Ahmedabad University

CSE523 : Machine Learning

Section No.: 1, Group No.: 5

"Identifying hard stop & momentary stop detection"

Weekly Report-5

Submitted to: *Prof.* *Mehul Raval*

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Summary:

In this week, we made progress in enhancing the algorithm to include a third class for moving vehicles in addition to hard stop and momentary stop detection in vehicle trajectories at signalized junctions.

Algorithm Enhancement:

- The algorithm has been modified to classify moving vehicles along with hard stops and momentary stops. New feature engineering techniques and data augmentation methods have been implemented to effectively differentiate between the three classes.

Model Training and Evaluation:

- The Random Forest classifier has been adapted to classify the three classes - hard stops, momentary stops, and moving vehicles. The model underwent training on the updated dataset, incorporating the new class.

Performance Analysis:

- Performance metrics for the updated model, including accuracy, precision, recall, and F1-scores for each class, have been evaluated. A comparison with the previous version focusing on hard stops and momentary stops has been conducted.

Visualization and Interpretation:

- Visual aids such as scatter plots and confusion matrices have been utilized to enhance the interpretation of the classification results for the three classes. Insights gained from the visualization of the model's predictions have been discussed.

Future Plans:

- Future plans include clustering the classes to analyze the relationships and patterns among hard stops, momentary stops, and moving vehicles. This clustering approach aims to provide a deeper understanding of the different stop types and their interactions in vehicle trajectories.

References to Credible Research Papers:

1. Gong L. et al. (Year). Title of the Paper. Journal/Conference.
2. Author, A., Author, B. (Year). Title of the Paper. Journal/Conference.

Github Repository Link:

Hard-Stop-and-Momentary-Stop-Detection-System