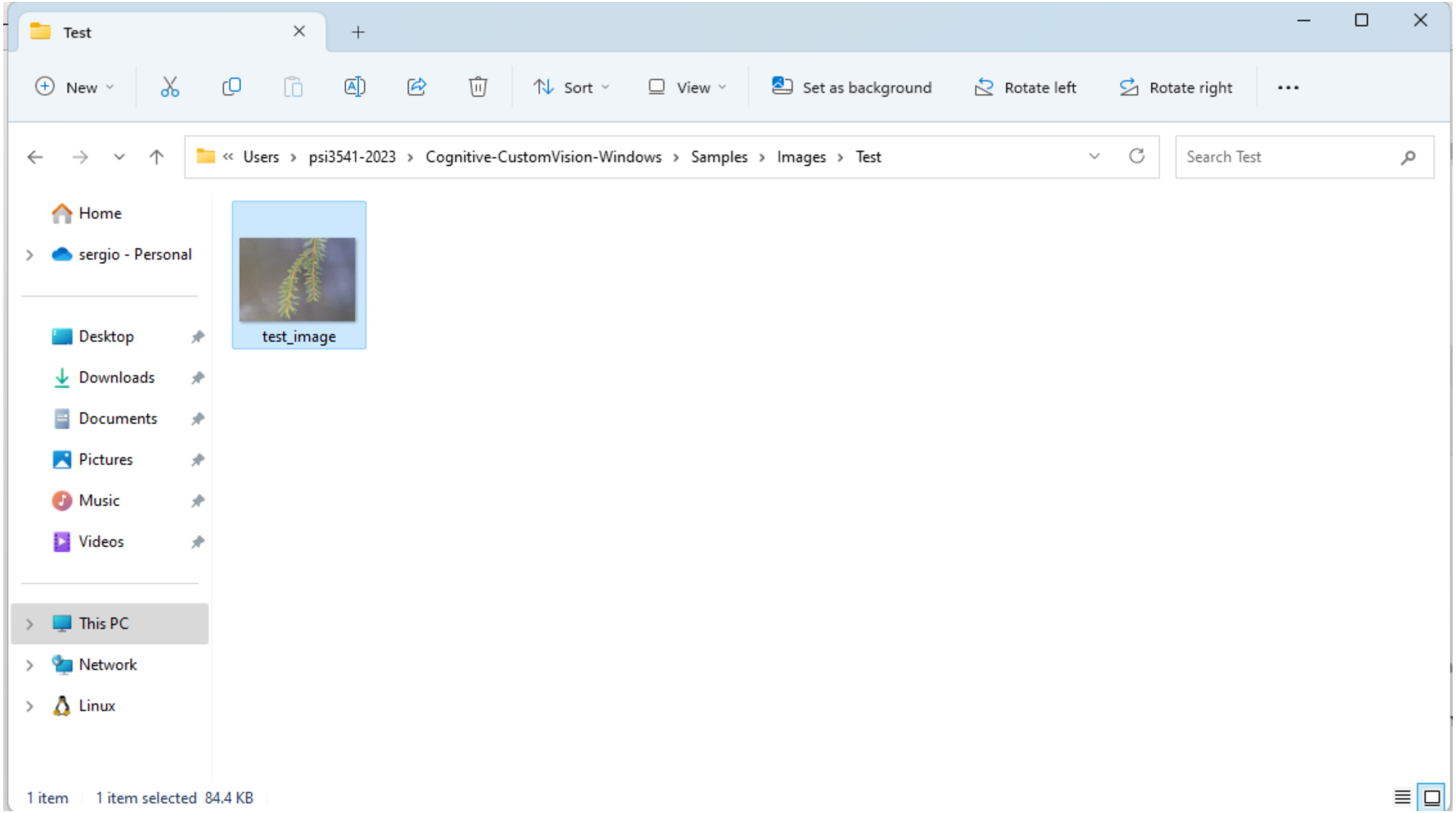

File Edit Selection View Go Run ···
module.json - CustomVisionSolution - Visual Studio Code
EXPLORER
CUSTOMVISIONSOLUTION
.devcontainer
.vscode
modules \ classifier
app
azureml
.gitignore
Dockerfile
Dockerfile.amd64
Dockerfile.amd64.deb
Dockerfile.arm32v7
Dockerfile.arm32v7.d
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
LICENSE
main.py
module.json
README.txt
requirements.txt
.env
.gitignore
deployment.debug.template.json
deployment.template.json
Select Module Template
C Module Use Azure IoT C SDK to build a module
C# Module Use Azure IoT C# SDK to build a module
Java Module Use Azure IoT Java SDK to build a module
Node.js Module Use Azure IoT Node.js SDK to build a module
Python Module Use Azure IoT Python SDK to build a module
Azure Functions - C# Create an Azure Function and deploy to IoT Edge
Azure Event Grid Deploy Azure Event Grid to Azure IoT Edge
Azure Machine Learning Deploy Azure Machine Learning images to Azure IoT Edge
Azure Stream Analytics Deploy Azure Stream Analytics to Azure IoT Edge
Existing Module (Import from ACR) Import an existing module image from your Azure Container Regis...
Existing Module (Enter Full Image URL) Import an existing module image from any container registry
Module from Azure Marketplace Import an existing module image from Azure Marketplace
"language": "python"
}
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Azure IoT Edge
OS/Arch: windows/amd64
Context: default
The specified iotedgehubdev version is: 0.14.18
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
Default platform is amd64 now.
azure-iot-edge.addModule:
azure-iot-edge.addModule:
azure-iot-edge.addModule:
OUTLINE
TIMELINE
AZURE IOT HUB
Azure: kofuji@usp.br
amd64
Ln 9, Col 38 Spaces: 2 UTF-8 LF JSON

