# Sentiment Analysis Dashboard

## Project Description

This is a Streamlit-based web application designed for performing sentiment analysis on text data. It allows users to analyze single text inputs, upload CSV files for batch analysis, compare sentiment across different datasets, and generate accuracy reports. The application leverages Hugging Face models for sentiment prediction and provides various export options for the analysis results.

## Features

* **Single Text Analysis:** Analyze the sentiment of individual text inputs.
* **Batch Upload (CSV):** Upload CSV files containing text data for bulk sentiment analysis.
* **Dataset Comparison:** Compare sentiment distributions between two different datasets.
* **Accuracy Report:** Generate classification reports and confusion matrices for model evaluation (requires labeled data).
* **Keyword Extraction:** Identify key terms from analyzed texts.
* **Multiple Export Formats:** Export results to CSV, Excel, JSON, HTML, Word, and PDF.
* **Demo Mode:** Functionality available without an API key, using a simplified sentiment analysis model.
* **Customizable Models:** Choose from various Hugging Face sentiment analysis models.

## Installation

To set up and run the Sentiment Analysis Dashboard locally, follow these steps:

1. **Clone the repository:**

git clone https://github.com/your-username/sentiment-analysis-dashboard.git

cd sentiment-analysis-dashboard

1. **Create a virtual environment (recommended):**

python -m venv venv

source venv/bin/activate # On Windows, use `venv\Scripts\activate`

1. **Install dependencies:**

pip install -r requirements.txt

## API Key Configuration

This application uses Hugging Face models for sentiment analysis. To use the full functionality (i.e., not in demo mode), you need a Hugging Face API key.

1. **Get your Hugging Face API Key:**
   * Go to [Hugging Face](https://huggingface.co/settings/tokens).
   * Sign up or log in.
   * Create a new access token with the "read" role.
2. **Create a .env file:**
   In the root directory of the project, create a file named .env and add your API key in the following format:

API\_KEY=your\_huggingface\_api\_key\_here

1. Replace your\_huggingface\_api\_key\_here with the actual API key you obtained from Hugging Face.

## Usage

To run the Streamlit application, navigate to the project directory in your terminal and execute:

streamlit run sentiment\_analyzer\_fixed.py

This will open the application in your web browser.

### Demo Mode

If no API key is provided in the .env file, or if you explicitly enable "Demo Mode" in the sidebar, the application will use a simplified, rule-based sentiment analysis for demonstration purposes.

## Export Options

The application supports exporting analysis results in multiple formats:

* **CSV:** Comma-separated values.
* **Excel:** Microsoft Excel spreadsheet (.xlsx).
* **JSON:** JavaScript Object Notation.
* **HTML:** HyperText Markup Language.
* **Word:** Microsoft Word document (.docx).
* **PDF:** Portable Document Format.

## Technologies Used

* [Streamlit](https://streamlit.io/) - For building interactive web applications.
* [Hugging Face Transformers](https://huggingface.co/transformers/) - For state-of-the-art NLP models.
* [Pandas](https://pandas.pydata.org/) - For data manipulation and analysis.
* [Matplotlib](https://matplotlib.org/) & [Seaborn](https://seaborn.pydata.org/) - For data visualization.
* [NLTK](https://www.nltk.org/) - For natural language processing tasks like tokenization and stop word removal.
* [python-dotenv](https://pypi.org/project/python-dotenv/) - For managing environment variables.
* [python-docx](https://python-docx.readthedocs.io/) - For creating Word documents.
* [xhtml2pdf](https://xhtml2pdf.readthedocs.io/) - For converting HTML to PDF.

## Contributing

Contributions are welcome! Please feel free to submit pull requests or open issues for any bugs or feature requests.

## License

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