Term Project Proposal - Aaron Yang

Dataset Overview

The selected dataset for the term project is titled '**Urban Traffic Density in Cities**', sourced from Kaggle. This dataset offers an in-depth perspective on traffic dynamics within futuristic urban settings. With over 1.2 million records (exactly 1,219,567 rows and 11 columns), it provides a rich resource for exploring the complexities of urban traffic patterns.

Justification for Dataset Selection

This dataset presents a captivating opportunity for data visualization due to its multifaceted nature and real-world relevance. By visualizing various aspects of traffic data, we can uncover insights crucial for urban planning, transportation management, and environmental sustainability.

Important Features for Static Plots

- **City-wise Traffic Comparison**: Utilizing bar charts to compare traffic density across different cities, highlighting variations based on time, weather conditions, and economic factors.
- **Hourly Traffic Trends**: Line plots can effectively showcase the fluctuation of traffic density throughout the day, revealing peak hours and identifying potential correlations with weather conditions.
- **Impact of Random Events**: Pie charts or stacked bar plots can illustrate the distribution of traffic disruptions caused by random events, aiding in understanding their influence on overall traffic patterns.
- **Vehicle Type Analysis**: Grouped bar charts can visualize the distribution of different vehicle types within the urban traffic ecosystem, offering insights into energy consumption and traffic flow efficiency.

Interactive Dashboard Features

Static Plots Integration

Users can select specific cities, time frames, and variables of interest to dynamically update the visualizations.

Dynamic Filtering and Sorting

The dashboard will feature interactive dropdown menus and sliders for filtering and sorting the data based on various parameters such as city, time, weather conditions, and economic factors. This functionality enhances user engagement and facilitates focused exploration of specific data subsets.

Number	Feature	Data Type
1	City	Object, Categorical Data
2	Vehicle Type	Object, Categorical Data
3	Weather	Object, Categorical Data
4	Economic Condition	Object, Categorical Data
5	Day of Week	Object, Categorical Data
6	Hour of Day	Numerical Data/Categorical Data
7	Speed	Numerical Data
8	Is Peak Hour	Categorical Data
9	Random Event Occurred	Categorical Data
10	Energy Consumption	Numerical Data
11	Traffic Density	Numerical Data