Analysing a Company’s growth using APIs and LLMs

This approach provides a comprehensive method for analyzing 10-K filings by combining automated data extraction, textual analysis using LLMs, and visualization techniques.

This will help you understand the company's financial performance a over the specified period, leading to informed conclusions about its growth trajectory.

**Steps Involved:**

1. **Data Collection**

First, we need to programmatically download the 10-K filings using the sec-edgar-downloader package.

**Then, download the 5 most recent 10-K filings of Microsoft.**

**2. Data Cleaning and Pre-processing**

**a. Extract and clean text data:**

You’ll need to parse the HTML or XML content from the downloaded filings. Libraries like BeautifulSoup or lxml can be helpful.

**3. Analysis Using LLMs via APIs**

**a. Define the analysis tasks:**

1. **Extracting and Analysing Financial Data and Liabilities:**
   * Extract sections related to financial performance, revenue, and income.
   * Use LLMs to analyse trends and calculate growth rates.
2. **Insights and Conclusions:**
   * Use LLMs to derive insights based on the extracted data and trends.

**b. Use OpenAI or Hugging Face API to derive insights**

**4. Visualization**

**a. Extract Data for Visualization:**

* Parse the insights from the LLM responses to extract numerical data like revenue and net income.
* Structure it using pandas dataframe.

**b. Create Visualizations using Matplotlib**

**5. Deriving Insights and Conclusion**

**a. Analyse the visualizations and LLM-generated insights:**

* Assess trends in revenue and income growth.

**b. Conclude based on the data:**

* Determine if the company has experienced consistent growth
* Collab links:
* <https://colab.research.google.com/drive/10fWSW4g1YyXOQE3Ss21OTW4QRolNMyEj?usp=sharing>
* <https://colab.research.google.com/drive/1Rmk5M0NiKkLE_msjlo73nhr9hZEbzHTA?usp=sharing>
* Second parses just the tabular data and insights are derived by chatgpt based on it, then it is used to visualise