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Crsv Score Dashboard to Predict Car Resale Price using Deep Neural Network

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Abstract: *With an increasingly flourishing quantity of private cars and the advancement of the used car market, used cars have to become the top priority for buyers. The price of a used car is an important aspect of a successful transaction for both buyers and sellers. However, used car transactions are much more complex than other commodity transactions, as the sale price is influenced not only by the basic features of the car itself, such as brand, power, and structure, but also by the condition of the car, such as mileage and usage time, as well as a lack of presently available methods determining which factors hit the sale price most dramatically. Traditionally, used car price appraisal methods include the replacement cost method, the present value of earnings method, the current market value method, and the liquidation price method. However, the traditional appraisal methods are difficult to select uniform indicators for and overly rely on the subjective judgment of appraisers, which is beyond the limits of online trading in the used car market. The accurate evaluation of used cars should be based on a standardized value evaluation system. As a scientific and effective model, deep residual networks will become an important method of used car value evaluation. This project aims to build a model to predict used cars' reasonable prices based on multiple aspects, including vehicle mileage, year of manufacturing, fuel consumption, transmission, road tax, fuel type, and engine size. An iterative framework LSTM is proposed in this project. First, the relevant data processing is carried out for the initial recognition features. Then, by training the deep residual network, the predicted results are fused with the original features as new features. Finally, the new feature group is input into the iteration framework for training, the iteration is stopped, and the results are output when the performance reaches the highest value. We will be integrated to the web-based application where the user is notified with the status of his product*

Keywords: Used car, car resale, LSTM, Neural network

I. INTRODUCTION

Artificial neural networks (ANN) are software or algorithms that solve real life problems by imitating the human thinking and learning system. Artificial Neural Networks applications are mostly used in data classification, prediction, association, and filtering and data interpretation processes. Car resale price prediction using machine learning has been a popular research topic in recent years. The objective of this research is to develop a model that can accurately predict the resale price of a used car based on various features such as the car's make and model, year of manufacture, mileage, condition, and market demand. The resale value of a car is an important factor for both buyers and sellers, as it helps to determine the fair market price of a used car. Several studies have been conducted on car resale price prediction using machine learning algorithms.

II. LITERATURE SURVEY

1. The initial study explores the utilization of supervised machine learning methods to forecast the prices of preowned cars in Mauritius, leveraging historical data sourced from daily newspapers. Various techniques such as

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multiple linear regression analysis, k-nearest neighbors, and naïve Bayes, and decision trees are employed to formulate the predictions.

2. The subsequent investigation delves into predicting the prices of used cars in Bosnia and Herzegovina by scrutinizing a considerable number of distinct attributes. The study employs three distinct machine learning techniques Artificial Neural Network, Support Vector Machine, and Random Forest to construct a reliable model for price prediction.

3. Lastly, a novel approach is presented in the third paper, proposing a price evaluation model for the secondary car market based on BP neural networks. The model capitalizes on extensive big data analysis of widely circulated vehicle data and numerous transaction records. It utilizes an optimized BP neural network algorithm to analyze price data across various vehicle types, with the aim of establishing an effective model for second hand car price evaluation tailored to individual vehicles.

III. METHODOLOGY SECTION

The system comprises two basic phases: Firstly, during the training phase, the dataset is used to train the system, which subsequently builds a model (line/curve) depending on the chosen algorithm. Secondly, during the testing phase, inputs are sent to the system to evaluate its functionality and accuracy. As a result, it is critical that the data used for training and testing the model is appropriate. The system's goal is to detect and anticipate the pricing of used automobiles, which requires the employment of proper algorithms for these tasks. Before continuing with the selection of algorithms for further implementation, numerous algorithms were compared in terms of accuracy, and the best one for the task was picked.

Artificial Neural Networks (ANNs) are computational models that draw inspiration from the biological neural networks found in the human brain. These networks are interconnected nodes or neurons arranged in layers, including the input layer, hidden layers, and output layer. Within this structure, each neuron receives input signals, processes them utilizing an activation function, and then transmits the resulting output to the subsequent layer.

