

Link to github for lab09: <https://github.com/jf2024/mlops/tree/main/Labs/Lab09>

## 1) Screenshot of terminal launching app with minikube

```
(mlops) jfuent02 cd ~/Documents/USFDS/Spring2025-02/MLOps/mlops/Labs/Lab09 % $ minikube start
minikube v1.35.0 on Darwin 14.5 (arm64)
Using the docker driver based on existing profile
Starting "minikube" primary control-plane node in "minikube" cluster
Pulling base image v0.0.46 ...
Restarting existing docker container for "minikube" ...
Preparing Kubernetes v1.32.0 on Docker 27.4.1 ...
Verifying Kubernetes components...
  Using image docker.io/kubernetes/dashboard:v2.7.0
  Using image gcr.io/k8s-minikube/storage-provisioner:v5
  Using image docker.io/kubernetes/metrics-scraper:v1.0.8
Some dashboard features require the metrics-server addon. To enable all features please run:

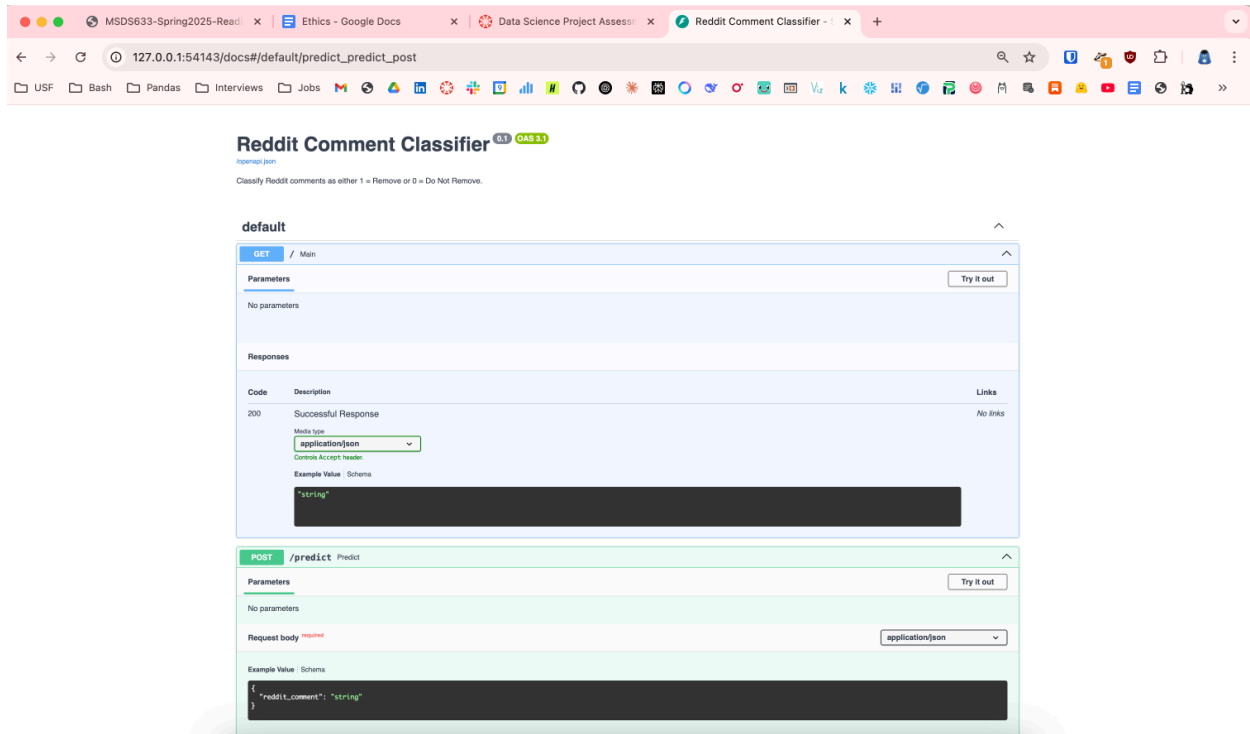
minikube addons enable metrics-server

Enabled addons: storage-provisioner, dashboard, default-storageclass
Done! kubectll is now configured to use "minikube" cluster and "default" namespace by default
(mlops) jfuent02 cd ~/Documents/USFDS/Spring2025-02/MLOps/mlops/Labs/Lab09 % $ eval $(minikube docker-env)
(mlops) jfuent02 cd ~/Documents/USFDS/Spring2025-02/MLOps/mlops/Labs/Lab09 % $ docker build -t reddit-app .
[+] Building 25.9s (12/12) FINISHED
=> [internal] load build definition from Dockerfile
=> transferring dockerfile: 460B
=> [internal] load metadata for docker.io/library/python:3.13-slim
=> [auth] library/python:pull token for registry-1.docker.io
=> [internal] load .dockerignore
=> transferring context: 2B
=> [1/6] FROM docker.io/library/python:3.13-slim@sha256:60248ff36cf701fcb6729c085a879d81e4603f7f507345742dc82d4b38d16784
=> resolve docker.io/library/python:3.13-slim@sha256:60248ff36cf701fcb6729c085a879d81e4603f7f507345742dc82d4b38d16784
=> sha256:752d4cef486674dcd573242cb91c3cd745d8a57e2c98137cea0b34865dc1397b 5.38kB / 5.38kB
=> sha256:943331d8a9a863299c02e5de6cce58602a5bc3dc564315aa886fe706376f27f 28.07MB / 28.07MB
=> sha256:e2cb253fde557c5344b6b66ea9fcfb70a6f4bf8d619a1a73634aec15d97afc 3.33MB / 3.33MB
=> sha256:5d2e5c0a4d7dd180112c7b54443783ea13244d874f5f53a2b351f58bcd0cd0 12.49MB / 12.49MB
