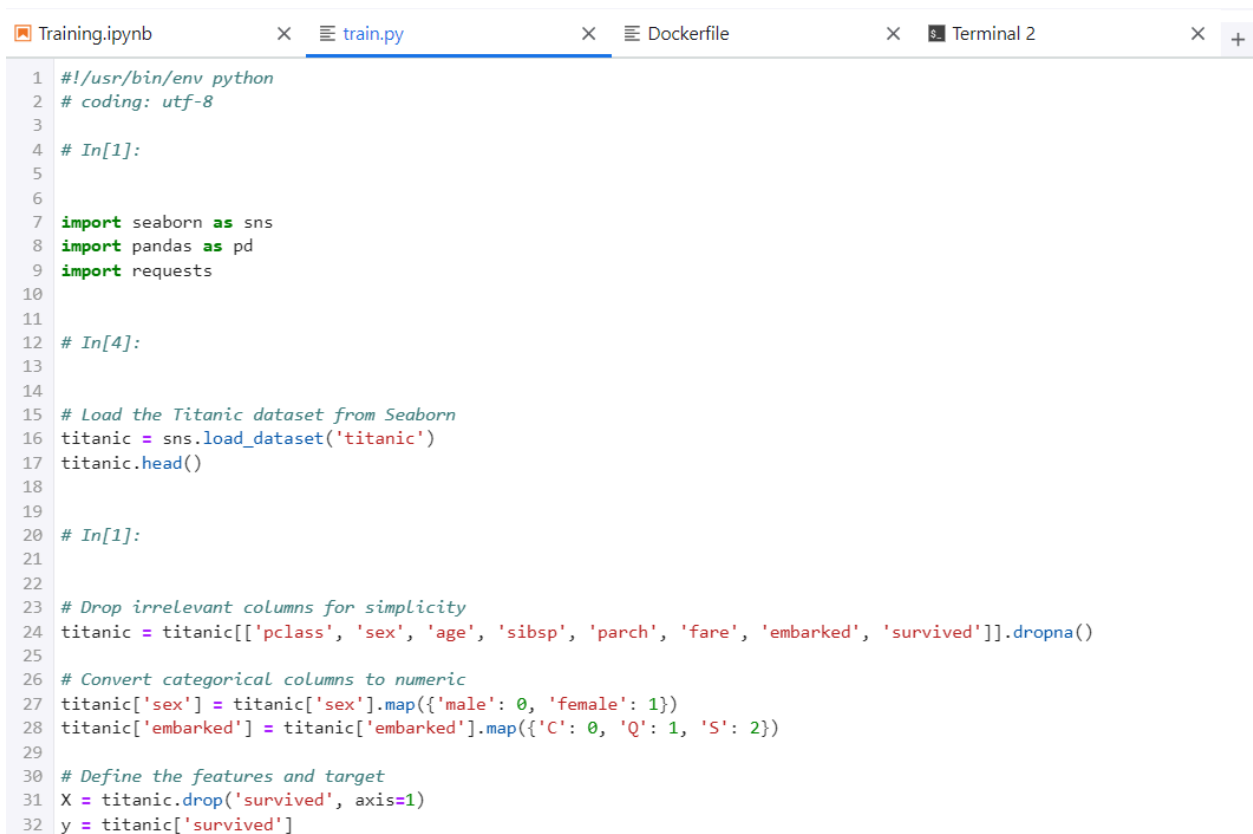


Creating Docker Image

```
FROM python:3.7-buster
WORKDIR /app
COPY ./requirements.txt /app/requirements.txt
RUN pip install -r /app/requirements.txt
COPY train.py /app/train.py
ENTRYPOINT ["python", "train.py"]
```

Training the model on Vertex AI



The screenshot shows a Jupyter Notebook with four tabs: 'Training.ipynb', 'train.py', 'Dockerfile', and 'Terminal 2'. The 'train.py' tab is active, displaying a Python script. The script starts with a shebang and encoding declaration, followed by imports for seaborn, pandas, and requests. It then loads the Titanic dataset from Seaborn, drops irrelevant columns, converts categorical columns to numeric, and finally defines the features and target variable for training.

```
1  #!/usr/bin/env python
2  # coding: utf-8
3
4  # In[1]:
5
6
7  import seaborn as sns
8  import pandas as pd
9  import requests
10
11
12  # In[4]:
13
14
15  # Load the Titanic dataset from Seaborn
16  titanic = sns.load_dataset('titanic')
17  titanic.head()
18
19
20  # In[1]:
21
22
23  # Drop irrelevant columns for simplicity
24  titanic = titanic[['pclass', 'sex', 'age', 'sibsp', 'parch', 'fare', 'embarked', 'survived']].dropna()
25
26  # Convert categorical columns to numeric
27  titanic['sex'] = titanic['sex'].map({'male': 0, 'female': 1})
28  titanic['embarked'] = titanic['embarked'].map({'C': 0, 'Q': 1, 'S': 2})
29
30  # Define the features and target
31  X = titanic.drop('survived', axis=1)
32  y = titanic['survived']
```

Creating image URI

```
jupyter@vm-d8943ec9-bc6c-4286-8ed2-c15a2eb1b4d7:~$ export IMAGE_URI=us-central1-docker.pkg.dev/smooth-mason-436217-p3/custom-training-container/titanic_model:v1[]
```

