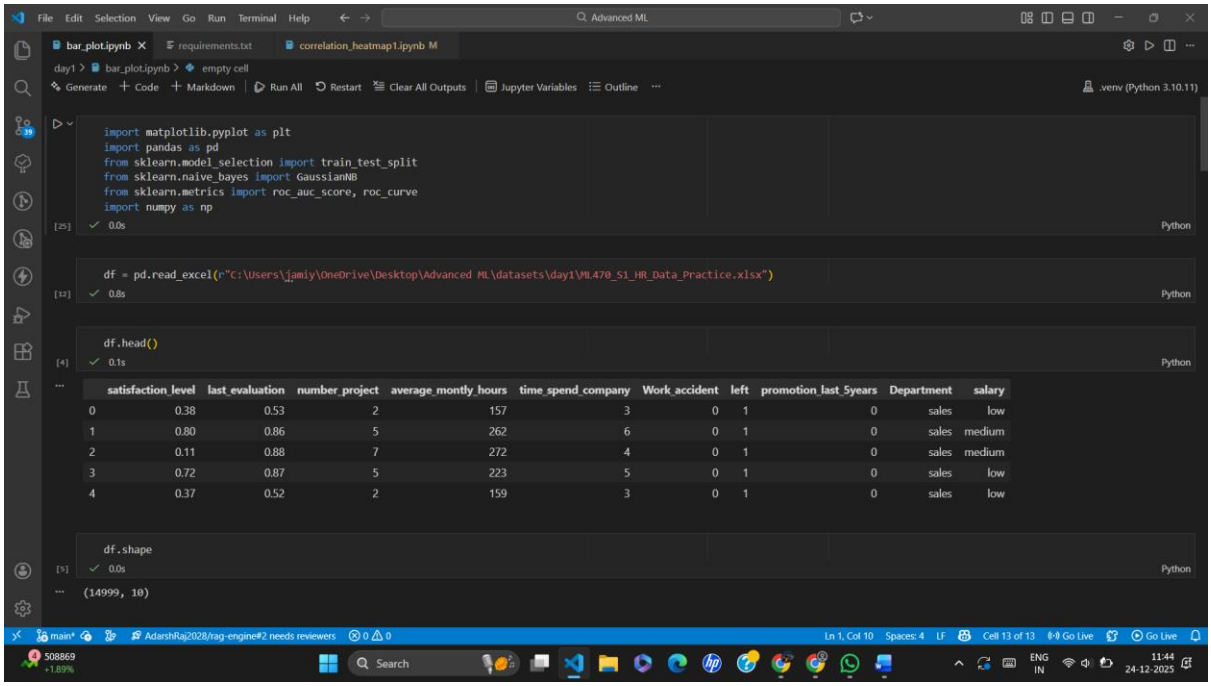
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Advanced ML
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day1 > bar_plot.ipynb > empty cell
Generate + Code + Markdown Run All Restart Clear All Outputs Jupyter Variables Outline
.venv (Python 3.10.11)
import matplotlib.pyplot as plt
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.naive_bayes import GaussianNB
from sklearn.metrics import roc_auc_score, roc_curve
import numpy as np
[25] 0.0s Python
df = pd.read_excel(r"C:\Users\jamiy\OneDrive\Desktop\Advanced ML\datasets\day1\ML470_S1_HR_Data_Practice.xlsx")
[12] 0.8s Python
df.head()
[4] 0.1s Python
satisfaction_level last_evaluation number_project average_montly_hours time_spend_company Work_accident left promotion_last_5years Department salary
0 0.38 0.53 2 157 3 0 1 0 sales low
1 0.80 0.86 5 262 6 0 1 0 sales medium
2 0.11 0.88 7 272 4 0 1 0 sales medium
3 0.72 0.87 5 223 5 0 1 0 sales low
4 0.37 0.52 2 159 3 0 1 0 sales low
df.shape
[5] 0.0s Python
(14999, 10)
main* AdarshRaj2028/rag-engine#2 needs reviewers Ln 1, Col 10 Spaces: 4 LF Cell 13 of 13 Go Live
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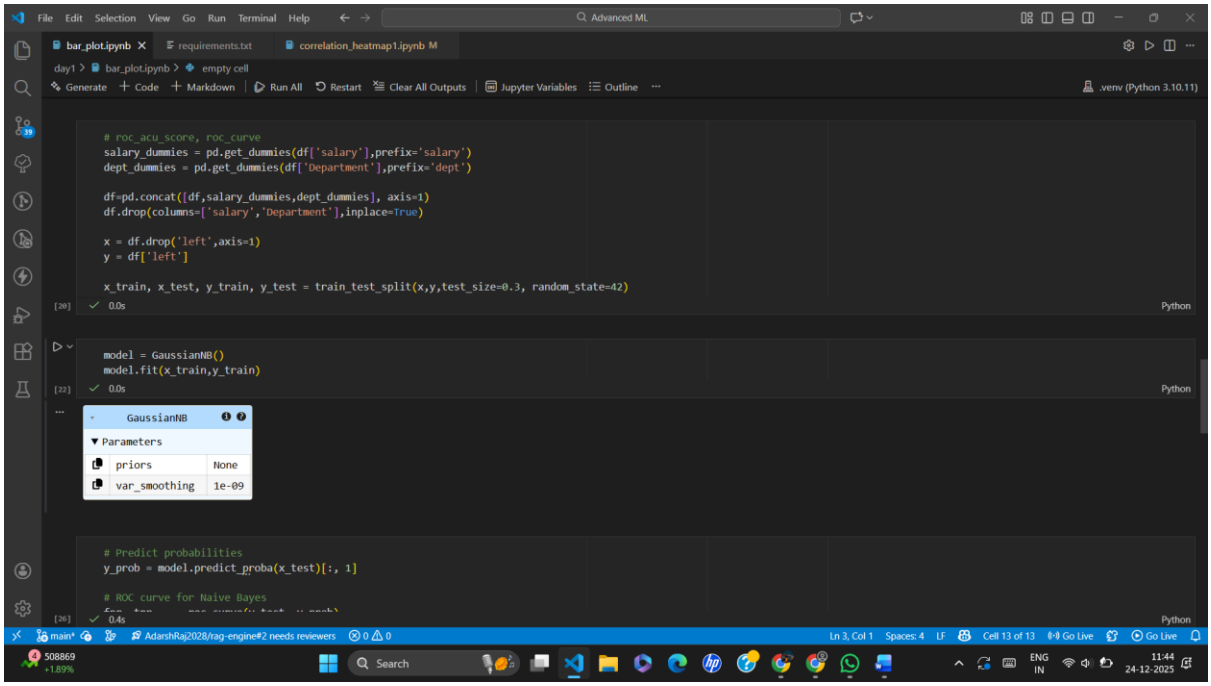
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Generate + Code + Markdown Run All Restart Clear All Outputs Jupyter Variables Outline
.venv (Python 3.10.11)
