

To use the song recommendation system:

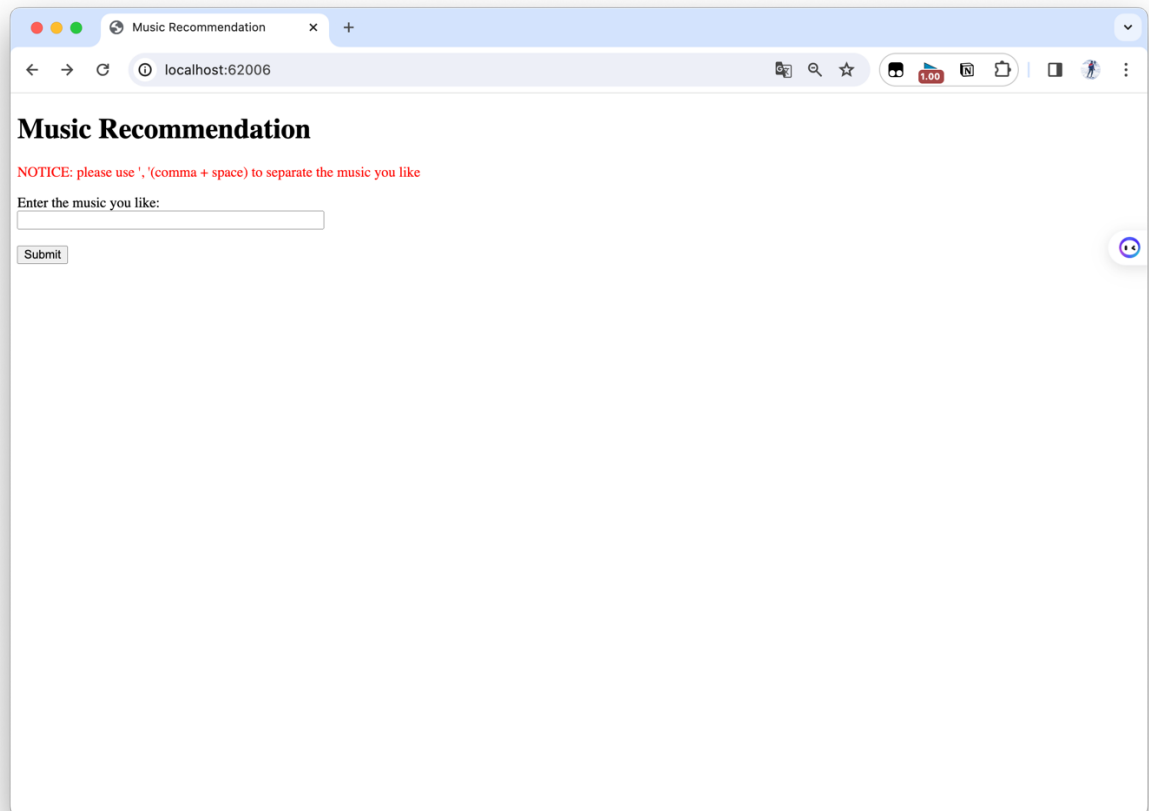
1. Create a tunnel to the CLUSTER_IP

```
xs90@vcm-37920:~/Project2$ kubectl -n xs90 get services
```

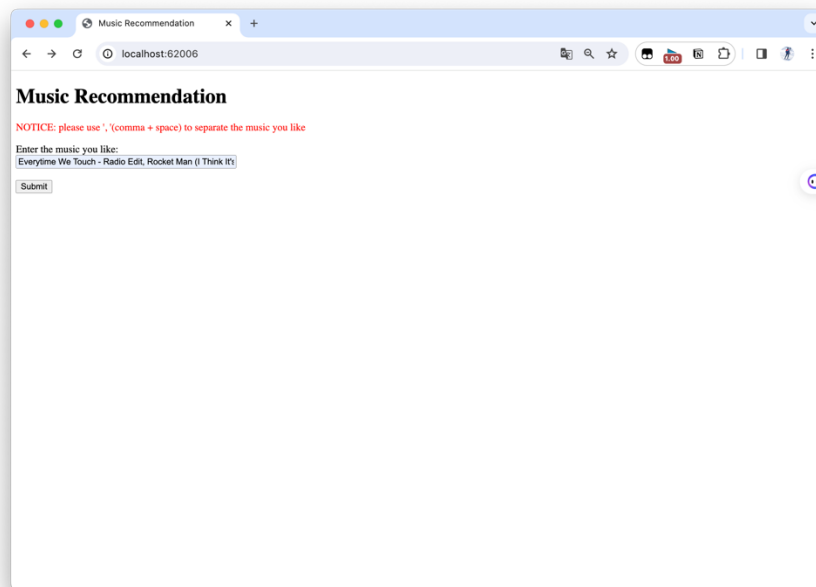
NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
project2-client-service-xs90	ClusterIP	10.105.108.174	<none>	62006/TCP	115s
song-recommender-service-xs90	ClusterIP	10.101.86.115	<none>	52006/TCP	115s