Building Docker Image

```
jupyter@vm-d8943ec9-bc6c-4286-8ed2-c15a2eb1b4d7:~$ docker build -t $IMAGE_URI .
[+] Building 41.9s (7/9)                                                                                               docker:default
=> sha256:65f08bc4dfb6870010a2ea85f3d85de826f624ede6349b05a65aa857456f987 2.01kB / 2.01kB 0.0s
=> sha256:a2e1e233599c00054fb839db78b4d42e6f12f36b64280aa62d482a3ad0ad7109 191.88MB / 191.88MB 3.8s
=> sha256:08be6287e9761b9b7dd1703470ff3473a62fe75238f3de01282165f8725968af 6.15MB / 6.15MB 1.7s
=> sha256:d8de4b0f984f47161a06a8314ceed5b0257f03a7f4dedd57b7bf059ece1b9fb8 16.97MB / 16.97MB 1.8s
=> extracting sha256:ac8bb7e1a32398e26c129ce64e2ddc3e7ec6c34d93424b247f16049f5a91cff4 1.7s
=> sha256:1d67c32387a2f0a530a064101b0ce3e7db0e24d28934d172210fbd6491ad20e 243B / 243B 1.8s
=> sha256:a09869dd26ab9ba944a4aed8211e150e8b8fc1e1505b6735a48716c14752ae70d 2.85MB / 2.85MB 1.9s
=> extracting sha256:3b1c264c0ad4598c25048a6dbd3030086cc5c74000e1d04ac27944cb116aabb 0.4s
=> extracting sha256:b1e7e053c9f6f57c6d95002167a6d57aed6aacf04dd2f8e681cb4f747a4c381 1.7s
=> extracting sha256:a2e1e233599c00054fb839db78b4d42e6f12f36b64280aa62d482a3ad0ad7109 5.3s
=> extracting sha256:08be6287e9761b9b7dd1703470ff3473a62fe75238f3de01282165f8725968af 0.3s
=> extracting sha256:d8de4b0f984f47161a06a8314ceed5b0257f03a7f4dedd57b7bf059ece1b9fb8 0.6s
=> extracting sha256:1d67c32387a2f0a530a064101b0ce3e7db0e24d28934d172210fbd6491ad20e 0.0s
=> extracting sha256:a09869dd26ab9ba944a4aed8211e150e8b8fc1e1505b6735a48716c14752ae70d 0.2s
=> [2/5] WORKDIR /app 10.0s
=> [3/5] COPY ./requirements.txt /app/requirements.txt 0.1s
=> [4/5] RUN pip install -r /app/requirements.txt 17.9s
=> # Successfully installed cycler-0.11.0 fonttools-4.38.0 kiwisolver-1.4.5 matplotlib-3.5.3 numpy-1.21.6 packaging-24.0 pandas-1.3.5
=> # pillow-9.5.0 pyarsing-3.1.4 python-dateutil-2.9.0.post0 pytz-2024.2 seaborn-0.12.2 six-1.16.0 typing_extensions-4.7.1
=> # WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv
=> # [notice] A new release of pip is available: 23.0.1 -> 24.0
```

Pushing Docker Image

```
Docker configuration file updated.
jupyter@vm-d8943ec9-bc6c-4286-8ed2-c15a2eb1b4d7:~$ docker push $IMAGE_URI
The push refers to repository [us-central1-docker.pkg.dev/smooth-mason-436217-p3/custom-training-container/titanic_model]
61918fab5790: Pushed
0aa35ecc31da: Pushed
41b5acb25d58: Pushed
96bfbbe5c30e: Pushed
e36b5e9d4963: Layer already exists
9c09c0d6f95a: Layer already exists
b032a3b4d7f8: Layer already exists
474c7af10697: Layer already exists
dcc1cfeee1ab: Layer already exists
eccb9ed74974: Layer already exists
53d40515380c: Layer already exists
6af7a54a0ad: Layer already exists
v1: digest: sha256:dc347ff855b8bc5f7fa61b6a61f05e6c103238f52db6f0afe3d7733eb5456286 size: 2841
jupyter@vm-d8943ec9-bc6c-4286-8ed2-c15a2eb1b4d7:~$
```

Training model using training Pipeline

Train new model

✓ Training method

2 Model details

3 Training container

4 Hyperparameters (optional)

5 Compute and pricing

6 Prediction container (optional)

START TRAINING

CANCEL

☒ Train new model

Creates a new model group and assigns the trained model as version 1

☐ Train new version

Trains model as a version of an existing model

Name *

titanic_model

Description

▼ ADVANCED OPTIONS

CONTINUE

Selecting docker image from Artifact Repository

Train new model

✓ Training method

✓ Model details

3 Training container

4 Hyperparameters (optional)

5 Compute and pricing

6 Prediction container (optional)

START TRAINING

CANCEL

non-ML dependencies
[more](#)

☐ Pre-built container

View the list of pre-built containers

☒ Custom container

Build a custom container

Custom container image

Container image name

gs://ModelArtifacts/your-model-artifact

Your model artifact name. You should specify the full path to the artifact, including the model name and version.

Arguments

Optional. Add arguments to the container. Overrides the command line.

-flag a=xxxx

Select container image

ARTIFACT REGISTRY

CONTAINER REGISTRY

Project: smooth-mason-436217-p3

CHANGE

us-central1-docker.pkg.dev/smooth-mason-436217-p3/custom-training-container

iris_image

titanic_model

dc347ff855

v1

1 minute ago

SELECT

CANCEL

Trained model

Name	ID	Status	Job type	Model type	Duration ?	Last updated ↓	Created	End	
titanic_model	3317414150811942912	✔ Finished	Training pipeline	☹ Custom	4 min 32 sec	Oct 5, 2024, 5:20:35 PM	Oct 5, 2024, 5:16:02 PM	Oct 5, 2024, 5:20:35 PM	⋮