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 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**
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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.

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**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:

- Poor visualization
- Geographical correlation
- 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 the 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

MATLAB is used here
- For saving the generated HTML file
- Opening the file in system browser

MATLAB is used for
- Generating scale
- Inserting various Info marker pins
- Other visual effects

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

MATLAB is used for
- For automating data extraction from vehicle
- Data management and storage
Questions and Discussions