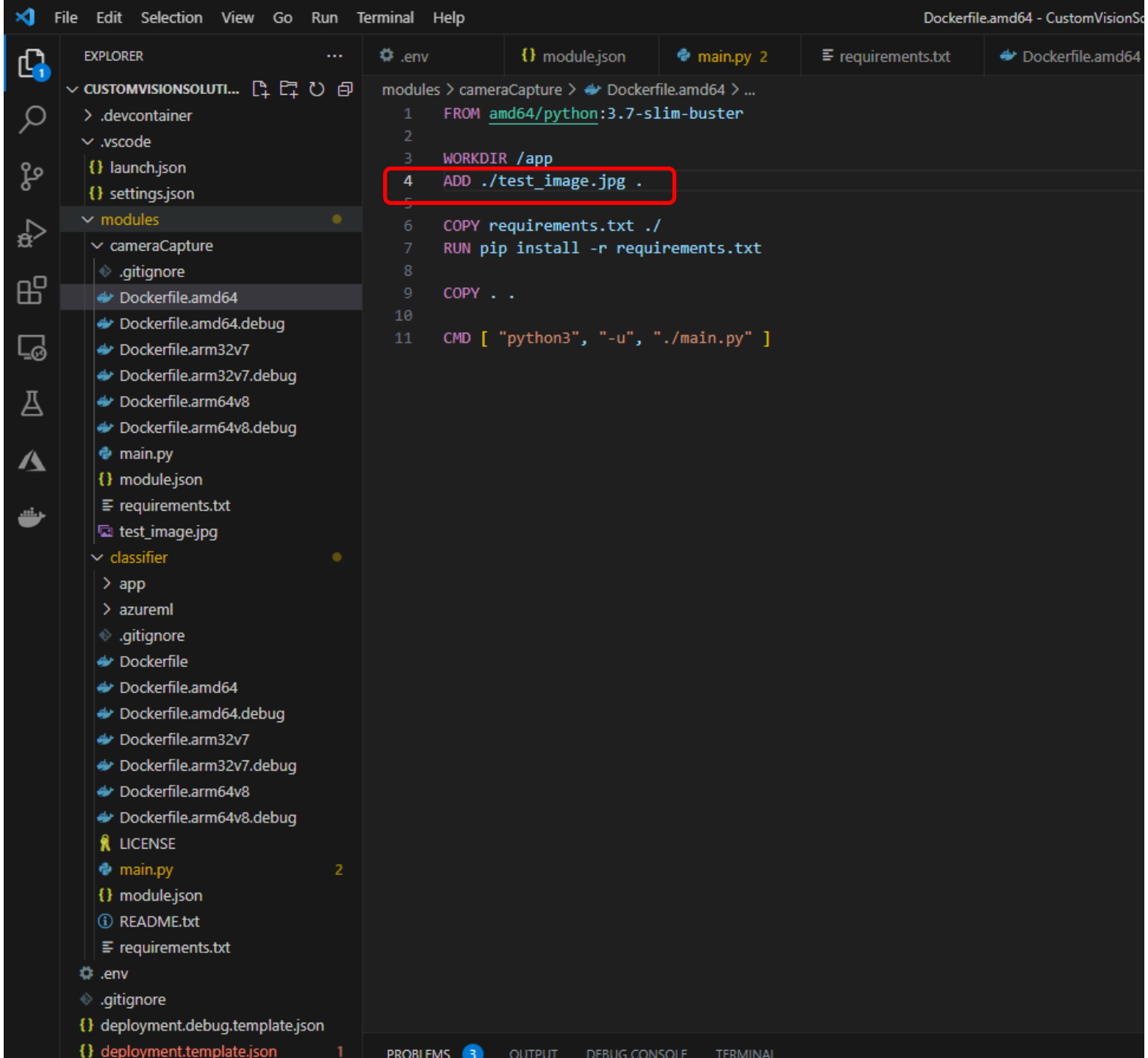

File Edit Selection View Go Run ···
module.json - CustomVisionSolution - Visual Studio Code
EXPLORER
cameracapture
Provide a Module Name (Press 'Enter' to confirm or 'Escape' to cancel)
CUSTOMVISIONSOLUTION
.devcontainer
.vscode
modules \ classifier
app
azureml
.gitignore
Dockerfile
Dockerfile.amd64
Dockerfile.amd64.debug
Dockerfile.arm32v7
Dockerfile.arm32v7.debug
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
LICENSE
main.py
module.json
README.txt
requirements.txt
.env
.gitignore
deployment.debug.template.json
deployment.template.json
{
"$schema-version": "0.0.1",
"description": "",
"image": {
"repository": "mycontainerregistry81151.azurecr.io/classifier",
"tag": {
"version": "0.0.1",
"platforms": {
"amd64": "./Dockerfile.amd64"
}
},
"buildOptions": [],
"contextPath": "./"
},
"language": "python"
}
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Azure IoT Edge
azure-iot-edge.setDefaultPlatform:
Default platform is amd64 now.
azure-iot-edge.addModule:
azure-iot-edge.addModule:
azure-iot-edge.addModule:
Cancelled by user
azure-iot-edge.addModule:
Cancelled by user
azure-iot-edge.addModule:
Cancelled by user
azure-iot-edge.addModule:
OUTLINE
TIMELINE
AZURE IOT HUB
0 0 Azure: kofuji@usp.br amd64
Ln 9, Col 38 Spaces: 2 UTF-8 LF { } JSON


File Edit Selection View Go Run ···
module.json - CustomVisionSolution - Visual Studio Code
EXPLORER
mycontainerregistry81151.azurecr.io/cameracapture
Provide Docker Image Repository for the Module (Press 'Enter' to confirm or 'Escape' to cancel)
CUSTOMVISIONSOLUTION
.devcontainer
.vscode
modules \ classifier
app
azureml
.gitignore
Dockerfile
Dockerfile.amd64
Dockerfile.amd64.debug
Dockerfile.arm32v7
Dockerfile.arm32v7.debug
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
LICENSE
main.py
module.json
README.txt
requirements.txt
.env
.gitignore
deployment.debug.template.json
deployment.template.json
"$schema-version": "0.0.1",
"description": "",
"image": {
"repository": "mycontainerregistry81151.azurecr.io/classifier",
"tag": {
"version": "0.0.1",
"platforms": {
