BVRIT Hyderabad College of Engineering for Women

DRIVER BEHAVIOUR PREDICTION

Team-8

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Problem Statement

- **Using Machine learning Predict Driver's Behavior**
- perform data exploration, preprocessing and visualization
- implement classification model using sklearn library
- evaluate the model using appropriate performance metrics
- develop the Driving Behavior Prediction system.

Python Packages Used

- **Pandas**: Pandas library is a popular open-source Python library used for Data manipulation, Data analysis and Data visualization.It provides powerful tools for working with structured data like CSV files.
- **Matplotlib**: Matplotlib provides a wide range of tools for creating charts, histograms, scatter plots.
- **Seaborn**: Seaborn provides a high-level interface for creating informative and attractive statistical graphics.
- **Sklearn**: Scikit-learn (also known as sklearn) provides a wide range of tools and functions for performing various machine learning tasks, such as classification, regression, clustering.
- **NumPy**: NumPy this library provides a wide range of tools and functions for performing mathematical and statistical operations on large multidimensional arrays and matrices.

- **Gradio**: With Gradio, you can build interactive web interfaces for your models without needing to write any HTML, CSS, or JavaScript code.
- **Tkinter**:Tkinter (short for "Tk interface") is a standard Python library for creating graphical user interfaces (GUIs) using the Tk GUI toolkit. It provides a set of widgets and tools that allow you to build interactive applications with buttons, labels, text boxes, menus, and other UI components.

Algorithm

- **LOGISTIC REGRESSION**: Logistic Regression is a classification algorithm that predicts the probability of an input belonging to a certain class. It is a type of linear regression model where the output variable is categorical (discrete) rather than continuous. In the case of the given dataset, the output variable is one of the four classes of driver behavior, i.e., Sudden Acceleration, Sudden Right Turn, Sudden Left Turn, and Sudden Break.

Algorithm

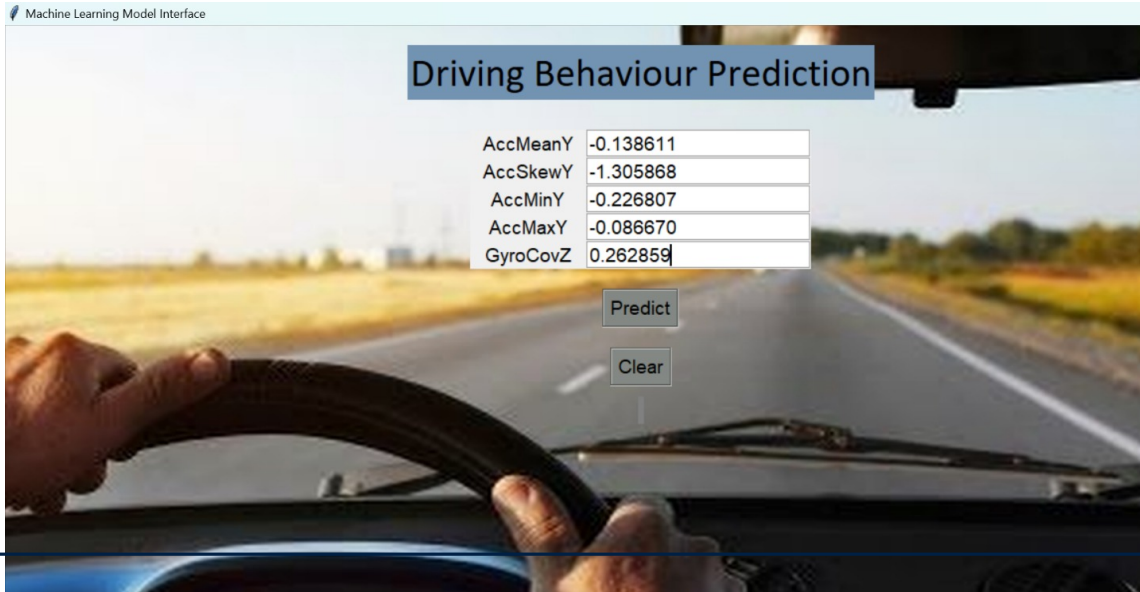
- **DECISION TREE**: A decision tree is a supervised machine learning algorithm used for classification and regression problems. It uses a tree-like model of decisions and their possible consequences to predict the outcome of a decision based on input variables.

Algorithm

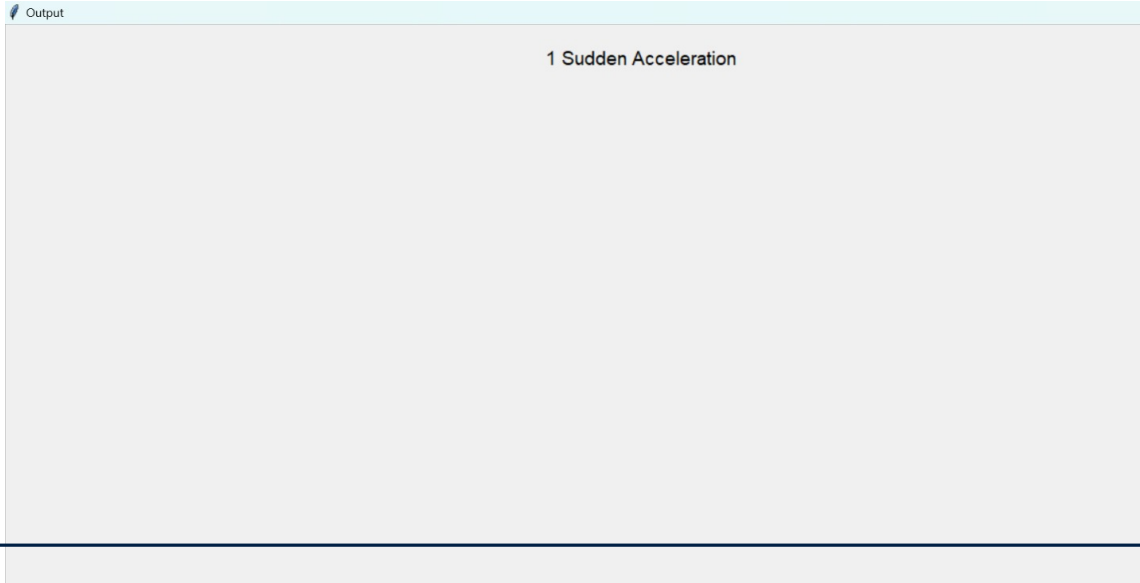
- **RANDOM FOREST**:Random Forest is an ensemble machine learning algorithm that uses multiple decision trees to improve the accuracy and robustness of the model. It's a popular and widely used algorithm in various fields, such as finance, marketing, and healthcare.

	Model	Accuracy
0	Logistic Regression	0.950226
1	Decision Tree	0.977376
2	Random Forest	0.993190

Output


Machine Learning Model Interface
Driving Behaviour Prediction
AccMeanY
-0.138611
AccSkewY
-1.305868
AccMinY
-0.226807
AccMaxY
-0.086670
GyroCovZ
0.262859
Predict
Clear

Output



THANK YOU!