In ANNs, training occurs through supervised learning techniques such as backpropagation. During this process, the network adjusts its weights and biases to minimize the disparity between actual and predicted outputs. ANNs find application across various domains, including classification, regression, pattern recognition, and decision-making tasks. They are particularly instrumental in areas like image and speech recognition, natural language processing, and financial forecasting

Deep Learning: Deep Learning is a subset of machine learning that utilizes deep neural networks with many hidden layers. It is characterized by its ability to automatically learn hierarchical representations of data, extracting increasingly abstract features as the network goes deeper. Deep Learning models often require large amounts of labeled data for training and substantial computational resources for optimization. Convolutional Neural Networks (CNNs) are commonly used in deep learning for tasks involving images and spatial data, while Recurrent Neural Networks (RNNs) are preferred for sequential data like text and time series. Deep Learning has achieved remarkable success in various domains, including computer vision, speech recognition, natural language processing, and reinforcement learning. Advanced techniques like transfer learning, generative adversarial networks (GANs), and reinforcement learning are also involved.

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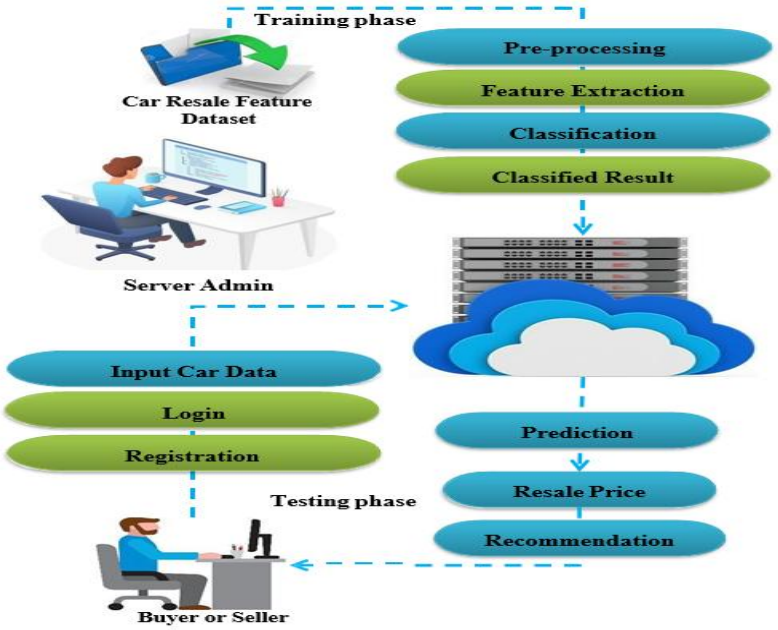
METHODOLOGY SECTION



IV. EXPERIMENTAL RESULTS

The recommendation module of the CRSV Score Dashboard is responsible for providing recommendations to car sellers and buyers based on the predicted resale price of the car. It uses the predicted resale price along with other factors such as the age, mileage, model, and make of the car to suggest whether the car is worth selling or buying. The recommendation module employs a decision-making algorithm to determine whether the predicted resale price is favorable or not. If the predicted price is high, the module will recommend selling the car, and if the predicted price is low, it will recommend holding onto the car or not buying it. The algorithm takes into account various factors such as the current market conditions, the demand for the car model, and other market trends to provide the most accurate recommendations. The module also provides additional information such as the top-selling cars in the market, the most popular models, and the latest trends in the car resale market. This information can help car sellers and buyers make informed decisions and maximize their profit.

V. CONCLUSION

In conclusion, the proposed system is a promising solution for the existing manual system. The system utilizes machine learning algorithms and neural networks to accurately predict the resale price of cars, based on various parameters like the model, make, year, mileage, and condition of the car. The system provides a user-friendly interface for the end- users, including car sellers, car buyers, and web admins, to input the required car data and receive accurate predictions. The proposed system offers several advantages over the existing system, including increased accuracy, reduced time and effort, and enhanced convenience. The system has been developed and tested using appropriate methodologies and techniques, ensuring its reliability and effectiveness. The test results indicate that the system is capable of accurately predicting the resale price of cars, making it a valuable tool for car buyers and sellers. Overall, the proposed project is a highly feasible and efficient solution for predicting car resale prices, and it has the potential to revolutionize the way car resale prices are predicted and determined.

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