TITLE: MODEL DEPLOYMENT ON GOOGLE CLOUD PLATFORM

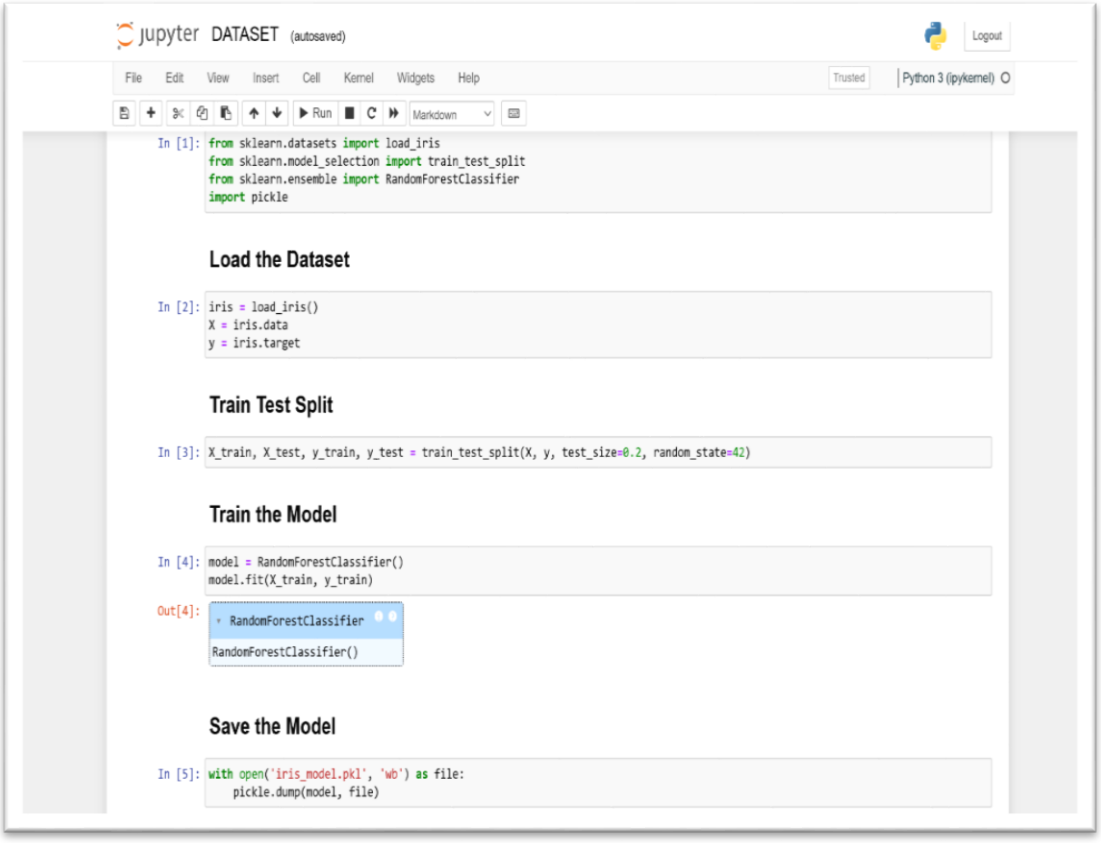
OVERVIEW:

