AWG Dashboard Technical Explanation

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Overview

This Streamlit application, titled "AWG Analytics Suite", provides an interactive dashboard to analyze payment and participation data collected through the "SaveALabel" program. It allows users to upload multiple Excel files, clean and merge data, and visualize insights via dynamic charts, tables, and an AI assistant powered by Gemini.

Technologies Used

In order to build this dashboard, UIUC team leveraged several interconnected technologies such as:

- Streamlit: For building the web interface and interactivity.
- Pandas & NumPy: For data processing and cleaning.
- Plotly: For interactive chart visualizations.
- Google Generative AI (Gemini): In order to generate AI reports.
- Excel file support: For multi-source uploads and tabular merging.

Code Structure

Initialization

The script initializes the Streamlit application layout, loads necessary libraries (e.g., pandas, numpy, plotly, generative AI), and sets custom CSS styles for the UI appearance.

Data Processing Function

The function `process_data()` can be considered as the core of the code, since performs several tasks, such as:

- Reads multiple Excel files related to the payments Excel files and a single Excel file related to the nonprofit participation through the years.
- Cleans and merges data based on "Participation #" ID.
- Filters and reformats key fields like dates and postal codes.
- Calculates additional features like processing time and organization classifications.
- Ensures required fields are present before proceeding.

Main Interface

The main function serves as the central UI controller and includes:

- Sidebar inputs for file uploads and AI assistant.
- Data filtering by date range, state, and organization type.
- KPI display: total amount, processing time, participant count.
- Multiple analysis tabs:
    - Trend Analysis: histogram and year over year comparisons.
    - Geo Insight: heatmaps or geobubble charts by state.
    - Classification: sunburst and scatter plots showing relationships.
    - Data Insight: interactive table and scatter matrix.

Usage Instructions

In order to use the app, the user will need to follow the following steps:

1. Launch the app using streamlit run AWG_Enhanced_Dashboard.py.
2. Upload multiple Excel files under "Save-A-Label Payments" and one participation file.
3. Use the sidebar to filter by date, state, and organization type.
4. Explore results through multiple analysis tabs.
5. Use the AI assistant to generate automated insights and suggestions.

Final Notes

The code operates under the assumption that all payment files maintain a consistent naming convention and column structure. It requires a valid Google API key to enable Gemini's AI assistant functionality. The application is intended solely for internal analytics use within the AWG initiative.