2CEAI702: MLOps Practical-4

Practical-4 Deploy the Machine Learning Model using Flask and Docker.

Task 1: Install the required libraries

pip install Flask pip install gunicorn

Task 2: Follow the steps described in theory material to deploy the model using Flask. Run the flask application to execute the deployed model.

Flask Code:

from flask import Flask, jsonify, request

from your_model import predict # Import your model's prediction function

app = Flask(__name__)

@app.route('/predict', methods=['POST']) def

prediction(): data =

request.get_json(force=True)

result = predict(data) # Use your model to make predictions return

jsonify(result)

if __name__ == '__main__': app.run(port=5000)

Task 3: Create the docker file using the steps described in theory material.

Docker File Code:

FROM python:3.8-slim
WORKDIR /app
COPY . /app
RUN pip install --trusted-host pypi.python.org -r requirements.txt

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EXPOSE 80
ENV NAME World
CMD ["python", "app.py"]

Task 4: Create the Docker Image

docker build -t dockerfile.

```
PS D:\SEM 7\ML-OPS\Practical\practical> docker build -t dockerfile .

[+] Building 25.5s (9/9) FINISHED

=> [internal] load .dockerignore

=> => transferring context: 2B

=> [internal] load build definition from dockerfile
```

Task 5: Create the Docker File

```
What's Next?

View summary of image vulnerabilities and recommendations → docker scout quickview

PS D:\SEM 7\ML-OPS\Practical\practical> docker run -p 4000:80 dockerfile
```

Task 6: Check Performance

```
PS D:\SEM 7\ML-OPS\Practical\practical> docker images
REPOSITORY
                  TAG
                              IMAGE ID
                                                 CREATED
                                                                     ST7F
dockerfile
                                                 2 minutes ago
                  latest
                                                                     509MB
                              ee193e6cc1a7
hello-world
                  latest
                                                 6 months ago
                              9c7a54a9a43c
                                                                     13.3kB
PS D:\SEM 7\ML-OPS\Practical\practical> docker images
CONTAINER ID NAME
                                   MEM USAGE / LIMIT
                           CPU %
                                                   MEM %
                                                           NET I/O
                                                                    BLOCK I/O
                                                                             PIDS
785e4a62c222 quizzical bardeen
                           0.00%
                                   0B / 0B
                                                   0.00%
                                                           0B / 0B
                                                                   0B / 0B
                                                                             0
```

Task 7: Hands-on on docker commands:

1. docker pull ubuntu:latest

2. docker ps

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```
PS D:\SEM 7\ML-OPS\Practical\practical> docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
```

3. docker ps -a

```
S D:\SEM 7\ML-OPS\Practical\practical> docker ps
CONTAINER ID
                IMAGE
                                          COMMAND
                                                              CREATED
                                                                                 STATUS
                                                                                                                  PORTS
                                          "python app.py"
"python app.py"
"/hello"
                                                                                                                             quizzical_bardeen
785e4a62c222
                 dockerfile
                                                              7 minutes ago
                                                                                 Exited (0) 7 minutes ago
                                                                                 Exited (0) 8 minutes ago
Exited (0) 25 minutes ago
523f21a1dd21
                 dockerfile
                                                              8 minutes ago
                                                                                                                             xenodochial_moser
98032478cfe5
                 hello-world:latest
                                                              2 months ago
                                                                                                                             mystifying_fermi
```

4. docker inspect container name or id