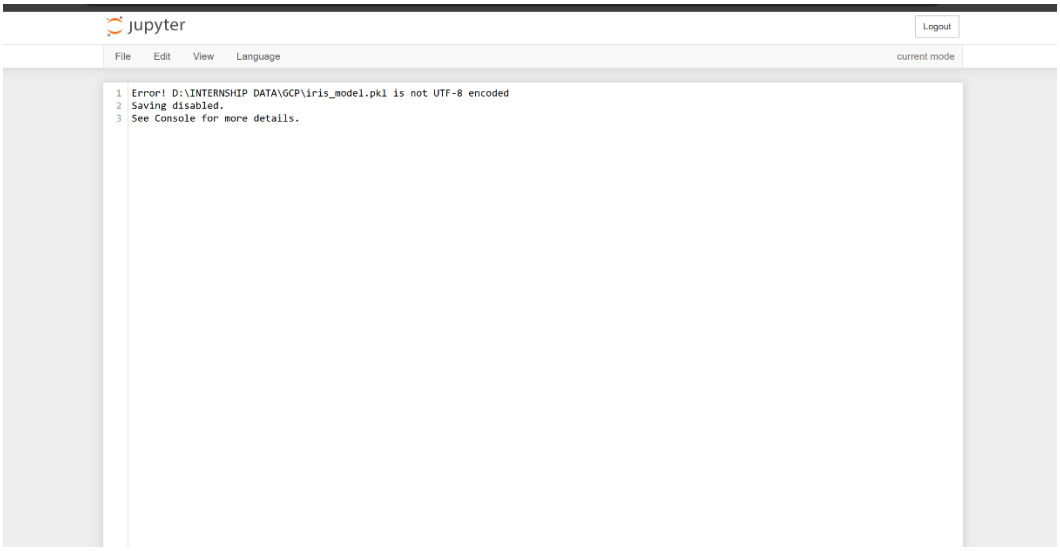
- This project demonstrates the end-to-end deployment of a machine learning model using Google Cloud Platform (GCP)
- The app includes both a web interface and an API endpoint to make predictions on the Iris dataset using a Random Forest Classifier model
- Technologies used: Python, Flask, scikit-learn, GCP App Engine

STEP-BY-STEP DEPLOYMENT PROCESS:

✓ **Step 1: Select & Train the Model**

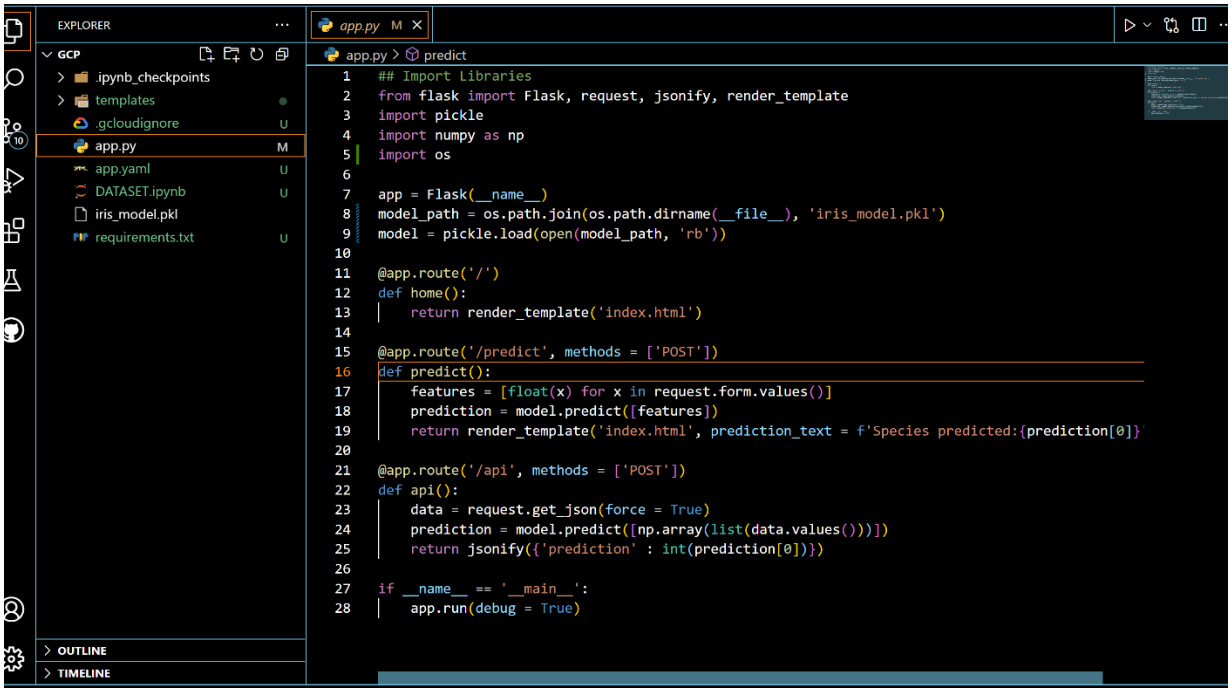
- **Description:** Used the same Iris dataset which was used in week 4 for flask deployment and trained a classifier using Random Forest Classifier model





