Deploying a Machine Learning Model with Flask
Yunke Wan
LISUM31
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Data Glacier

- **Selecting the Dataset**

California Housing data:

	MedInc	HouseAge	AveRooms	AveBedrms	Population	AveOccup	Latitude	Longitude	MedHouseVal
0	8.3252	41.0	6.984127	1.023810	322.0	2.555556	37.88	-122.23	4.526
1	8.3014	21.0	6.238137	0.971880	2401.0	2.109842	37.86	-122.22	3.585
2	7.2574	52.0	8.288136	1.073446	496.0	2.802260	37.85	-122.24	3.521
3	5.6431	52.0	5.817352	1.073059	558.0	2.547945	37.85	-122.25	3.413
4	3.8462	52.0	6.281853	1.081081	565.0	2.181467	37.85	-122.25	3.422

- **Training the Model**

```
from sklearn.datasets import fetch_california_housing
from sklearn.model_selection import train_test_split
from sklearn.ensemble import GradientBoostingRegressor
import joblib

# train the model
housing = fetch_california_housing()
X_train, X_test, y_train, y_test = train_test_split(
    housing.data, housing.target, test_size=0.2, random_state=42
)
model = GradientBoostingRegressor(
    n_estimators=100, learning_rate=0.1, max_depth=3, random_state=42
)
model.fit(X_train, y_train)
```

- **Saving the Model**

```python
joblib.dump(model, "model.pkl")

from flask import Flask, request, jsonify
import joblib

app = Flask(__name__)
model = joblib.load("model.pkl")
```

- Creating a Flask Application

```python
@app.route("/")
def home():
    return "Welcome to my Flask app!"


@app.route("/predict", methods=["POST"])
def predict():
    data = request.get_json(force=True)
    prediction = model.predict([data["features"]])
    return jsonify(prediction=prediction.tolist())


if __name__ == "__main__":
    app.run(port=5000, debug=True)
```

- Testing the Deployment

```
PS C:\Users\78641> $response = Invoke-WebRequest -Uri "http://127.0.0.1:5000/predict" -Method Post -ContentType "applica
tion/json" -Body '{"features": [7, 40, 6, 1, 500, 2.5, 37, -122]}'
PS C:\Users\78641> $response.Content
{
  "prediction": [
    4.20697984535848
  ]
}
```