

Google Search Trend Analysis with Python

Understanding Public Interest Across Time and Regions

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Problem Statement

- With over 8.5 billion Google searches daily, understanding what people are searching for can reveal deep insights into public interest, market demand, and emerging trends.
- Businesses, educators, and marketers need real-time data to make informed decisions. This project provides a way to analyze and visualize search trends using Python and Google Trends data.

Why This Project Matters

- - It automates the search analysis process
- - It answers real business questions using real-time data
- - It provides dynamic visualizations for instant insight
- - Anyone can reuse it by changing just one keyword

What Business Questions Are Answered?

- 1. Which countries search the keyword the most?
- 2. How does interest vary across the world (map view)?
- 3. What is the trend of the keyword over time?
- 4. How do related keywords compare?
- 5. What are the actionable insights from the data?

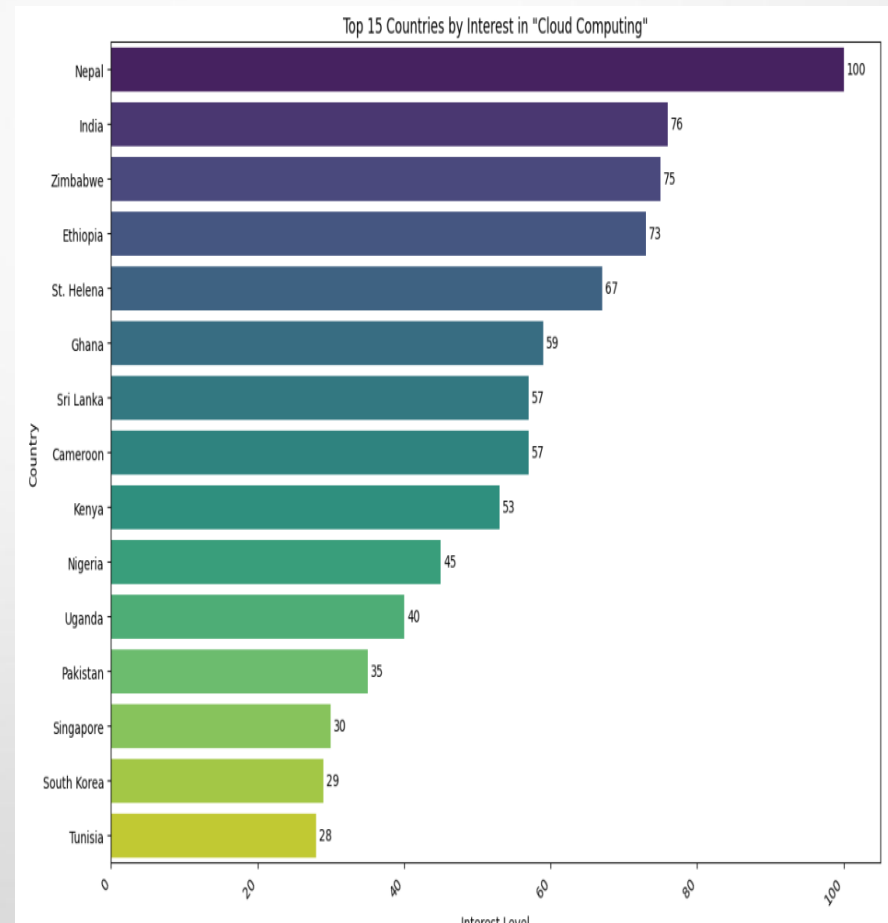
Top 15 Countries by Search Interest

```
plt.figure(figsize=(12, 8))
ax = sns.barplot(x=top_15_countries[keyword_list[0]], y=top_15_countries.index, palette='viridis')
plt.xticks(rotation=45)
plt.title(f'Top 15 Countries by Interest in "{keyword_list[0]}"')
plt.ylabel('Country')
plt.xlabel('Interest Level')
plt.xticks(rotation=45, ha='right')
plt.tight_layout()

# Add values on top of the bars
for p in ax.containers:
    plt.bar_label(p, fmt='%0f', label_type='edge', color='black', padding=3)

plt.tight_layout()
plt.show()
```

Insight:
Nepal, India, and Zimbabwe show the highest interest in 'Cloud Computing'.

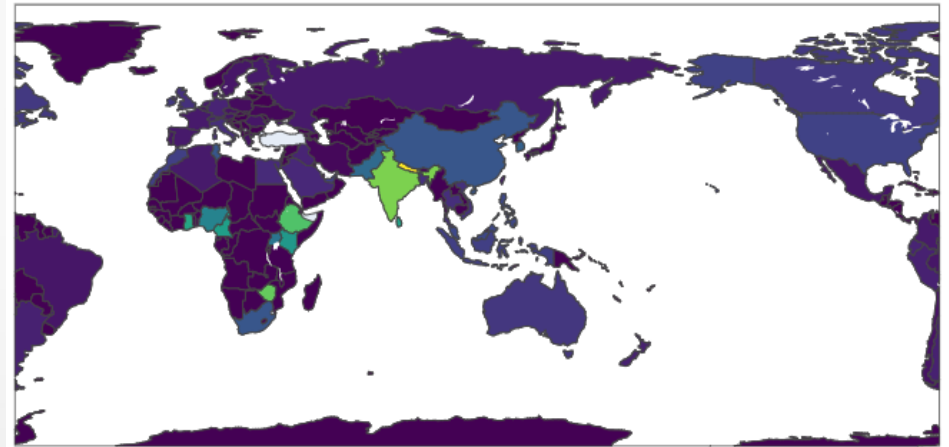


Search Interest by Country (Map View)

```
[41] fig = px.choropleth(region_data,  
    locations='geoName',  
    locationmode='country names',  
    color=keyword_list[0],  
    title=f"Search Interest for '{keyword_list[0]}' by Country",  
    color_continuous_scale='viridis')  
fig.show()
```