✓ Step 2: Flask App Setup

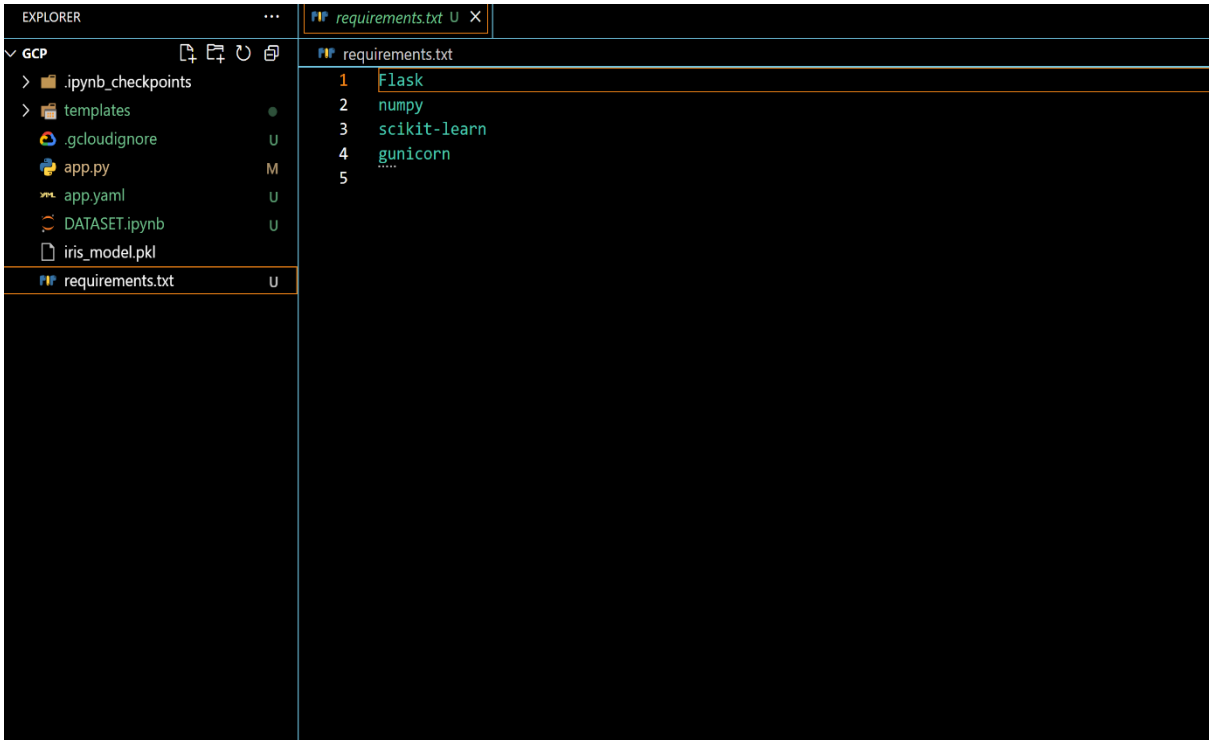
- **Description:** Created app.py with / for web UI and /api for JSON prediction
- **Files Included:** app.py, iris_model.pkl, requirements.txt, app.yaml, templates/index.html