"amd64": "./Dockerfile.amd64"
},
"buildOptions": [],
"contextPath": "./"
},
"language": "python"
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Azure IoT Edge
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
azure-iot-edge.setDefaultPlatform:
Default platform is amd64 now.
azure-iot-edge.addModule:
azure-iot-edge.addModule:
azure-iot-edge.addModule:
Cancelled by user
azure-iot-edge.addModule:
Cancelled by user
azure-iot-edge.addModule:
OUTLINE
TIMELINE
AZURE IOT HUB
Azure: kofuji@usp.br
amd64
Ln 9, Col 38
Spaces: 2
UTF-8
LF
JSON


File Edit Selection View Go Run ···
main.py - CustomVisionSolution - Visual Studio Code
EXPLORER
CUSTOMVISIONSOLUTION
.devcontainer
.vscode
modules
cameracapture
.gitignore
Dockerfile.amd64
Dockerfile.amd64.debug
Dockerfile.arm32v7
Dockerfile.arm32v7.debug
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
main.py 2
module.json
requirements.txt
classifier
.env
.gitignore
deployment.debug.template.json
deployment.template.json
OUTLINE
TIMELINE
AZURE IOT HUB
module.json
main.py 2
requirements.txt
modules > cameracapture > main.py > ...
1 # Copyright (c) Microsoft. All rights reserved.
2 # Licensed under the MIT license. See LICENSE file in the project root f
3 # full license information.
4
5 import time
6 import sys
7 import os
8 import requests
9 import json
10 from azure.iot.device import IoTHubModuleClient, Message
11
12 # global counters
13 SENT_IMAGES = 0
14
15 # global client
16 CLIENT = None
17
18 # Send a message to IoT Hub
19 # Route output1 to $upstream in deployment.template.json
20 def send_to_hub(strMessage):
21 message = Message(bytearray(strMessage, 'utf8'))
PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL
Azure IoT Edge
azure-iot-edge.setDefaultPlatform:
Default platform is amd64 now.
azure-iot-edge.addModule:
azure-iot-edge.addModule:
azure-iot-edge.addModule:
Cancelled by user
azure-iot-edge.addModule:
Cancelled by user
azure-iot-edge.addModule:
Cancelled by user
azure-iot-edge.addModule:
0 2 Azure: kofuji@usp.br amd64
Ln 77, Col 75 Spaces: 4 UTF-8 CRLF Python 3.11.3 64-bit


