TOOL FOR MAPPING HYBRID VEHICLE DATA OF ON-ROAD FLEET TESTING ON GOOGLE MAPS

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Calibration and Fleet Testing are the integral part of a development cycle as they lie on top of the V-Cycle. It becomes necessary to do testing and analysis within stipulated time to meet the development schedule.
Fleet Testing and Analysis

For **CALIBRATION** and gauging the actual On road performance of a hybrid/electric vehicle

- **Fleet testing for different road conditions**
- **Analysis of test data**
- **Feedback for change in Calibration/logic change**

![Car image](image-url)
Fleet Testing and Analysis

For **CALIBRATION** and gauging the actual On road performance of a hybrid/electric vehicle

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Conventional Approach for Fleet data Analysis

**Using Excel** for plotting data in various pie charts, histograms, etc

**Correlating Excel results** with different testing routes and conditions

Input from drivers, other misc. test conditions, breakdowns and other issues

**Data Analyst**

**TIME**
- More time required for data interpretation

**EFFORT**
- Extra efforts to correlate data with route

**SKILL**
- Skilled/Experienced person on job required for analysis
Other Limitations of Conventional Approach

Poor visualization techniques for studying impact of different routes and traffic conditions on system

Correlation of System performance with changing routes is difficult to study
Limitations of Conventional approach

- **Exclusivity loss** of short intermittent conditions of route
- **No geographical correlation** of data with the test route and traffic conditions
SOLUTION

Overcoming the present challenges faced with the conventional approach:

- **Geographical correlation**
- **Poor visualization**
- **Exclusivity loss**

**TIME**
- Less time required for data interpretation

**EFFORT**
- Reduced efforts to correlate data with route

**SKILL**
- Easy data interpretation with little skills/experience
Development of Mapping tool using MATLAB

- A GUI based standalone application for mapping data on google maps was developed using MATLAB.

- It lets user select the test data file along with few options for customization.
Mapping Tool Framework

- **User**
- **GUI**
- **DATA FROM SERVER**
- **FLEET TESTING**
- **Request/load JavaScript file**
- **Client uses JavaScript to connect Google API and load base MAP**
- **Plot route data as requested on google maps in browser**
- **Generates a HTML code file based on user input**
APPLICATION OF MATLAB AT DIFFERENT STAGES

Fleet testing and Data Acquisition and management

MATLAB is used here
- For automating data extraction from vehicle
- Data management and storage
- For making interactive GUI and getting user input with proper input validation
- For processing selected data file
- Time sampling of captured signals
- Other statistical calculations related to vehicle performance

MATLAB is used here
- For generating HTML code based on USER input
- Generating scale
- Inserting various Info marker pins
- Other structural calculations

MAPPING Tool
- Get User input through GUI and validation of input
- Pre-processing and time sampling on signals of test data
- Request query to GOOGLE and wait for the response
- MATLAB is used here
- For saving the generated HTML file
- Opening the file in system browser
- For inserting various Info marker pins
- For saving the generated HTML file
- For opening the file in system browser
Questions and Discussions