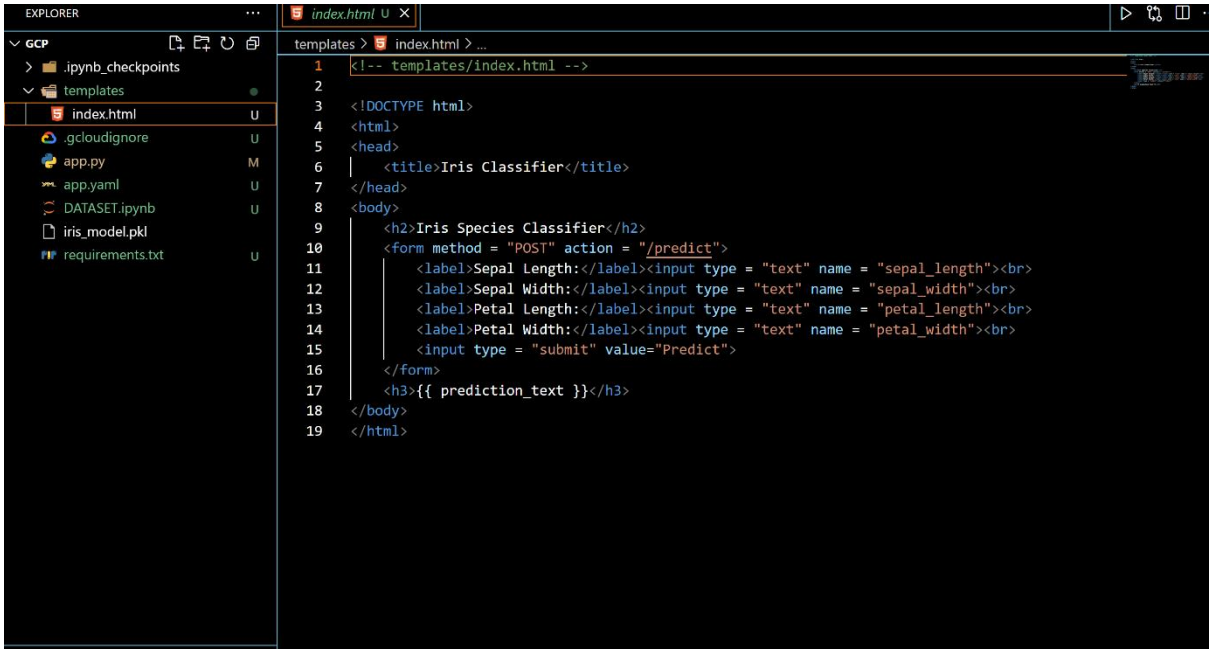


✓ Step 3: Create GCP App Files

- **app.yaml:** Config for App Engine
- **requirements.txt:** Installed Flask, sklearn, numpy, gunicorn