File Edit Selection View Go Run
• requirements.txt - CustomVisionSolution - Visual Studio Code
EXPLORER
CUSTOMVISIONSOLUTION
.devcontainer
.vscode
modules
cameracapture
.gitignore
Dockerfile.amd64
Dockerfile.amd64.debug
Dockerfile.arm32v7
Dockerfile.arm32v7.debug
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
main.py 2
module.json
requirements.txt
classifier
.env
.gitignore
deployment.debug.template.json
deployment.template.json
module.json
main.py 2
requirements.txt
modules > cameracapture > requirements.txt
1 azure-iot-device~=2.7.0
2 requests
3
Create Environment...
PROBLEMS 2
OUTPUT
DEBUG CONSOLE
TERMINAL
Azure IoT Edge
azure-iot-edge.setDefaultPlatform:
Default platform is amd64 now.
azure-iot-edge.addModule:
azure-iot-edge.addModule:
azure-iot-edge.addModule:
Cancelled by user
azure-iot-edge.addModule:
Cancelled by user
azure-iot-edge.addModule:
Cancelled by user
azure-iot-edge.addModule:
OUTLINE
TIMELINE
AZURE IOT HUB
0 2
Azure: kofuji@usp.br
amd64
Ln 2, Col 9
Spaces: 4
UTF-8
LF
pip requirements


Test
New
Sort
View
Set as background
Rotate left
Rotate right
Users › psi3541-2023 › Cognitive-CustomVision-Windows › Samples › Images › Test
Search Test
Home
sergio - Personal
Desktop
Downloads
Documents
Pictures
Music
Videos
This PC
Network
Linux
test_image
1 item
1 item selected 84.4 KB


File Edit Selection View Go Run Terminal Help
Dockerfile.amd64 - CustomVisionSo
EXPLORER
CUSTOMVISIONSOLUTI...
.devcontainer
.vscode
launch.json
settings.json
modules
cameraCapture
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Dockerfile.amd64
Dockerfile.amd64.debug
Dockerfile.arm32v7
Dockerfile.arm32v7.debug
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
main.py
module.json
requirements.txt
test_image.jpg
classifier
app
azureml
.gitignore
Dockerfile
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Dockerfile.amd64.debug
Dockerfile.arm32v7
Dockerfile.arm32v7.debug
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
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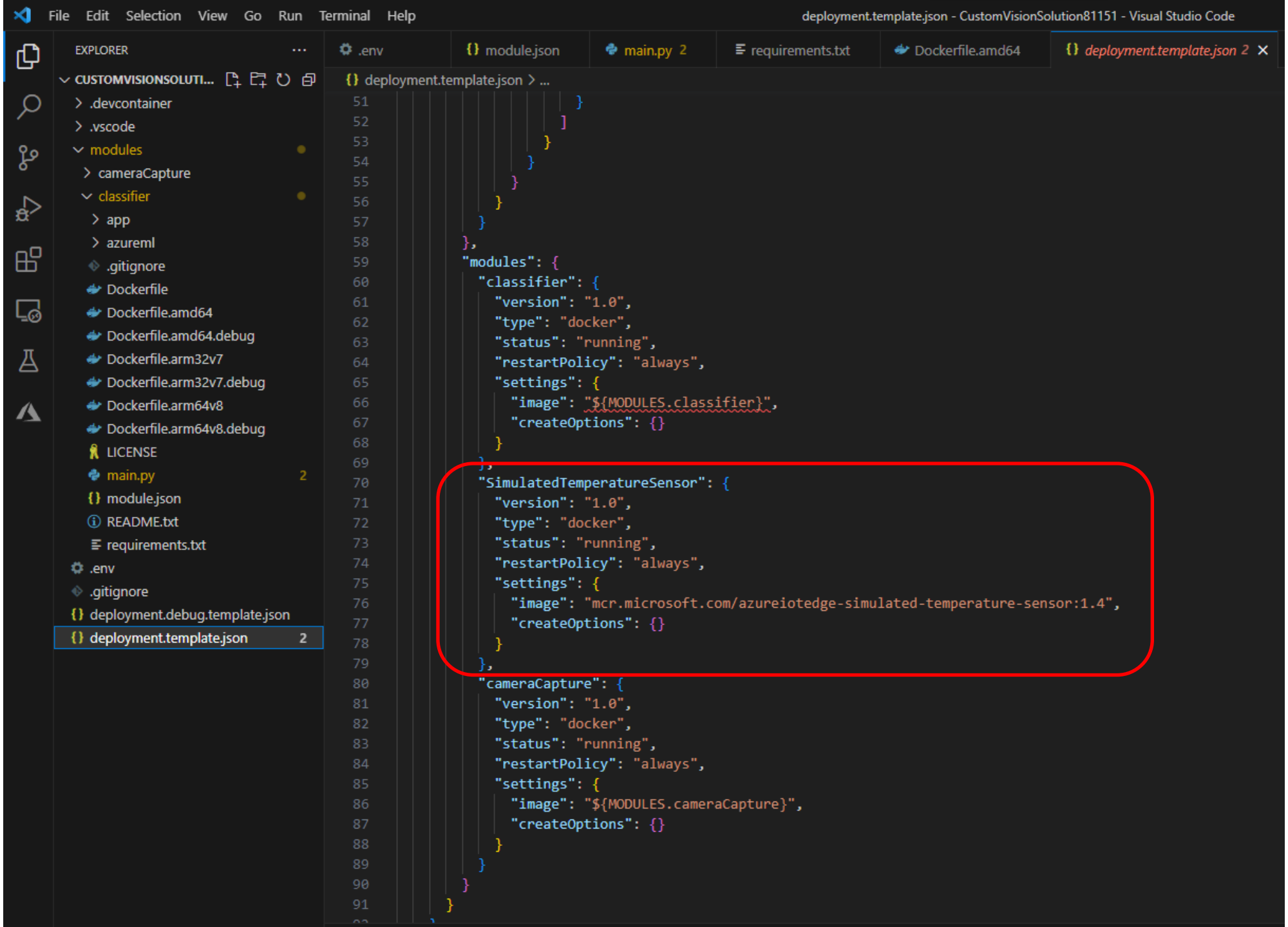
requirements.txt
.env
.gitignore
deployment.debug.template.json
deployment.template.json 1
.env
module.json
main.py 2
requirements.txt
Dockerfile.amd64
modules > cameraCapture > Dockerfile.amd64 > ...
1 FROM amd64/python:3.7-slim-buster
2
3 WORKDIR /app
4 ADD ./test_image.jpg .
5
6 COPY requirements.txt ./
7 RUN pip install -r requirements.txt
8
9 COPY . .
10
11 CMD ["python3", "-u", "./main.py"]
PROBLEMS 3
OUTPUT
DEBUG CONSOLE
TERMINAL

