A review on linear regression

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Annotatsiya. Ushbu ishda trigonometrik funksiylar basisi yordamida nochiziqli regressiya modeli qaralib, regression coefficientlarni anqilash uchun analitik va taqribiy yechimlar olingan. Hamda, olingan nochiziqli regressiya funksiyaning machinani o'qitishda tadbig'i urganilgan.

Kalit so'zlar: regressiya,intellektual taxlil, mashinali o'qitish, neyron to'ri

Annotation. In this study, analytical and approximate solutions were obtained for the encroachment of regression coefficients by looking at the model of nonlinear regression using some of the trigonometric functions. The application of the obtained nonlinear regression function in machine learning has been studied.

Keywords: regression, intellectual analysis, machine learning, neural net.

Hyun-il Lim. [1]developed a framework for using linear regression in evaluating application-defined software features using code vectors based on software instructions. Experiments have been performed to test the proposed method, although the experimental results indicate that linear regression can be an effective way to classify related software in software analysis. In conclusion, a well-designed machine learning model can be easily used in software analysis. The use of machine learning in information analysis will also improve the understanding of software functionality.

The author Xingang Wang. [2] used MLR algorithm to calculate its weight, which eliminates redundancy between attributes, proposed a weighted naive Bayesian algorithm on the basis of the multiple regression (MLWNBC). Simultaneously, each attribute will also determine the impact size of each attribute on the basis of weight. MLWNBC makes WNBC more rational (weighted naive bias

classification algorithm). The results of the study, classification of 10 data sets in the UCI database, show that the algorithm has strong properties and is able to improve accuracy while reducing consumption time. Data collection evaluates all attributes, and some properties do not affect the results.

In the work [3], it is proposed to use a multivariate statistical method, i.e. factor analysis, to identify predictor variables by their relationships and importance, in order to approximate portfolio sensitivities to 4 chosen macroeconomic factors (Market Performance, Real GDP, Inflation, and Unemployment). (Market Performance, Real GDP, Inflation, and Unemployment). Introduces and applies a multi-factorial stock portfolio management model. First, a model is created, then the portfolio is refined, and eventually multi-factorial factors will be used to assess the sensitivity of the portfolio. The results show that improved results can be obtained by choosing less related variables.

The authors [4]proposed enter-based weighted kernel linear regression (CWKLR) classifier is proposed for objects and face recognition. The middle of each class is used in CWKLR to provide information. The CWKLR can then use the Tikhonov matrix to obtain weighted classification projection coefficients. The experimental results show that, compared to many current approaches, the proposed classifier provides improved performance, analysis and preliminary results on the three datasets indicate the performance and face detection of the proposed algorithms for artifacts.

In the work [5], it iscentered on the 110KV high voltage switchgear contact temperature results. Using the Map Reduce model, a temperature regression model is developed by MLR models to analyze and process monitoring point data. The effects of the evaluation are evaluated by the regression criterion F. The results show that the longitudinal regression in MLR may well be suitable for estimating long-term leave for high-voltage switchgear communication with little deviation. The conclusion is that the MLR longitudinal regression has high accuracy in long-term temperature prediction.

In [6], automatic design software for human-equivalent phantoms with linear and exponential regression analyzes was proposed to increase the production performance of human-equivalent phantoms for antenna calculation. The components of human phantoms are water, silicone emulsion, glycerin, sodium chloride, and agar. The software uses MLR and exponential regression analysis to create compositions targeted at the target fantasy. The article describes the results of measurements of brain dreams and mental dreams developed with software as examples of new software. The fabricated phantoms show that an additional 9% brain fantasy value and 13% gastric fantasy value are required to get closer to the real world. This has been confirmed.

The authors in [7]proposed new approach for intracoding video based on MLR. The proposed method uses a linear regression model to learn end-to-end projections and the best internal prediction block. The technology is designed in the realm of pixels, not physical space. A single model is qualified for model optimization using internal prediction. Clean and concise style, but also gives promising results. The proposal is implemented in the HEVC reference program, outperforming the matched anchor. These results provide valuable information for future video encoding. The experimental results showed the reliability of the proposed system and provided important information on how classical video coding algorithms can be further manipulated.

The authors of the work [8] contrast two contemporary methods in task-based functional magnetic resonance imaging (fMRI) for a MLR: linear Regression with ridge regularization and nonlinear Symbolic Regression by genetic programming. The data for this project reflect the fMRI experimental design for visual stimulation. For 10 topics, linear and non-linear models were developed, and 4 more refused validation. Model consistency is measured by comparing R values (correlation of product and Pearson moment) in various contexts, including single-run self-compatibility, subject generalization, and cross-subject generalization. Suitability for modeling retraining strategies is determined using a separate rest state scan. The results show that neither approach is necessarily or statistically superior to the other.

The article[9] focuses on the processing of educational data to predict the psychomotor domain of students. In this case, the linear regression method is used. Four regularizations were used in this step, namely no regularization, ridge regression, lasso regression, and elastic network regression. For comparison, the use of two sampling methods as an evaluation tool: cross-validated sampling and random sampling as examples. The experimental result shows that elastic network regression is the best regularization for cross-validation and random sampling because this regularization gives the smallest predictive error. For cross-validation, the MSE, RMSE, and MAE values are 40.079, 6.330, and 5.183, respectively. For comparison, for a random sample, the MSE, RMSE, and MAE values are 86.910, 8.428, and 6.511, respectively.

In [10], the author worked on a statistical model and used MLR. The MLR analyses interval projections.An MLR model has been developed that predicts the consumption of aircraft materials. Based on case studies, the fitness test, t-testing, and residual tests, as well as a detailed and robust regression model, were tested and evaluated. The model shows that the use of aircraft parts is consistent and successful. The results provide a realistic and analytical estimate of the consumption of aerodynamic materials.

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