Motorq Data Science Assignment

VIT - 2024

Goal: Calculate Fuel economy for each of the given vehicles
Dataset Description: The dataset consists of 3 tables - Telemetry 1, Telemetry 2, and Vehicle Data

- Telemetry 1: Each row contains multiple parameters for a particular vehicle at a particular timestamp
    - Vehicle ID - Unique identifier of a vehicle
    - Timestamp - Timestamp at which the parameters were recorded
    - Speed - Speed at the given timestamp in miles per hour
    - Odometer - Value of the odometer at the given timestamp in miles
    - Fuel Level - Percentage of fuel tank filled at the given timestamp
- Telemetry 2: Each row contains the value of a single parameter (denoted by name)
    - Vehicle ID - Unique identifier of a vehicle
    - Timestamp - Timestamp at which the specified parameter was recorded
    - Name - Name of the parameter recorded
    - Value - Value of the parameter mentioned
- Vehicle Data: Each row maps a single vehicle to its fuel tank capacity and rated miles per gallon
    - Vehicle ID - Unique identifier of a vehicle
    - Tank Capacity - Capacity of the fuel tank in Gallons
    - Rated MPG - The vehicle's rated Fuel Economy in Miles per Gallon

Steps to be Followed:
The assignment consists of two steps

1. Data Preprocessing
    a. Convert the Telemetry 1 and Telemetry 2 tables into one common format
    b. Combine the two tables into one Telemetry table
    c. Ensure that corresponding telemetry messages in both tables are combined into one message to avoid redundancy
    d. Explore this dataset and share at most 3 takeaways from this dataset.
2. Calculate Fuel Economy
    a. Using the telemetry data from the combined table, calculate the Fuel Economy for each vehicle
    b. Please refer to Fuel Economy for an introduction
    c. Discuss your findings and approach taken to calculate this metric with us for follow-ups

Best Practices:

- Try out logic and functions on smaller subsets of data before scaling it to the whole dataset.
- Always think about potential drawbacks of an approach and try to quantify the errors.
- Reach out to us for clarifications regarding any doubts or to discuss your approach. This would help prevent you from taking incorrect approaches.

Note: Document any anomalies, issues, assumptions made during this assignment