# FUEL MANAGEMENT SOLUTION TEST CASE

Testcase Description:

- The objective is to design and execute a data science project focused on enhancing event detection and minimizing false events in a fuel management system (FMS). The aim is to develop robust models and algorithms capable of accurately identifying refueling and pilferage events while reducing the occurrence of false events.

- The primary aim is to develop robust models and algorithms capable of accurately identifying refueling events while reducing the occurrence of false events.

- Data is available from January 5th to April 5th, 2024. For one vehicle, you have to detect all refuels and pilferage above 10 liters. The accuracy should be greater than 95%.

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Assignment Objectives:

1. Explore and preprocess EDA.

2. Design and implement ML algorithms or statistical models to accurately detect events.

3. Develop strategies to reduce false events in event detection.

4. Identify patterns and anomalies in the data that may indicate pilferage incidents.

5. Develop predictive models to identify potential refuel and pilferage incidents in real-time or near real-time.

6. Evaluate the performance of the developed models.

7. Document the entire process including data exploration, preprocessing steps, model development, evaluation metrics, and insights gained.

8. Prepare a comprehensive report summarizing the findings, methodology, challenges encountered, and recommendations for further improvements.

9. Visualization for fuel level trend, which involves detected refuels and pilferages with their event of time.

Sample output visualization
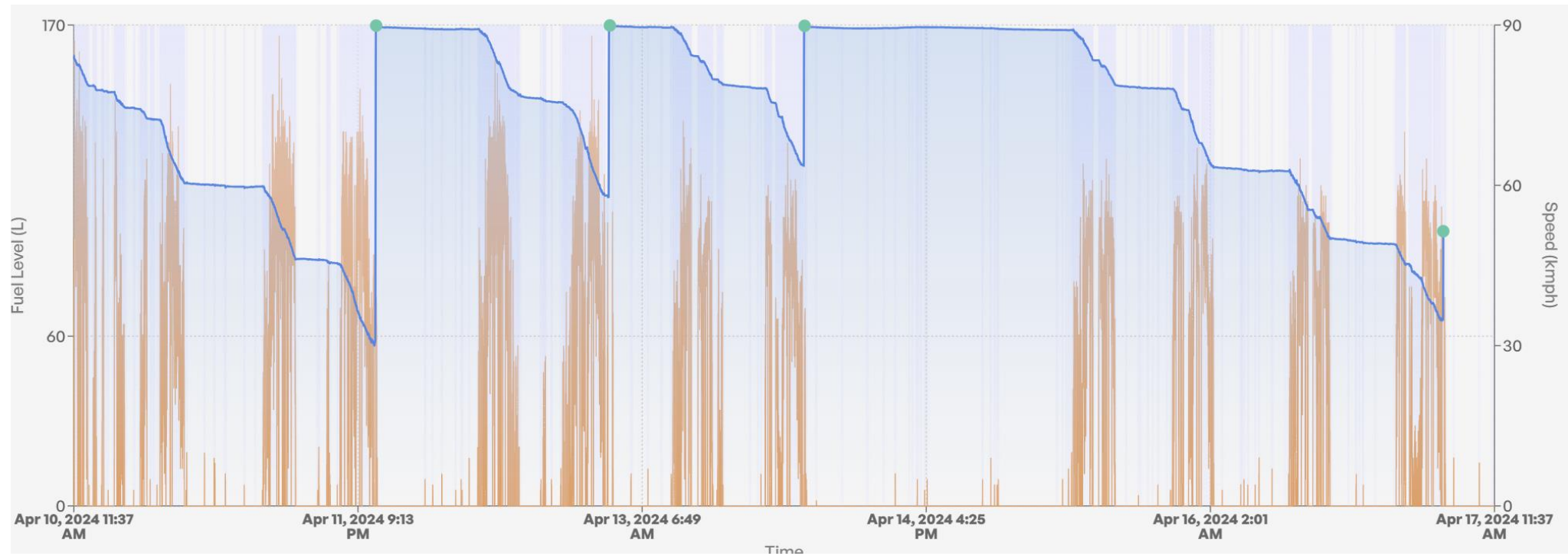
Deliverables:

- 1. Detailed report documenting the entire project including methodology, findings, and recommendations.
- 2. Source python code for project.
- 3. Accuracy of refuel and pilferage event detection.
- 4. Effectiveness and innovation in model development and strategy for false event minimization.
- 5. **False Event Minimization:** Develop strategies to minimize false events in refuel detection. The goal is to achieve a reduction of false events by at least 10%.

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Additional Notes:

- You are encouraged to explore additional analysis techniques and visualizations beyond the specified tasks to gain deeper insights into the dataset.

- Plagiarism will not be tolerated, and any instances of dishonesty will result in disqualification from the hiring process.

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Thank You

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