Ahmedabad University

Weekly Report 3

Group : MLcops

Course: Machine Learning

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Project: Classification of Drivers Based on Driving Patterns

Group Members

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Objective:

- Identify relevant datasets for driver classification based on patterns.
- Explore potential approaches and machine learning models for classification.

Dataset Exploration:

1. **Public Datasets:**
   - Explored datasets like "Safety Pilot Model Deployment Data" or "Driving Behavior (by AAA Foundation for Traffic Safety)"
2. **Considerations:**
   - Dataset size and relevance to the problem statement.
   - Feature description and clarity.
   - Presence of labels for driver classification (e.g., safe, risky, aggressive).

Initial Understanding:

1. **Analyze feature types:**
   - Identifying numerical and categorical features.
   - Understanding the meaning and potential impact of each feature on driving behavior.
2. **Check for missing values:**
   - Can know the extent of missing data and develop strategies for handling it (e.g., imputation, deletion).

Approach and Models:

- Define the number of driver classes (e.g., safe, moderate, aggressive).
- Determine the evaluation metrics for classification performance (e.g., accuracy, precision, recall).

Potential Machine Learning Models:

- **Classification algorithms:**
  - Support Vector Machines (SVM)
  - Random Forest
  - K-Nearest Neighbors (KNN)
  - Decision Trees
- **Time Series-specific models:**
  - Recurrent Neural Networks (RNNs)
  - Long Short-Term Memory (LSTM) networks

Next Steps:

- Preprocess the chosen dataset (handling missing values, scaling features).
- Implement baseline machine learning models for classification.
- Evaluate model performance and compare results.
- Based on initial findings, refine the approach and explore more advanced models (if necessary).