

Airline Sentiment Insights Dashboard

Technologies Used: Python, pandas, TextBlob, nltk, Power BI Desktop, Visual Studio Code, Git, GitHub

Project Overview:

Built an end-to-end sentiment analysis and visualization pipeline to analyze public opinions about major U.S. airlines using Twitter data. The project combines Python scripting for data cleaning, text preprocessing, and sentiment scoring with Power BI Desktop to create an interactive and insightful dashboard.

The pipeline starts with raw tweet data, processes it through sentiment analysis using TextBlob, and outputs a cleaned dataset. This dataset is then imported into Power BI to visualize sentiment trends, compare airlines, and explore customer feedback interactively.

Key Features:

- Developed a Python script to clean and preprocess tweets by removing noise, stopwords, and irrelevant text using `nltk` and `pandas`.
 - Performed sentiment analysis with TextBlob to classify tweets as positive, neutral, or negative.
 - Exported the processed data as a CSV file to be consumed by Power BI for dynamic visualization.
 - Created interactive Power BI dashboards with charts, slicers, and filters to analyze sentiment distribution by airline, sentiment category, and other tweet metadata.
 - Integrated Python visuals (e.g., word clouds) directly inside Power BI reports to enhance storytelling.
 - Managed dependencies using Python's package management and structured the project for modularity and reusability.
 - Used Visual Studio Code for Python development and Git/GitHub for version control and project collaboration.
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Code Structure (`analyze_sentiment.py`):

- **Import Libraries:** pandas for data manipulation, TextBlob for sentiment analysis, nltk for text cleaning, and wordcloud/matplotlib for optional visualization.
- **Load Raw Data:** Reads raw Twitter data CSV into a pandas DataFrame.
- **Text Cleaning:** Removes URLs, mentions, hashtags, punctuations, and stopwords.

- **Sentiment Scoring:** Uses TextBlob to compute polarity and subjectivity scores and categorize sentiment.
 - **Save Output:** Writes cleaned and enriched data into `cleaned_tweets.csv` for Power BI import.
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Power BI Report (`Airline_Sentiment_Insights.pbix`):

- **Data Import:** Loads `cleaned_tweets.csv` as the data source.
- **Visualizations:** Uses pie charts, bar graphs, and slicers to explore sentiment trends by airline and sentiment categories.
- **Python Visuals:** Embedded Python visuals like word clouds to show frequent words per sentiment.
- **Interactivity:** Allows users to filter and drill down into specific airlines or sentiment types dynamically.