EDITAR O ARQUIVO DE DEPLOYMENT


File Edit Selection View Go Run Terminal Help
deployment.template.json - CustomVisionSolution81151 - Visual Studio Code
EXPLORER
CUSTOMVISIONSOLUTI...
.devcontainer
.vscode
modules
cameraCapture
classifier
app
azureml
.gitignore
Dockerfile
Dockerfile.amd64
Dockerfile.amd64.debug
Dockerfile.arm32v7
Dockerfile.arm32v7.debug
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
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main.py 2
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README.txt
requirements.txt
.env
.gitignore
deployment.debug.template.json
deployment.template.json 2
.env
module.json
main.py 2
requirements.txt
Dockerfile.amd64
deployment.template.json 2
deployment.template.json > ...
"modules": {
"classifier": {
"version": "1.0",
"type": "docker",
"status": "running",
"restartPolicy": "always",
"settings": {
"image": "${MODULES.classifier}",
"createOptions": {}
"SimulatedTemperatureSensor": {
"version": "1.0",
"type": "docker",
"status": "running",
"restartPolicy": "always",
"settings": {
"image": "mcr.microsoft.com/azureiotedge-simulated-temperature-sensor:1.4",
"createOptions": {}
"cameraCapture": {
"version": "1.0",
"type": "docker",
"status": "running",
"restartPolicy": "always",
"settings": {
"image": "${MODULES.cameraCapture}",
"createOptions": {}

File Edit Selection View Go Run Terminal Help — deployment.template.json - CustomVisionSolution81151 - Visual Studio Code