=> sha256:60248ff36cf701fcb6729c085a879d81e4603f7f507345742dc82d4b38d16784 9.12kB / 9.12kB
=> sha256:7b2d1770c8f92ae273997005d6d0a82338efaac578a6c7cc51faac77e1a734aa 1.75kB / 1.75kB
=> sha256:f67dc854fc87ab1c8faf57d16cc5411da8a4ef059920fc436bba2966bbf5dd41 249B / 249B
=> extracting sha256:943331d8a9a863299c02e5de6cce58602a5bc3dc564315aa886fe706376f27f
=> extracting sha256:e2cb253fde557c5344b6b66ea9fcfb70a6f4bf8d619a1a73634aec15d97afc
=> extracting sha256:5d2e5c0a4d7dd180112c7b54443783ea13244d874f5f53a2b351f58bcd0cd0
=> extracting sha256:f67dc854fc87ab1c8faf57d16cc5411da8a4ef059920fc436bba2966bbf5dd41
=> [internal] load build context
=> transferring context: 529.12kB
=> [2/6] RUN pip install -U pip
=> [3/6] WORKDIR /app
=> [4/6] COPY [ requirements.txt, ./ ]
=> [5/6] RUN pip install -r requirements.txt
=> [6/6] COPY [ reddit_model_pipeline.joblib, redditApp.py, ./ ]
=> exporting to image
=> exporting layers
=> writing image sha256:f9bce359ce7333ddfdcd16dfdaa0b39f0b2a699762aae5c321bb56bccb87184e4
=> naming to docker.io/library/reddit-app
View build details: docker-desktop://dashboard/build/default/default/81rySptgffemxzicja7snbtt
(mlops) jfuent02 cd ~/Documents/USFDS/Spring2025-02/MLOps/mlops/Labs/Lab09 % $ eval $(minikube docker-env --unset)
(mlops) jfuent02 cd ~/Documents/USFDS/Spring2025-02/MLOps/mlops/Labs/Lab09 % $ kubectl apply -f reddit-deployment.yaml
deployment.apps/reddit-app created
(mlops) jfuent02 cd ~/Documents/USFDS/Spring2025-02/MLOps/mlops/Labs/Lab09 % $ kubectl apply -f reddit-service.yaml
service/reddit-service created
(mlops) jfuent02 cd ~/Documents/USFDS/Spring2025-02/MLOps/mlops/Labs/Lab09 % $ minikube service reddit-service
|-----|
| NAMESPACE | NAME | TARGET PORT | URL |
|-----|
| default | reddit-service | 8000 | http://192.168.76.2:31686 |
|-----|
X Starting tunnel for service reddit-service.
|-----|
| NAMESPACE | NAME | TARGET PORT | URL |
|-----|
| default | reddit-service | | http://127.0.0.1:54143 |
|-----|
Opening service default/reddit-service in default browser...
! Because you are using a Docker driver on darwin, the terminal needs to be open to run it.
```

