CAR RESALE VALUE PREDICTION

LITERATURE SURVEY

1. Prediction of Prices for Used Car by Using Regression Models

Author name: Nitis Monburinon, Prajak Chertchom, Thongchai Kaewkiriya, Suwat Rungpheung, Sabir Buya, Pitchayakit Boonpou.

Abstract:

For this research, we conducted a comparative study on performance of regression based on supervised machine learning models. Each model is trained using data of used car market collected from German e-commerce website. As a result, gradient boosted regression trees gives the best performance with mean absolute error (MSE) = 0.28. . Followed by random forest regression with MSE = 0.35 and multiple linear regression with MSE = 0.55 respectively.

Technology:

Considering the demand for private car all around the world, the demand of second-hand car market has been rising and creating a chance in business for both buyer and seller. In several countries, buying a used car is the best choice for customer because its price is reasonable dnd affordable bybuyer. After few years of using them, it may get a profit from resell again. However, various factors influence the price of a used car such as how old of those vehicles and the condition in current scenario of them. Normally, the price of used cars in the market is not constant. Thus, car price evaluation model is required for helping in trading...

2. A New Model for Residual Value Prediction of the Used Car Based on BP Neural Network and Nonlinear Curve Fit

Author name: Shen Gongqi, Wang Yansong, Zhu Qiang

Abstract:

A new model for predicting the residual value of theprivate used car with various conditions, such as manufacturer, mileage, time of life, etc., was developed in this paper. A comprehensive method combined by the BP neural network and nonlinear curve fit was introduced for optimizing the model due to its flexible nonlinearity. Firstly, some distribution curves of residual value of the used cars were analyzed in time domain. Then, the BP neural network (NN) was established and used to extract the feature of the distribution curves in various conditions. A set of schemed data was used to train the NN and reached the training goal. Finally, the schemed data as inputs and the NN outputs were organized for nonlinear curve fit. Conclusion was drawn that the newly proposed model is feasible and accurate for residual value prediction of the used cars with various conditions.

Technology:

Owing to the rapid economy development in China, the national quantity of possessed cars has been increasing continuously. The gross national products of new cars have reached 10 million in 2009. With the time being, these cars are getting older and after several years the majority of them will flow into the used car trade market, which will become a potential and prosperous market. Now the national trade volume of the used car is increasing at the speed of 30% each year. To confront this extending market, it is very useful to develop a computation model (or an algorithm) for predicting residual value of the used cars with various conditions. Till now, however, researches on characteristics of the used cars and their residual value have just begun and there is no in-situ model is widely accepted and completely suitable for the marketing prediction. As a commodity, cars have their special characteristics, including high unit

value, long life span, complex structure, advanced engineering technologies involving in mechanism, electronics, material science, etc., and the complicated conditions of usage such as the different owner habits, the maintenance level, and the high purchase tax [1]. When one estimate the residual value of a used car, the above characteristics should be carefully considered and determined whether and/or how they affect the residual price of the used cars. From the above discussions, a new method based on the BP neural network and nonlinear curve fit was developed in this paper. This model combined the principals of the economic theory and the datasets of the trade records of the used cars can estimate the residual value of the used car directly and can be used in relative used car trade markets, companies and individuals.

3. Price Evaluation Model in Second-hand Car System based on BP Neural Network Theory

Author name: Ning Sun, Hongxi Bai, Yuxia Geng, Huizhu Shi

Abstract:

With the rapid growth of the number of private cars and the development of the second-hand car market, secondhand cars have become the main choice when people buy cars. The online second-hand car platform provides both buyers and sellers the chance of online P2P trade. In such systems, the accuracy of second-hand car price evaluation largely determines whether the seller and the buyer can get more efficient trading experience. In this paper, the price evaluation model based on big data analysis is proposed, which takes advantage of widely circulated vehicle data and a large number of vehicle transaction data to analyze the price data for each type of vehicles by using the optimized BP neural network algorithm. It aims to establish a second-hand car price evaluation model to get the price that best matches the car. In this paper, the optimized BP neural network algorithm is used to select the optimal number of hidden neurons in BP neural network, which improves the convergence speed ofthe network topology and the accuracy of the

prediction model.Through the sampling simulation experiments, the fitting curve of the prediction price is compared with the real transaction price derived from the optimized model. As a result, the fitting of the optimized model is better as well as the accuracy is higher.

Methodology:

With the development of information technology, especially the rising of the mobile Internet, the traditional offline second-hand car trading mode has been unable to meet consumers' demands. The emergence of second-hand car online trading platform is an inevitable trend [1]. Compared with some of the existing online trading platforms, we found that the accurate online evaluation of second-hand car price is the critical requirement of such platforms. The evaluation algorithms used by existing platforms are mechanical and isolated, and there is no sign of a surge in trading data and dynamic changes in the trading market, which are the key factors in determining the price of second-hand cars. Existing evaluation algorithms cannot cope with the huge amount of application scenarios, leading to a great decline for calculation accuracy.