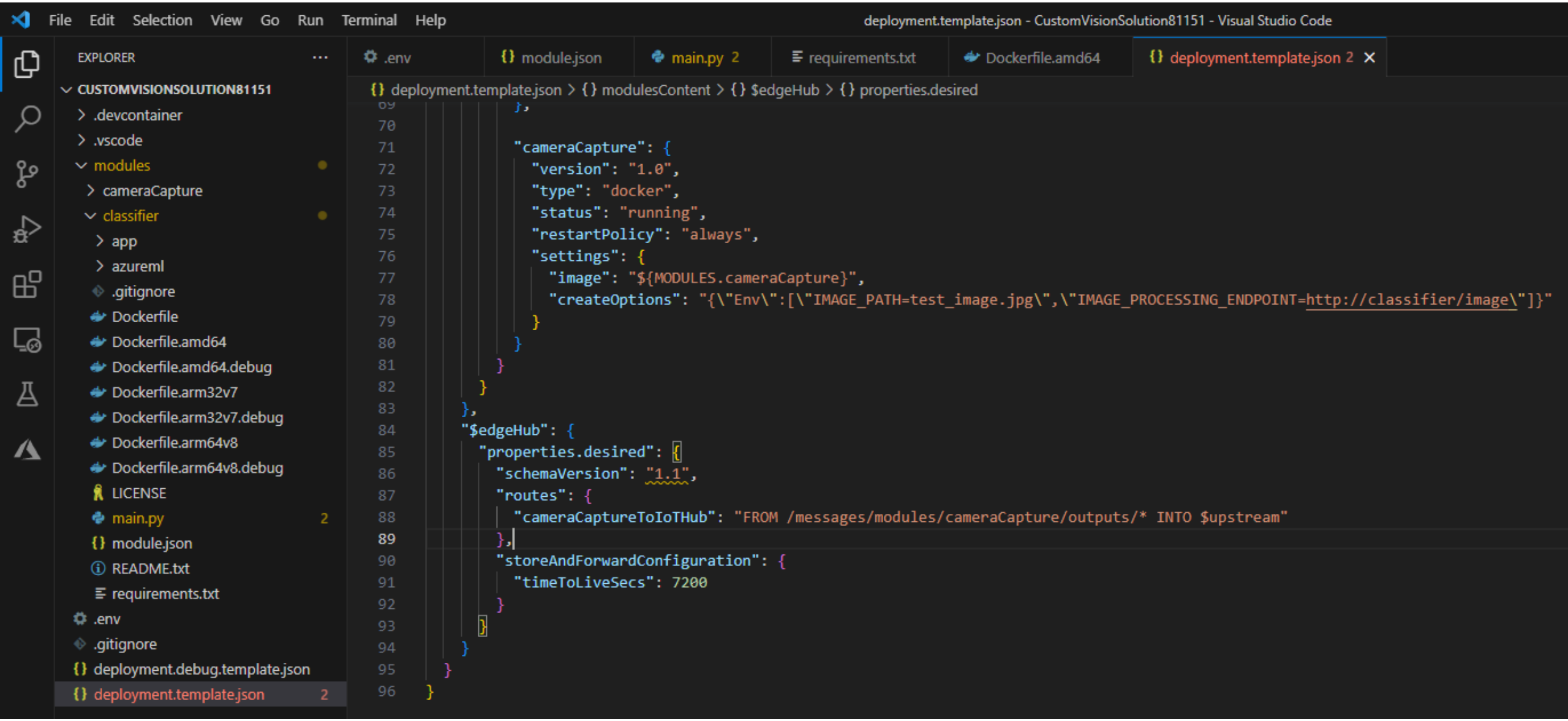
EXPLORER

CUSTOMVISIONSOLUTION81151
- .devcontainer
- .vscode
- modules
  - cameraCapture
  - classifier
    - app
    - azureml
    - .gitignore
    - Dockerfile
    - Dockerfile.amd64
    - Dockerfile.amd64.debug
    - Dockerfile.arm32v7
    - Dockerfile.arm32v7.debug
    - Dockerfile.arm64v8
    - Dockerfile.arm64v8.debug
    - LICENSE
    - main.py 2
    - module.json
    - README.txt
    - requirements.txt
- .env
- .gitignore
- deployment.debug.template.json
- deployment.template.json 2

.env | module.json | main.py 2 | requirements.txt | Dockerfile.amd64 | deployment.template.json 2

{} deployment.template.json > {} modulesContent > {} $edgeAgent > {} properties.desired > {} modules > {} cameraCapture > {} settings > createOptions

```
54                  }
55                }
56              }
57            }
58          },
59          "modules": {
60            "classifier": {
61              "version": "1.0",
62              "type": "docker",
63              "status": "running",
64              "restartPolicy": "always",
65              "settings": {
66                "image": "${MODULES.classifier}",
67                "createOptions": {}
68              }
69            },
70
71            "cameraCapture": {
72              "version": "1.0",
73              "type": "docker",
74              "status": "running",
75              "restartPolicy": "always",
76              "settings": {
77                "image": "${MODULES.cameraCapture}",
78                "createOptions": "{\"Env\":[\"IMAGE_PATH=test_image.jpg\",\"IMAGE_PROCESSING_ENDPOINT=http://classifier/image\"]}"
79              }
80            }
81          }
82        }
83      },
84      "$edgeHub": {
85        "properties.desired": {
86          "schemaVersion": "1.1",
87          "routes": {
88            "classifierToIoTHub": "FROM /messages/modules/classifier/outputs/* INTO $upstream",
89            "sensorToclassifier": "FROM /messages/modules/SimulatedTemperatureSensor/outputs/temperatureOutput INTO BrokeredEndpoint(\"/modules/classifier/inputs/input1\")",
90            "cameraCaptureToIoTHub": "FROM /messages/modules/cameraCapture/outputs/* INTO $upstream"
91          },
92          "storeAndForwardConfiguration": {
93            "timeToLiveSecs": 7200
94          }
```


