Peer Assignment
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Assignment (3.4)

Write a component that will log metadata of your Classification model that you trained on the day dedicated to Supervised Learning. Remember to include all metadata that are important to track for this problem.

Solution

1. Setting up MLFlow tracking server

We also specify artifact root and backend store URI. This makes it possible to store models.

After running this command tracking server will be accessible at `localhost:5006`

```
%%bash --bg

mlflow server --host 0.0.0.0 \
    --port 5006 \
    --backend-store-uri sqlite:///mlflow.db \
    --default-artifact-root ./mlruns
```

[7] ✓ 0.0s

2. Now make MLProject file.

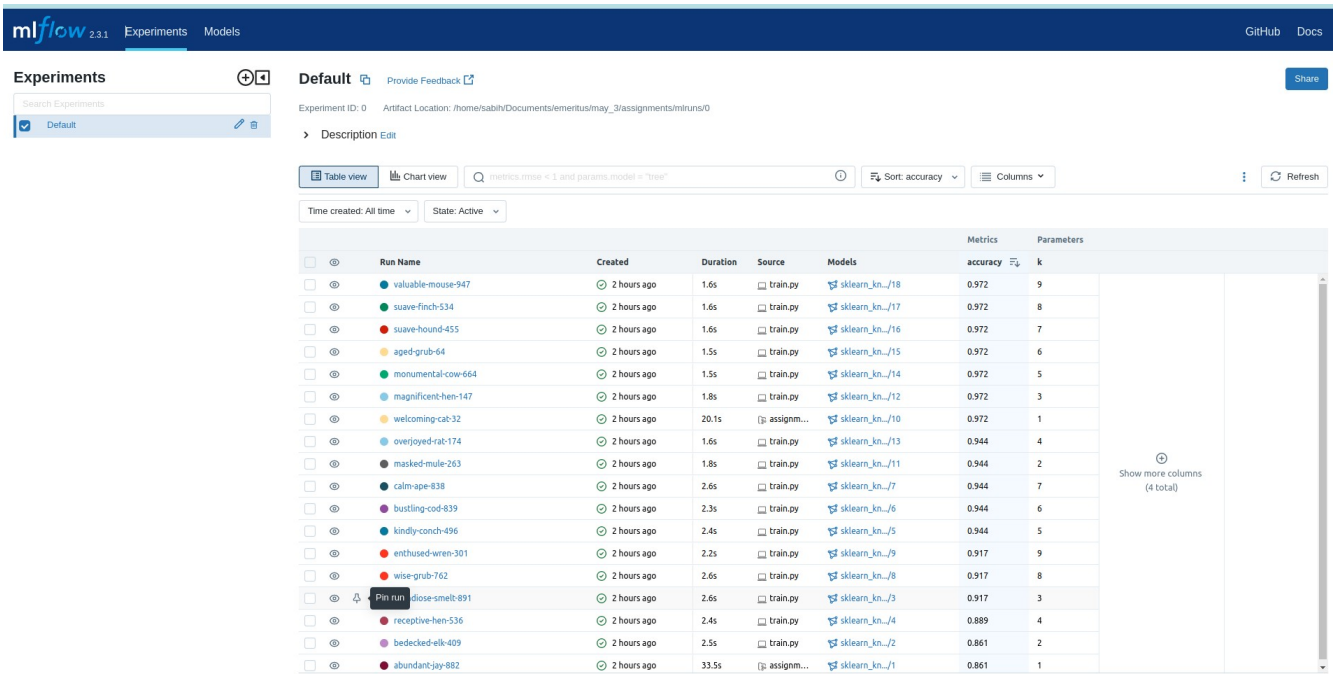
```
%cat MLproject
```
✓ 0.1s

```
name: basic_mlflow

# this file is used to configure Python package dependencies.
# it uses Anaconda, but it can be also alternatively configured to use pip.
conda_env: conda.yml

# entry points can be ran using `mlflow run <project_name> -e <entry_point_name>
entry_points:
  # MLproject file has to have main entry_point. It can be toggled without using -e option.
  main:
    command: "python train.py"
```

