**Sentiment Analysis Dashboard**

**Project Overview**

This Streamlit-based Sentiment Analysis Dashboard allows users to analyze sentiments from product reviews, specifically focusing on musical instruments. It dynamically classifies sentiments as Positive, Neutral, or Negative based on user input or loaded review data.

**Features**

* **Data Visualization**: Interactive charts showing the distribution of sentiments and a word cloud visualization based on review texts.
* **Sentiment Analysis**: Real-time sentiment analysis of user-entered text to determine whether the sentiment is positive, negative, or neutral.
* **Interactive Filters**: Users can select the number of samples to display and filter the data by sentiment.

**Installation**

Follow these steps to set up and run the Sentiment Analysis Dashboard locally:

**Prerequisites**

* Python 3.6 or higher
* pip

**Dependencies**

Install the required Python packages using pip:

bash

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pip install streamlit pandas matplotlib textblob wordcloud

**Optional: Watchdog Installation**

For better performance on local development:

bash

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xcode-select --install # macOS specific

pip install watchdog

**Usage**

To run the app, navigate to the project directory and run the following command:

bash

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streamlit run app.py

This will start the Streamlit server, and you should be able to view the app in your web browser at http://localhost:8501.

**Data**

The dashboard uses the Instruments\_Reviews.csv dataset, which includes musical instrument reviews with ratings. The dataset should contain the following columns:

* reviewerID: ID of the reviewer
* asin: ID of the product
* reviewerName: Name of the reviewer
* helpful: Helpful votes the review received
* reviewText: Text of the review
* overall: Overall rating given to the product
* summary: Summary of the review
* unixReviewTime: Time of the review (UNIX timestamp)
* reviewTime: Time of the review (formatted)

**User Interface Components**

1. **Sidebar Controls**:
   * **Select number of samples**: A slider allows users to select how many review samples they want to display from the dataset. This is useful for limiting the data processed and visualized at any given time.
   * **Filter by sentiment**: Users can filter reviews by sentiment categories (Positive, Neutral, Negative) using multiselect checkboxes. This feature lets users focus on analyzing specific types of sentiments.
2. **Analyze Sentiments Button**:
   * When clicked, it triggers the analysis and visualization of sentiments based on the selected number of samples and filters. This button acts as the primary action for generating outputs like data previews, distribution charts, and word clouds.

**Main Display Area**

* **Dataset Preview**: Displays a preview of the dataset as a table, showing the top records according to the number specified by the slider. This gives a quick glance at the data being analyzed.
* **Sentiment Distribution**: Visualized as a pie chart, this shows the proportion of each sentiment type within the filtered dataset. The chart is interactive, providing a clear visual representation of sentiment distribution, which can help in quickly understanding the overall sentiment bias in the reviews.
* **Word Cloud**: Represents the most frequent words found in the reviews of the selected sentiment categories. The size of each word in the cloud indicates its frequency. This visualization helps in identifying key themes and terms prevalent in the reviews, offering insights into common opinions or issues highlighted by reviewers.

**Text Input for Sentiment Analysis**

* Users can enter any text into the text area to analyze its sentiment. This feature is particularly useful for testing how the model interprets different phrases or sentences and can be used for quick checks or demonstrations.

**Output for User Input Analysis**

* This section is designed to display the analysis of the text input by the user. It is meant to show whether the sentiment of the entered text is Positive, Neutral, or Negative, providing immediate feedback on the sentiment analysis model's interpretation.

**System Messages and Notices**

* **System Recommendations and Warnings**: Messages about deprecated features or recommendations for improving performance (like installing Watchdog) are shown. This helps in keeping the application up-to-date with best practices and ensuring optimal performance.

**Overall Functionality**

The Streamlit Sentiment Analysis Dashboard effectively combines data processing, user interaction, and visualization to provide a comprehensive tool for sentiment analysis. It's designed to be user-friendly, allowing non-technical users to perform complex data analysis tasks easily. The interactive nature of Streamlit ensures that changes in input or filter settings produce immediate updates to the visualizations, making it an effective tool for exploratory data analysis.

A screenshot of a computer

AI-generated content may be incorrect.

**Contributing**

Contributions to this project are welcome. Please fork the repository and submit a pull request with your features or fixes.

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