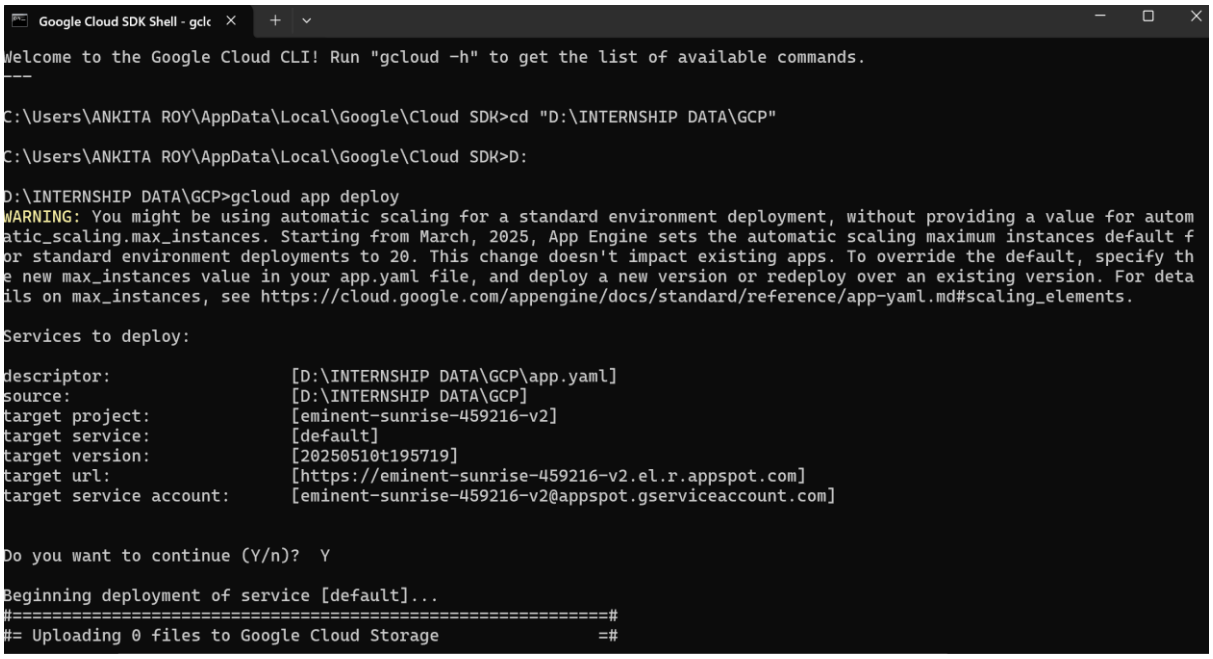

EXPLORER
app.yaml U
GCP
.ipynb_checkpoints
templates
.gcloudignore U
app.py M
app.yaml U
DATASET.ipynb U
iris_model.pkl
requirements.txt U
app.yaml
1 runtime: python39
2 entrypoint: gunicorn -b :$PORT app:app
3
4
5 handlers:
6 - url: /static
7 static_dir: static
8
9
10 - url: /.*
11 script: auto
12
OUTLINE
TIMELINE


EXPLORER
requirements.txt U
GCP
.ipynb_checkpoints
templates
.gcloudignore U
app.py M
app.yaml U
DATASET.ipynb U
iris_model.pkl
requirements.txt U
requirements.txt
1 Flask
2 numpy
3 scikit-learn
4 gunicorn
5



✓ Step 4: GCP Setup

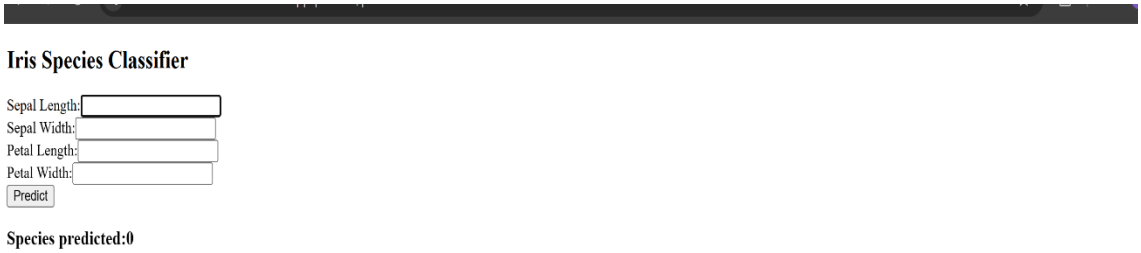
- gcloud init configuration
- Region selection
- Service creation
- Successful gcloud app deploy



```
target version:              [20250510t195719]
target url:                  [https://eminent-sunrise-459216-v2.el.r.appspot.com]
target service account:      [eminent-sunrise-459216-v2@appspot.gserviceaccount.com]


Do you want to continue (Y/n)?  Y

Beginning deployment of service [default]...
#============================================================#
#= Uploading 0 files to Google Cloud Storage                =#
#============================================================#
File upload done.
Updating service [default]...done.
Setting traffic split for service [default]...done.
Deployed service [default] to [https://eminent-sunrise-459216-v2.el.r.appspot.com]

You can stream logs from the command line by running:
  $ gcloud app logs tail -s default

To view your application in the web browser run:
  $ gcloud app browse

D:\INTERNSHIP DATA\GCP>
```

✓ Step 5: Test the Web App

https://eminent-sunrise-459216-v2.el.r.appspot.com



✓ Step 6: Test the API

Curl

```
C:\Users\ANKITA ROY>curl -X POST "https://eminent-sunrise-459216-v2.el.r.appspot.com/api" -H "Content-Type: application/
json" -d "{\"feature1\":5.1,\"feature2\":3.5,\"feature3\":1.4,\"feature4\":0.2}"
{"prediction":0}

C:\Users\ANKITA ROY>
```

Conclusion:

This project successfully demonstrates the complete deployment pipeline of a machine learning model using the **Google Cloud Platform (GCP).** A **Random Forest Classifier** trained on the Iris dataset was integrated with a Flask application, which was then deployed on GCP App Engine.

Both a **web-based interface** and an **API endpoint** were implemented to interact with the model. The deployment utilized free-tier credits provided by GCP, making it accessible and cost-effective.

Through this project, key cloud concepts such as environment configuration, dependency management, and scalable deployment were applied in practice, reinforcing both machine learning and DevOps skills.

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Batch Code: LISUM44

Submission Date: 05/05/25

Submitted to: Data Glacier