3. Now we are **Train** the model.

```
%%bash
source mlflow_env_vars.sh
mlflow run .
```
[12] ✓ 21.4s

```
2023/05/08 08:43:34 INFO mlflow.utils.conda: Conda environment mlflow-dd0fbdd40ba98798131458f29496394bd1a3fb
2023/05/08 08:43:34 INFO mlflow.projects.utils: === Created directory /tmp/tmpkq6uz9zc for downloading remot
2023/05/08 08:43:34 INFO mlflow.projects.backend.local: === Running command 'source /home/sabih/anaconda3/bi
{'data': array([[1.423e+01, 1.710e+00, 2.430e+00, ..., 1.040e+00, 3.920e+00,
         1.065e+03],
        [1.320e+01, 1.780e+00, 2.140e+00, ..., 1.050e+00, 3.400e+00,
         1.050e+03],
        [1.316e+01, 2.360e+00, 2.670e+00, ..., 1.030e+00, 3.170e+00,
         1.185e+03],
        ...,
        [1.327e+01, 4.280e+00, 2.260e+00, ..., 5.900e-01, 1.560e+00,
         8.350e+02],
        [1.317e+01, 2.590e+00, 2.370e+00, ..., 6.000e-01, 1.620e+00,
         8.400e+02],
        [1.413e+01, 4.100e+00, 2.740e+00, ..., 6.100e-01, 1.600e+00,
         5.600e+02]]), 'target': array([0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
```



4. Inspecting stored models The trained models are stored in `mlruns/0`.

```
%%bash
last_model_path=$(ls -tr mlruns/0/ | tail -1)
cat mlruns/0/$last_model_path/artifacts/knn/MLmodel
```

[13] ✓ 0.0s

```
artifact_path: knn
flavors:
  python_function:
    env:
      conda: conda.yaml
      virtualenv: python_env.yaml
    loader_module: mlflow.sklearn
    model_path: model.pkl
    predict_fn: predict
    python_version: 3.11.3
  sklearn:
    code: null
    pickled_model: model.pkl
    serialization_format: cloudpickle
    sklearn_version: 1.2.2
mlflow_version: 2.3.1
model_uuid: 236205d23ce845649b8d7d3079bad324
run_id: 8e509c2c290c426f9b293de1005ee636
utc_time_created: '2023-05-08 03:43:50.294035'
```

5. Now we have to **serve** our model.

```
%%bash --bg
source mlflow_env_vars.sh
mlflow --version
mlflow models serve -m models:/sklearn_knn/Production -p 5007 --env-manager=conda
```

[18] ✓ 0.0s

6. Now to check our model we have to **predict** it.

```
%%bash
data='[[14.23,1.71,2.43,15.6,127.0,2.80,3.06,0.28,2.29,5.64,1.04,3.92,1065.0]]'
echo $data

curl -d "{\"inputs\": $data}" -H 'Content-Type: application/json' 127.0.0.1:5007/invocations
```

✓ 0.0s

```
[[14.23,1.71,2.43,15.6,127.0,2.80,3.06,0.28,2.29,5.64,1.04,3.92,1065.0]]
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100   104  100    20  100    84   4960  20833 --:--:-- --:--:-- --:--:-- 34666
{"predictions": [0]}
```

```
%%bash
data='[[13.05,1.73,2.04,12.4,92.0,2.72,3.27,0.17,2.91,7.2,1.12,2.91,1150.0]]'
echo $data

curl -d "{\"instances\": $data}" -H 'Content-Type: application/json' 127.0.0.1:5007/invocations
```

✓ 0.0s

```
[[14.23,1.71,2.43,15.6,127.0,2.80,3.06,0.28,2.29,5.64,1.04,3.92,1065.0]]
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100   107  100    20  100    87   4956  21561 --:--:-- --:--:-- --:--:-- 35666
{"predictions": [0]}
```

```
%%bash
data='[[ 12.93,   2.81,   2.7 ,  21.0  ,  96.0  ,   1.54,   0.5 ,   0.53, 0.75,   4.6 ,   0.77,   2.31,600.0]]'
echo $data

curl -d "{\"instances\": $data}" -H 'Content-Type: application/json' 127.0.0.1:5007/invocations
```

✓ 0.0s

```
[[ 12.93, 2.81, 2.7 , 21.0 , 96.0 , 1.54, 0.5 , 0.53, 0.75, 4.6 , 0.77, 2.31,600.0]]
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100   139  100    20  100   119   8054  47925 --:--:-- --:--:-- --:--:-- 69500
{"predictions": [2]}
```