File Edit Selection View Go Run Terminal Help
deployment.template.json - CustomVisionSolution81151 - Visual Studio Code
EXPLORER
CUSTOMVISIONSOLUTION81151
.devcontainer
.vscode
modules
cameraCapture
classifier
app
azureml
.gitignore
Dockerfile
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Dockerfile.amd64.debug
Dockerfile.arm32v7
Dockerfile.arm32v7.debug
Dockerfile.arm64v8
Dockerfile.arm64v8.debug
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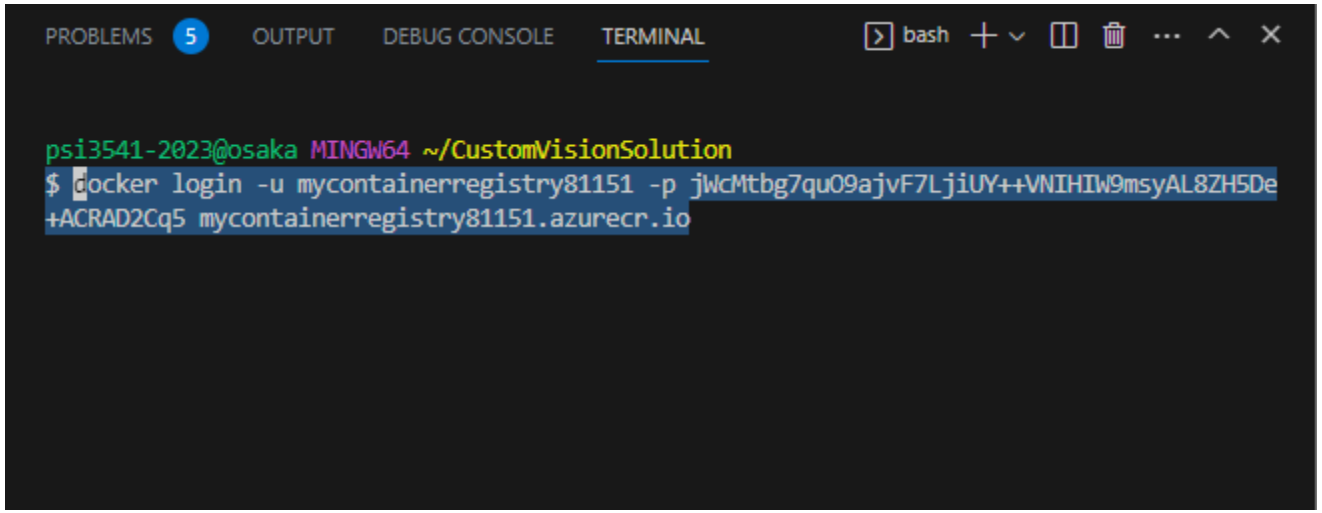
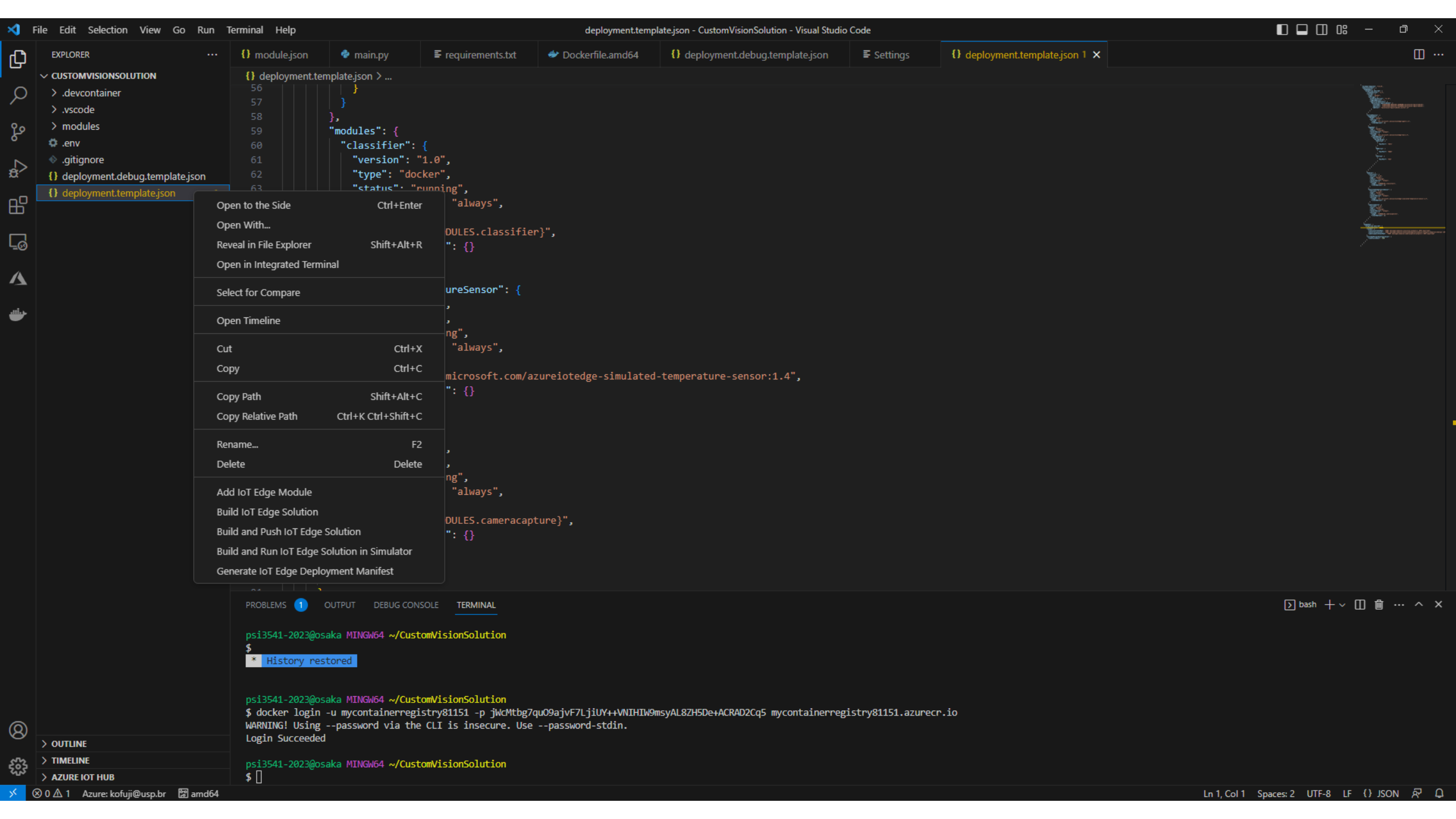
.gitignore
deployment.debug.template.json
deployment.template.json 2
.env
module.json
main.py 2
requirements.txt
Dockerfile.amd64
deployment.template.json 2
deployment.template.json > modulesContent > $edgeHub > properties.desired
},
"cameraCapture": {
"version": "1.0",
"type": "docker",
"status": "running",
"restartPolicy": "always",
"settings": {
"image": "${MODULES.cameraCapture}",
"createOptions": "{\"Env\":[\"IMAGE_PATH=test_image.jpg\",\"IMAGE_PROCESSING_ENDPOINT=http://classifier/image\"]}"
}
}
}
}
},
"$edgeHub": {
"properties.desired": {
"schemaVersion": "1.1",
"routes": {
"cameraCaptureToIoTHub": "FROM /messages/modules/cameraCapture/outputs/* INTO $upstream"
},
"storeAndForwardConfiguration": {
"timeToLiveSecs": 7200
}
}
}
}
}

