

Diplomado en ML Cloud - UCB CBBA

Módulo 4: Machine Learning Cloud MLOps

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Laboratorio 1

Creación de workspace

The screenshot shows the Microsoft Azure portal interface for the 'ws-mlops-ucb' workspace. The left sidebar contains navigation options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Resource visualizer, Events, Settings, Monitoring, Automation, and Support + troubleshooting. The main area displays the 'Overview' tab with a search bar and a 'Download config.json' button. Below this, there are two columns of information. The left column lists 'Essentials' such as Resource group (rg-mlops-ucb), Location (East US), Subscription (Azure for Students), Storage (wsmlopsucb4079559337), and Provisioning State (Succeeded). The right column lists other details like Studio web URL, Container Registry, Key Vault, Application Insights, and MLflow tracking URI. At the bottom, there is a large graphic of a 3D cube and the text 'Work with your models in Azure Machine Learning Studio'.

Essentials	Details
Resource group	rg-mlops-ucb
Location	East US
Subscription	Azure for Students
Storage	wsmlopsucb4079559337
Provisioning State	Succeeded

Other Details	Values
Studio web URL	https://ml.azure.com?tid=Sb264231-eab6-433f-a237-f...
Container Registry	...
Key Vault	wsmlopsucb1342208293
Application Insights	wsmlopsucb9228378484
MLflow tracking URI	azureml://eastus.api.azureml.ms/mlflow/v1.0/subscription...

Instancia de cómputo creada

The screenshot shows the 'Compute' tab in the Azure AI Machine Learning Studio. The left sidebar has navigation options like All workspaces, Home, Model catalog, Authoring, Notebooks, Automated ML, Designer, Prompt flow, Assets, Data, Jobs, Components, Pipelines, and Environments. The main area displays the 'Compute instances' tab. It includes a 'New' button and a table of existing instances. The table has columns for Name, State, Idle shutdown, Applications, and Size. One instance named 'mlops' is shown in a 'Starting' state with an idle shutdown of 1 hour and applications including JupyterLab, Jupyter, and VS Code (Web).

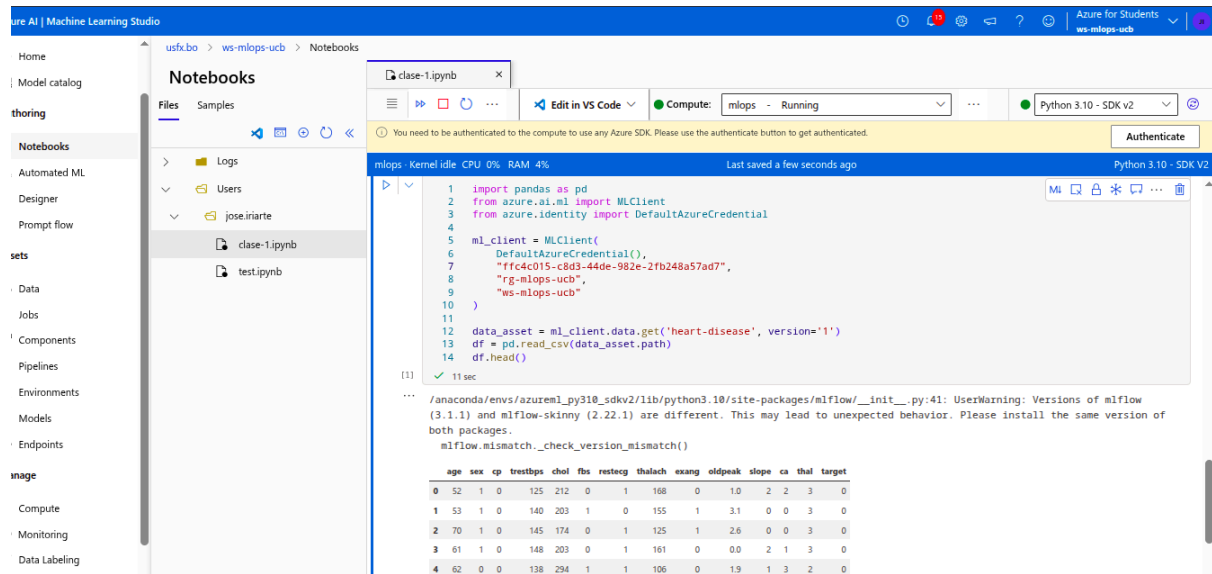
Name	State	Idle shutdown	Applications	Size
mlops	Starting	1 hour	JupyterLab Jupyter VS Code (Web) ...	Standard_DS11_v2

Cargado del dataset

The screenshot shows the 'Data' tab in the Azure AI Machine Learning Studio. The left sidebar has navigation options like Notebooks, Automated ML, Designer, Prompt flow, Assets, Data, Jobs, Components, Pipelines, Environments, Models, Endpoints, and Manage. The main area displays the 'Data assets' tab. It includes a 'Create' button and a table of existing data assets. The table has columns for Name, Version, Data source, Created on, Modified on, Type, Properties, and Created by. Two data assets are shown: 'titanic' and 'heart-disease', both created from 'workspaceblobstore'.

Name	Version	Data source	Created on	Modified on	Type	Properties	Created by
titanic	1	workspaceblobstore	Aug 18, 2025 3:43 PM	Aug 18, 2025 3:43 PM	Folder		Jose Iriarte
heart-disease	1	workspaceblobstore	Aug 14, 2025 2:31 PM	Aug 14, 2025 2:31 PM	Folder		Jose Iriarte

Notebook que carga el dataset con el SDK v2



The screenshot shows an Azure Machine Learning Studio notebook interface. The notebook is titled "clase-1.ipynb" and is running on a compute instance named "ml0ps". The code in the notebook is as follows:

```
1 import pandas as pd
2 from azure.ai.ml import MLClient
3 from azure.identity import DefaultAzureCredential
4
5 ml_client = MLClient(
6     DefaultAzureCredential(),
7     "ffc4c015-c8d3-44de-982e-2fb248a57ad7",
8     "rg-ml0ps-ucb",
9     "ws-ml0ps-ucb"
10 )
11
12 data_asset = ml_client.data.get('heart-disease', version='1')
13 df = pd.read_csv(data_asset.path)
14 df.head()
```

The output of the code shows a warning message from mlflow and a table of the first 5 rows of the dataset:

```
[1] ✓ 11 sec
...
/anaconda/envs/azureml_py310_sdkv2/lib/python3.10/site-packages/mlflow/__init__.py:41: UserWarning: Versions of mlflow
(3.1.1) and mlflow-skinny (2.22.1) are different. This may lead to unexpected behavior. Please install the same version of
both packages.
mlflow.mismatch_check_version_mismatch()
```

	age	sex	cp	trestbps	chol	fb	restecg	thalach	exang	oldpeak	slope	ca	thal	target
0	52	1	0	125	212	0	1	168	0	1.0	2	2	3	0
1	53	1	0	140	203	1	0	155	1	3.1	0	0	3	0
2	70	1	0	145	174	0	1	125	1	2.6	0	0	3	0
3	61	1	0	148	203	0	1	161	0	0.0	2	1	3	0
4	62	0	0	138	294	1	1	106	0	1.9	1	3	2	0