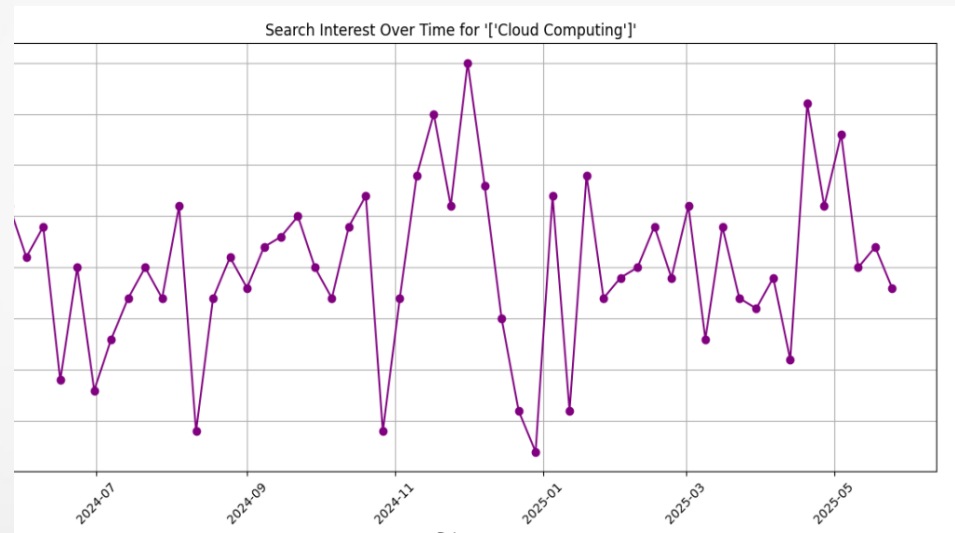
Insight:

India, Ethiopia, and Nigeria stand out with strong regional interest.



Search Trend Over Time

```
plt.figure(figsize=(12,6))
plt.plot(time_df.index, time_df[keyword_list[0]], marker='o', color='purple')
plt.title(f"Search Interest Over Time for '{keyword_list[0]}'")
plt.xlabel("Date")
plt.ylabel("Interest")
plt.grid(True)
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```

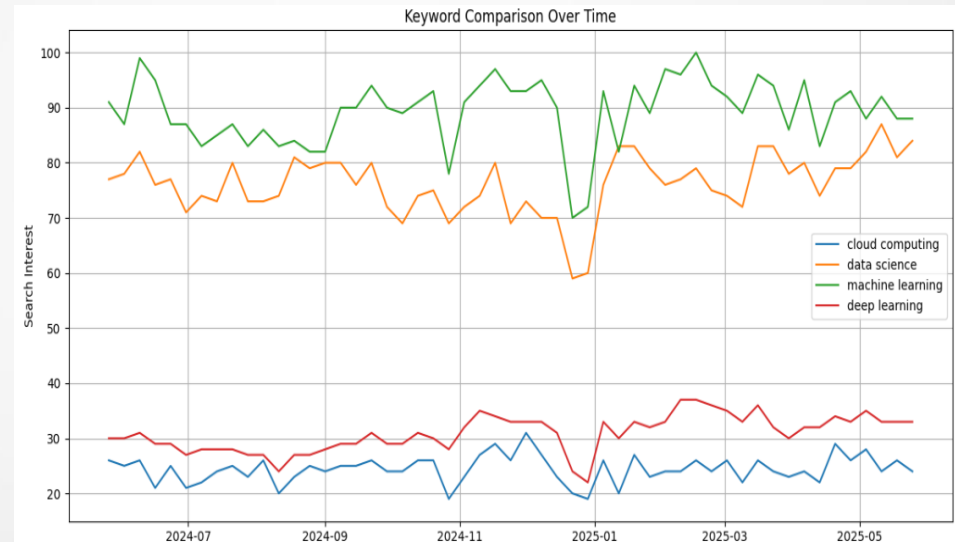


Insight:
Search interest peaked in Nov–Dec 2024 and dropped in Aug 2024 and Jan 2025.

Keyword Comparison Over Time

```
plt.figure(figsize=(12,6))
for kw in kw_list:
    plt.plot(compare_df.index, compare_df[kw], label=kw)
plt.title("Keyword Comparison Over Time")
plt.xlabel("Date")
plt.ylabel("Search Interest")
plt.legend()
plt.grid(True)
plt.tight_layout()
plt.show()
```

Insight:
Machine learning leads overall;
cloud computing trends more
steadily but lower in interest.



Business Impact

- - Helps marketers time campaigns and ads
- - Informs SEO and content strategy
- - Supports educators in course launches
- - Helps startups validate product demand
- - Enables data-driven decision making

Summary & Conclusion

- This project enables real-time, keyword-based trend analysis using Python.
- ✓ Easy to reuse — just change the keyword
- ✓ Instant insights — from geography to time-based trends
- ✓ Helps multiple departments make smarter decisions
- This tool is a step towards data-driven strategy and awareness.