CS23334 -Fundamental Of Data Science

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Analysis of Data Science Job Posting Trends (2015–2024)

Exp :1A

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Aim:

To analyze the trend of Data Science job postings (2015–2024) by calculating and visualizing the 3-Year Rolling Mean and Year-over-Year (YoY) percentage change.

Algorithm:

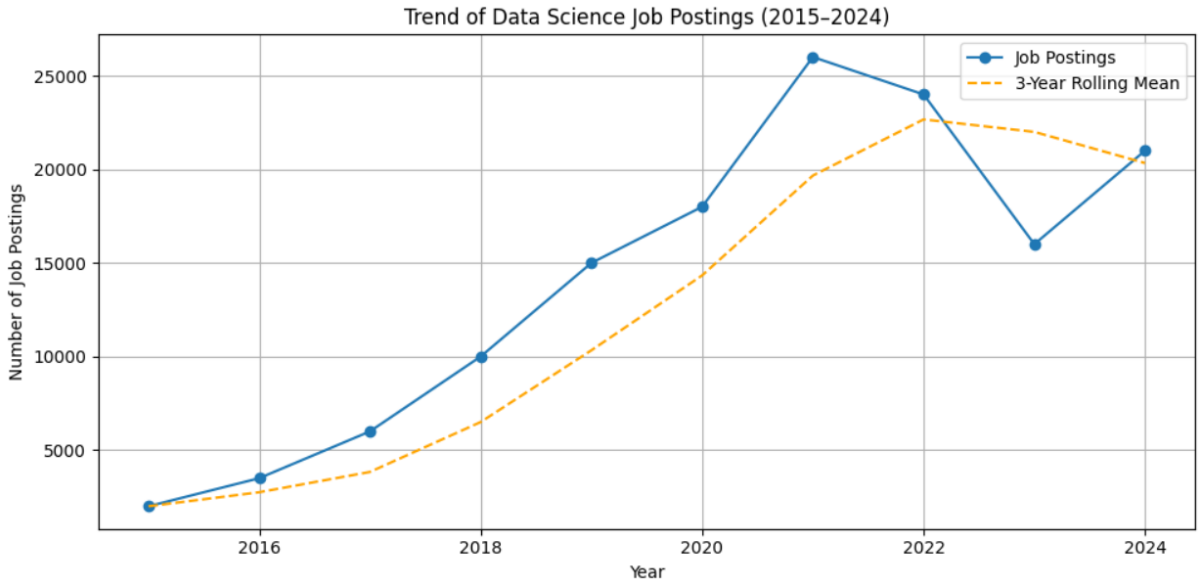
1. Load the **data_science_job_postings.csv** dataset.
2. Calculate the **Year-over-Year (%) Change** in job postings.
3. Calculate the **3-Year Rolling Mean** of job postings to smooth the trend.
4. Generate a **line plot** showing both raw postings and the rolling mean.
5. Generate a **bar plot** for the Year-over-Year (%) Change.
6. Display both visualizations and interpret the results.

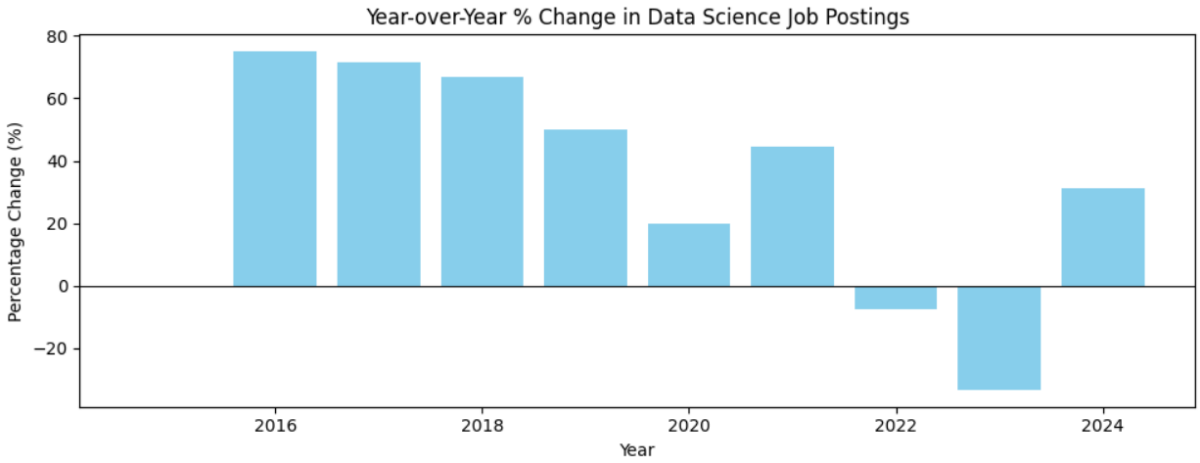
Code:

```
import pandas as pd

import matplotlib.pyplot as plt

df = pd.read_csv(r"data_science_job_postings.csv")

df['YoY_Change_%'] = df['Job_Postings'].pct_change().fillna(0) * 100

df['Rolling_Mean'] = df['Job_Postings'].rolling(window=3, min_periods=1).mean()

plt.figure(figsize=(10,5))

plt.plot(df['Year'], df['Job_Postings'], marker='o', label='Job Postings')

plt.plot(df['Year'], df['Rolling_Mean'], linestyle='--', color='orange', label='3-Year Rolling Mean')

plt.title('Trend of Data Science Job Postings (2015–2024)')
```

```
plt.xlabel('Year')
plt.ylabel('Number of Job Postings')
plt.legend()
plt.grid(True)
plt.tight_layout()
plt.show()
plt.figure(figsize=(10,4))
plt.bar(df['Year'], df['YoY_Change_%'], color='skyblue')
plt.axhline(0, color='black', linewidth=0.8)
plt.title('Year-over-Year % Change in Data Science Job Postings')
plt.xlabel('Year')
plt.ylabel('Percentage Change (%)')
plt.tight_layout()
plt.show()
```

Output:





Result:

The analysis confirms a long-term positive growth trend in Data Science job demand but shows a sharp negative Year-over-Year change in 2024, indicating recent market contraction. Thus, the python program was executed successfully, and the output is verified.