Build and push your IoT Edge solution


PROBLEMS 5
OUTPUT
DEBUG CONSOLE
TERMINAL
bash
psi3541-2023@osaka MINGW64 ~/CustomVisionSolution
$ docker login -u mycontainerregistry81151 -p jWcMtbg7quO9ajvF7LjiUY++VNIHIW9msyAL8ZH5De
+ACRAD2Cq5 mycontainerregistry81151.azurecr.io


File Edit Selection View Go Run Terminal Help
deployment.template.json - CustomVisionSolution - Visual Studio Code
EXPLORER
CUSTOMVISIONSOLUTION
.devcontainer
.vscode
modules
.env
.gitignore
deployment.debug.template.json
deployment.template.json
module.json
main.py
requirements.txt
Dockerfile.amd64
deployment.debug.template.json
Settings
deployment.template.json 1
deployment.template.json > ...
Open to the Side Ctrl+Enter
Open With...
Reveal in File Explorer Shift+Alt+R
Open in Integrated Terminal
Select for Compare
Open Timeline
Cut Ctrl+X
Copy Ctrl+C
Copy Path Shift+Alt+C
Copy Relative Path Ctrl+K Ctrl+Shift+C
Rename... F2
Delete Delete
Add IoT Edge Module
Build IoT Edge Solution
Build and Push IoT Edge Solution
Build and Run IoT Edge Solution in Simulator
Generate IoT Edge Deployment Manifest
PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
bash
psi3541-2023@osaka MINGW64 ~/CustomVisionSolution
$
* History restored
psi3541-2023@osaka MINGW64 ~/CustomVisionSolution
$ docker login -u mycontainerregistry81151 -p jWcMtbg7quO9ajvF7LjiUY++VNIHIW9msyAL8ZH5De+ACRAD2Cq5 mycontainerregistry81151.azurecr.io
WARNING! Using --password via the CLI is insecure. Use --password-stdin.
Login Succeeded
psi3541-2023@osaka MINGW64 ~/CustomVisionSolution
$
OUTLINE
TIMELINE
AZURE IOT HUB
Azure: kofuji@usp.br
amd64
Ln 1, Col 1
Spaces: 2
UTF-8
LF
JSON

DÚVIDAS?

KOFUJI@USP.BR