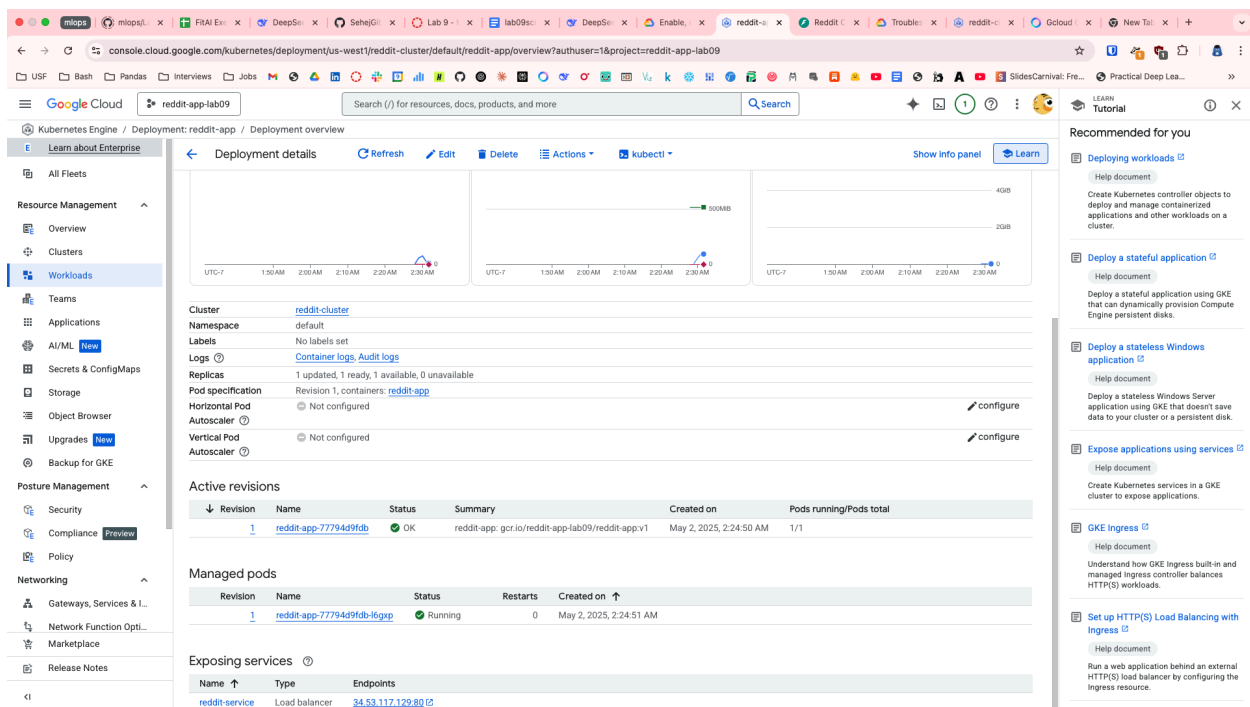
Some extra proof

```
(mlops) jfuent02 cd ~/Documents/USFDS/Spring2025-02/MLOps/mlops/Labs/Lab09 % $ kubectl get pods
NAME                                READY    STATUS    RESTARTS    AGE
mlflow-deployment-655dcb78c7-2rt8k 1/1      Running   1 (6m18s ago)  17d
mlflow-deployment-655dcb78c7-c5nsh 1/1      Running   1 (6m18s ago)  17d
mlflow-deployment-655dcb78c7-zzqmf 1/1      Running   1 (6m18s ago)  17d
reddit-app-5669d97658-86nhq         1/1      Running   0            4m16s
(mlops) jfuent02 cd ~/Documents/USFDS/Spring2025-02/MLOps/mlops/Labs/Lab09 % $ kubectl get deployments
NAME                                READY    UP-TO-DATE    AVAILABLE    AGE
kubernetes-bootcamp                0/0      0              0            21d
mlflow-deployment                  3/3      3              3            17d
reddit-app                          1/1      1              1            4m19s
(mlops) jfuent02 cd ~/Documents/USFDS/Spring2025-02/MLOps/mlops/Labs/Lab09 % $ kubectl get services
NAME                                TYPE        CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
kubernetes                        ClusterIP   10.96.0.1     <none>         443/TCP          21d
kubernetes-bootcamp               NodePort    10.108.234.123 <none>         8080:30804/TCP   21d
mlflow-service                     NodePort    10.99.237.21  <none>         5000:30000/TCP   17d
reddit-service                     LoadBalancer 10.98.216.189 <pending>      8000:31686/TCP   4m9s
(mlops) jfuent02 cd ~/Documents/USFDS/Spring2025-02/MLOps/mlops/Labs/Lab09 % $
```

## 2) App running locally using minikube



## 3) Running in gcp



#### 4) App running with url given