# roc_acu_score, roc_curve
salary_dummies = pd.get_dummies(df['salary'],prefix='salary')
dept_dummies = pd.get_dummies(df['Department'],prefix='dept')
df=pd.concat([df,salary_dummies,dept_dummies], axis=1)
df.drop(columns=['salary','Department'],inplace=True)
x = df.drop('left',axis=1)
y = df['left']
x_train, x_test, y_train, y_test = train_test_split(x,y,test_size=0.3, random_state=42)
[20] 0.0s Python
model = GaussianNB()
model.fit(x_train,y_train)
[22] 0.0s Python
GaussianNB
Parameters
priors None
var_smoothing 1e-09
# Predict probabilities
y_prob = model.predict_proba(x_test)[:, 1]
# ROC curve for Naive Bayes
[26] 0.4s Python
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```
# Predict probabilities
y_prob = model.predict_proba(x_test)[:, 1]

# ROC curve for Naive Bayes
fpr, tpr, _ = roc_curve(y_test, y_prob)
auc_score = roc_auc_score(y_test, y_prob)

# No-skill classifier
no_skill = np.zeros(len(y_test))
fpr_ns, tpr_ns, _ = roc_curve(y_test, no_skill)
auc_ns = roc_auc_score(y_test, no_skill)

# Print AUC values
print(f"No Skill: ROC AUC={auc_ns:.3f}")
print(f"Classifier: ROC AUC={auc_score:.3f}")

# Plot ROC Curve
plt.figure(figsize=(8,6))
plt.plot(fpr_ns, tpr_ns, linestyle='--', label='No Skill')
plt.plot(fpr, tpr, marker='.', label='Naive Bayes')
plt.xlabel('False Positive Rate')
plt.ylabel('True Positive Rate')
plt.legend()
plt.title('ROC Curve')
plt.show()
```

```
No Skill: ROC AUC=0.500
Classifier: ROC AUC=0.756
```