ssh -fNT -L 62006:10.105.108.174:62006 xs90@vcm-37920.vm.duke.edu

2. Open <http://localhost:62006/> on our own computer



3. Enter the music list and press Submit:



Music Recommendation

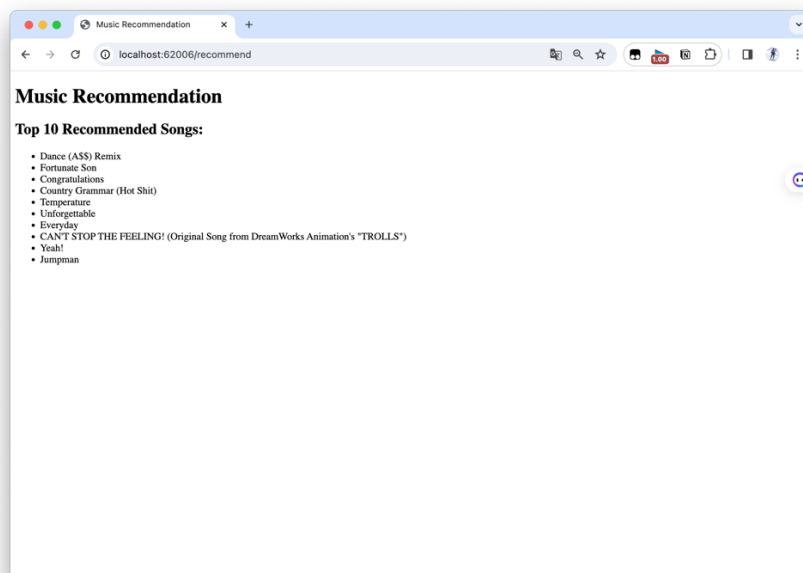
NOTICE: please use ', (comma + space)' to separate the music you like

Enter the music you like:

Everytime We Touch - Radio Edit, Rocket Man () Think It

Submit

4. Result:



Music Recommendation

Top 10 Recommended Songs:

- Dance (ASS) Remix
- Fortunate Son
- Congratulations
- Country Grammar (Hot Shit)
- Temperature
- Unforgettable
- Everyday
- CAN'T STOP THE FEELING! (Original Song from DreamWorks Animation's "TROLLS")
- Yeah!
- Jumpman

ML code folder: /recSystem

Flask code/ Web front end folder: /client

Server code/back end folder: /server

All the Dockerfiles are in the corresponding folder

The yaml files to control Kubernetes: deployment.yaml, service.yaml

The YAML file describing the ArgoCD application: Manifest.yaml

```
Project2 > ! Manifest.yaml
1 metadata:
2   creationTimestamp: "2024-02-25T13:50:28Z"
3   generation: 88
4   managedFields:
5   - apiVersion: argoproj.io/v1alpha1
6     fieldsType: FieldsV1
7     fieldsV1:
8       f:spec:
9         .: {}
10        f:destination:
11          .: {}
12          f:namespace: {}
13          f:server: {}
14          f:project: {}
15          f:source:
16            .: {}
17            f:path: {}
18            f:repoURL: {}
19            f:syncPolicy:
20              .: {}
21              f:automated:
22                .: {}
23                f:prune: {}
24            f:status:
25              .: {}
26              f:health: {}
27              f:summary: {}
28              f:sync:
29                .: {}
30                f:comparedTo:
31                  .: {}
32                  f:destination: {}
33                  f:source: {}
34      manager: argocd-server
35      operation: Update
36      time: "2024-02-25T14:26:40Z"
37   - apiVersion: argoproj.io/v1alpha1
38     fieldsType: FieldsV1
```

I have test Argo CD and it does works to deploy the app. When I make changes to the Git Repo: https://github.com/shenxingy/Song_Recommendation, Argo CD would make adjustments.

Update the number of replicas: very fast.

Update the dataset of playlists: slow, need to update image and retrain the ml model (using matrix factorization).

Update one of the container images: slow.