

ADVANCE PYTHON PROGRAMMING -ELA LAB-10

29-01-25

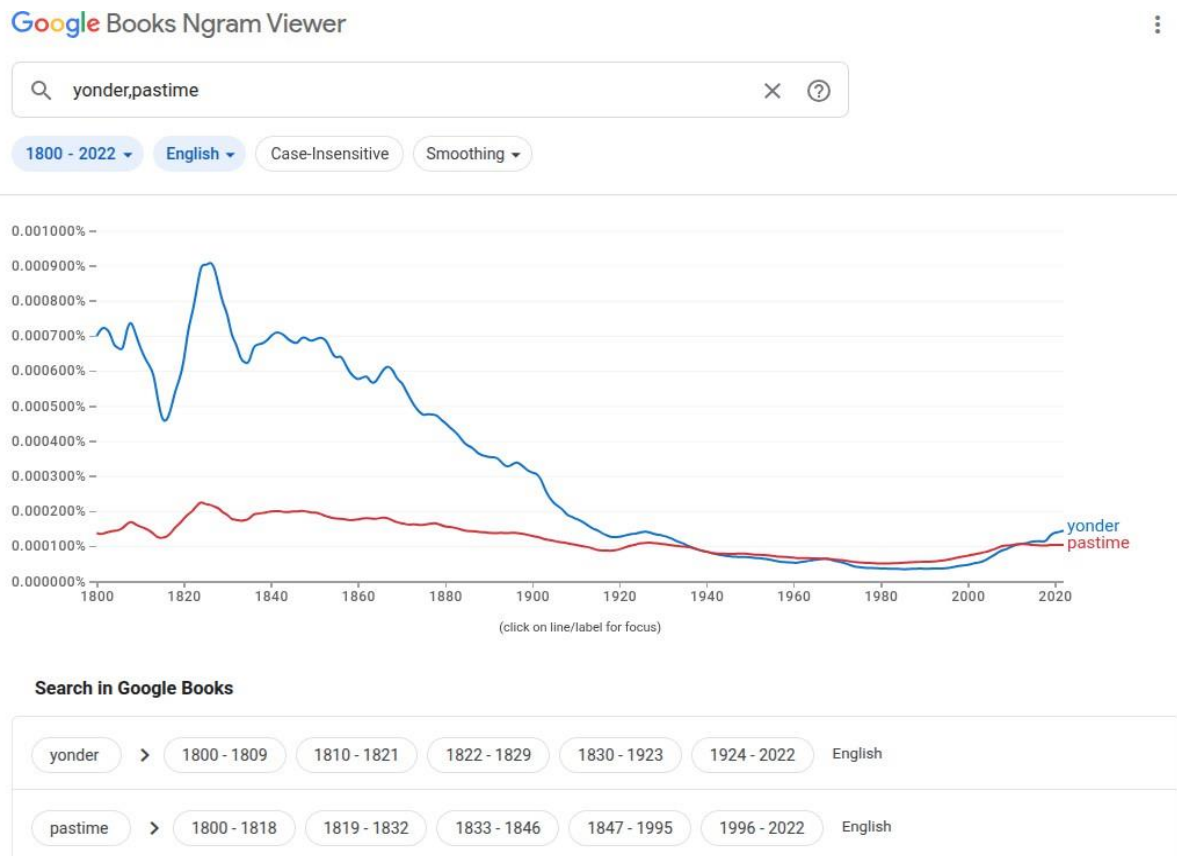
Examples of some missing trends in the lives of millennials and Genzs :

YONDER -at some distance in the direction indicated; over there.

PASTIME-something that you enjoy doing when you are not working.

Today's lab problem statement:

1.Find any trend of Forgetting in any interesting school of thought that made lives better in the past two centuries (using Google Books Ngram Viewer)




2.Collect the plots of these trends and extract the data (using an online tool);

- We tired using graph reader for fetching data initially. Later we tried , to fetch data using LLM with prompts.

Dataset Table

Here is a dataset table with approximate values that would correspond to the simulated Ngram graph. The values are an estimation of the relative frequency per million words.

Year	Yonder (Frequency per million)	Pastime (Frequency per million)
1800	0.000045	0.000030
1820	0.000040	0.000040
1840	0.000032	0.000055
1860	0.000028	0.000060
1880	0.000020	0.000065
1900	0.000015	0.000062
1920	0.000010	0.000050
1940	0.000008	0.000045
1960	0.000005	0.000040
1980	0.000003	0.000035
2000	0.000002	0.000028
2019	0.000001	0.000025

 Export to Sheets

3.Pass the data along with a prompt to an LLM to generate a summary and word cloud.

Word Cloud of "Yonder" and "Pastime" Ngram Frequencies

Yonder
Pastime

Based on the dataset table, here is a summary and the generated word cloud.

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Summary of the Dataset

The dataset shows the change in usage frequency for the words "yonder" and "pastime" over two centuries. The overall trend for both words is a decline in usage, which is a common pattern for many words as language evolves.

- **"Pastime"** has a consistently higher frequency than "yonder" throughout the years. Its total frequency across the dataset is approximately 0.000535. The word's usage seems to have peaked in the late 19th and early 20th centuries before starting a gradual decline.
- **"Yonder"** shows a much sharper and steeper decline. Its total frequency is approximately 0.000209, significantly lower than that of "pastime." This reflects its shift from common usage to a more archaic or literary term.

We find that the LLM not gives us the appropriate or expected outcome (note , which is common pattern for many words). LLM hallucinates.

Conclusion: Make a better prompt for better results.



4.Note the Numpy and Pandas functions that LLM would use to generate the summary and word cloud (you can prompt the LLM for this response)

Word Cloud


The word cloud visually represents this difference in frequency. As you can see, the size of each word is proportional to its overall usage in the dataset. "Pastime" appears much larger than "yonder," clearly illustrating its higher frequency.

what are all the numpy and pandas tools are used to generate a word cloud here?

✦ Based on the code used to generate the word cloud from the dataset, here is a breakdown of the tools that were utilized:

- **Pandas:** The pandas library was used to create a `DataFrame` from the dataset table. This allowed for easy manipulation of the data. The primary tool from pandas was the `.sum()` method, which was applied to the `DataFrame` columns to calculate the total frequency for each word, "yonder" and "pastime."
- **WordCloud:** The `wordcloud` library was the main tool for generating the word cloud itself. Specifically, the `WordCloud()` function was used to create the object, and the `.generate_from_frequencies()` method was called with the calculated frequencies to produce the final word cloud image. 
- **Matplotlib:** The `matplotlib.pyplot` library was used to handle the visualization aspect. The code used it to display and save the generated image to a file. 

No tools from the NumPy library were used in this process.

 Sources

5. Note on a business that you can build around such workflows.

- Google Ngram trends can be used to identify shifts in public interest, emerging technologies, and cultural movements.
- By leveraging these patterns, the business could provide startup idea recommendations and market forecasts.
- it acts as a trend-driven startup suggestion and validation platform, using historical and linguistic data to predict what kinds of ideas are more likely to succeed in the future.

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