A Driving Decision Strategy(DDS) Based on Machine learning for an autonomous vehicle

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Abstract

A current independent vehicle decides its driving system by thinking about just outer variables (People on foot, street conditions, and so forth.) without considering the inside state of the vehicle. To take care of the issue, this paper proposes "A Driving Decision Strategy(DDS) Based on AI for a self-governing vehicle" which decides the ideal system of a self-governing vehicle by breaking down not just the outer variables, yet additionally the inside elements of the vehicle (consumable conditions, RPM levels and so on.

The DDS learns a hereditary calculation utilizing sensor information from vehicles put away in the cloud and decides the ideal driving procedure of an self-ruling vehicle. This paper contrasted the DDS and MLP what's more, RF neural system models to approve the DDS.

EXISTING SYSTEM

- k-NN, RF, SVM and Bayes models are existing methods Although studies have been done in the medical field with an advanced data exploration using machine learning algorithms, orthopedic disease prediction is still a relatively new area and must be explored further for the accurate prevention and cure.

PROPOSED SYSTEM

- We will propose an feature selection with MLP and RF algorithm to compute the sensor data to determine the driving strategy of an autonomous vehicle.

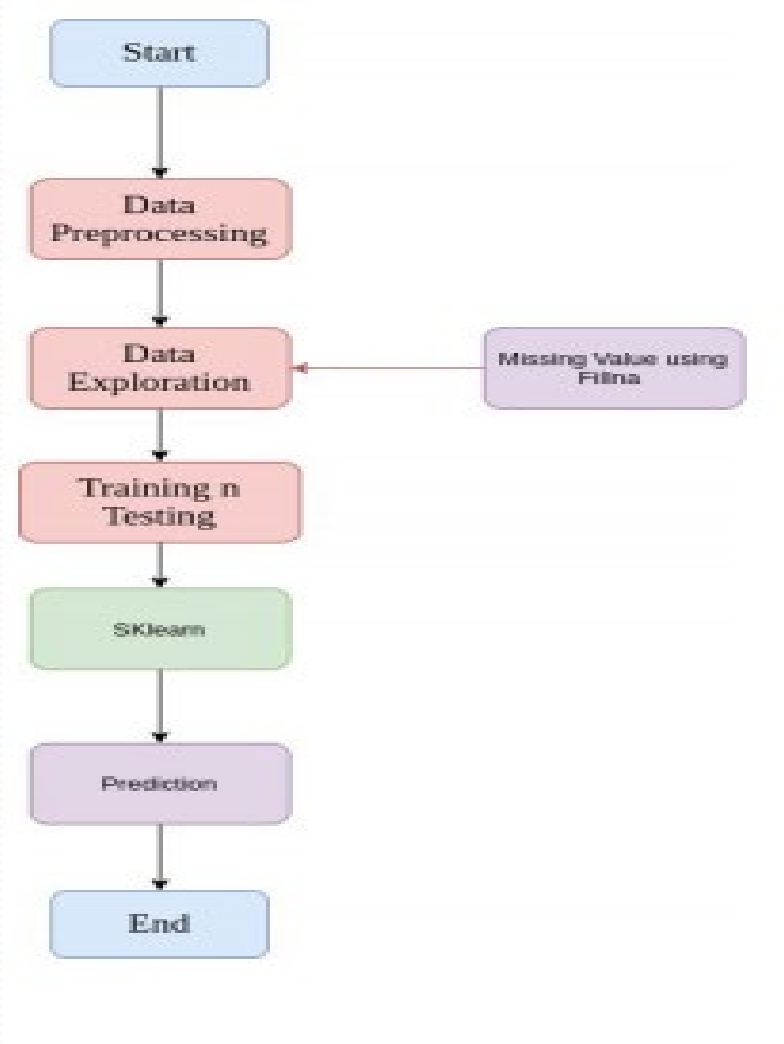
ADVANTAGE

The improvements system to control the vehicle based on sensor data.

DISADVANTAGE

Less efficiency and need more are to explored for prevention.

Flow chart


Start
Data Preprocessing
Data Exploration
Missing Value using Fillna
Training n Testing
SKlearn
Prediction
End

Algorithm models

Random Forest - RF.
Multi Layer Perceptron – MLP
Genetic Algorithm

Datasets

- The datasets is download from kaggle

- https://www.kaggle.com/sensor-vehicle/download

Technology

- Machine learning
- Deep learning
- Python packages

Project implementation

- Gathering the dataset.
- Pre-processing the dataset and analysing dataset
- Splitting the datasets into training and testing in the ratio of 80 % and 20 % and using the RF and MLP models to analysis the data.
- Obtain the accuracy in prediction

Working modules

- Upload Historical Trajectory Dataset
- Generate Train & Test Model
- Run Random Forest Algorithm
- Run MLP Algorithm
- Run DDS with Genetic Algorithm
- Accuracy Comparison Graph
- Predict DDS Type

Input

- The input is image or sensor data files

output

- The output is the accuracy in prediction

Software

- Python idle 3.7 version (or)
- Anaconda 3.7 (or)
- Jupiter (or)

Hardware

- Operating system: windows, Linux
- Processor : minimum intel i3
- Ram: minimum 4 Gb
- Hard disk : minimum 250 Gb

conclusion

- We are proposed a Driving Decision Strategy. It executes the genetic algorithm based on accumulated data to determine the vehicle's optimal driving strategy according to the slope and curvature of the road in which the vehicle is driving and visualizes the driving and consumables conditions of an autonomous vehicle to provide drivers. To verify the validity of the DDS, experiments were conducted to select an optimal driving strategy by analyzing data from an autonomous vehicle.