

Analysis Models of Technical and Economic Data of Mining Enterprises Based on Big Data Analysis

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ABSTRACT

Property of the particular and money related data of mining ventures both are multi-dimensionality and nonlinearity. The business value information of mineral items is a vital financial pointer of mining endeavors, and the geological information is essential specialized information. The examination methodology for specialized and monetary information is inquired about utilizing advances of Hadoop and data mining. There is change design and affecting parameters of the mineral items cost are examined. ANN is use to determine the mineral product prizing based on prediction model. The outcomes show that the practicability of the expectation show is solid, and the forecast accuracy is high. During the process of mineral development, due to the limitation of technical conditions and equipment conditions, lots of geological data have been lost, which reduces the accuracy of the orebody shape and that of reserves approximation. Depend on techniques of geostatistics and artificial neural network, the prediction model of the land or geological missing data is established. By using the forecast model, the regularity of geological data of single borehole, group boreholes and all boreholes s talked about and dissected. This paper depicts the literature analysis of prediction of geological missing data of mineral products and their cost and results of prediction and interpolation are reliable.

Keyword: - mining enterprises, technical and economic data, prediction models, BP neural network

1.INTRODUCTION

In outcome of the long generation cycle, mining ventures think that its hard to adjust the adjustments in free market activity of the mineral items. The activities plan of the undertaking can't be made rapidly to pursue the pattern of mining industry globalization. The creation of the mine undertaking activities plan is essential parts of the tasks administration of mining venture. At present, a lot of information assets created and gathered by data frameworks of the mining endeavor are not broke down logically. This information neglected to give sufficient help to procedures of creation administration and basic leadership of the mining endeavor. In this way, the foundation of effective examination and forecast models of mine specialized and monetary information is of extraordinary hugeness to the mining undertaking. At present, a lot of information assets created and gathered by data frameworks of the mining endeavor are not dissected deductively. This information neglected to give satisfactory help to procedures of generation administration and basic leadership of the mining undertaking. In this manner, the foundation of productive investigation and expectation models of mine specialized and financial information is of incredible hugeness to the mining undertaking. Numerous investigations are completed about the examination and forecast techniques for the specialized and financial information. Reference examines the forecast and interjection strategies for missing financial information of the mining undertaking, for example, the mean technique, the weighted normal strategy, the direct relapse technique, the most extreme expected strategy and the numerous attribution technique. Reference gathers the borehole information and finds the worldwide pattern and the aeolotropism existing in the information. The information is changed to typical conveyance, and the aeolotropism of the information is rejected,

along these lines the introduction accuracy is progressed. With the end goal to enhance the capacity of information investigation of mining ventures, basing on the qualities of the specialized and financial information of mining endeavors, the expectation method of mineral items cost and the forecast and interjection model of the topographical missing information is set up individually by methods for systems of geostatistics and fake neural system.

2.LITERATURE REVIEW

For the study of geological missing data prediction and interpolation we studied following papers.

Jian Ming et al [1] in paper “Analysis Models of Technical and Economic Data of Mining Enterprises Based on Big Data Analysis”, author were proposed a system in which they predicted missing data of mineral products and cost of that product by using various prediction algorithms.

Ming Jian et al [2] in paper “The Operations Plan Management System of Metallurgical Mining Enterprise Based on Business Intelligence”, BI innovation is connected in the tasks administration of metallurgical mining endeavors, in which the venture activity plan administration framework is set up. The designs of big business activity divisions are naturally joined and turned out to be more logical and sensible.

Jian Ming et al [3] in paper “Study of Iron Concentrate Price Forecasting Models Based on Data Mining”, they demonstrates an prediction or forecasting model at the iron focus deals cost by incorporate enormous information examination with the prediction methods is built up and that is then connected to anticipating the iron think deals cost of the mining enterprise.

Shuyi Song et al [4] in paper “Application of the TGP206 geological prediction method for a tunnel in the karst mountains”, they introduces principle, data processing of tunnel geological forecasting system and its application in forecasting or prediction for the different tunnel. Through analyzing the reflected signals in the karst area, it can accurately predict the location parameters as well as the rock of the cave in front of the tunnel, It is a directing significance for tunnel geological prediction in similar geological conditions to prove the correctness and feasibility of theory and techniques of the system.

S. M. Lawan et al [5] in paper “Different Models of Wind Speed Prediction; A Comprehensive Review”, this paper presented a review of wind speed/power prediction model at different prediction periods. Wind speed/power prediction using different models is very challenging and requires several weather parameters should to be considered. Depending on the prediction method range available for this purpose. Although, different optimization models has been applied in many scientific literatures. A great deal of work should be directed toward the enhancement of these models.

Liam Comerford et al [6] in paper “Revealing Prediction Uncertainty in Artificial Neural Network Based Reconstruction of Missing Data in Stochastic Process Records utilizing Extreme Learning Machines”, various systems are prepared to illuminate the equivalent stochastic process record recreation issue with the end goal to introduce missing information forecasts as irregular factors. This methodology is made computationally feasible by using elm minimum squares arrange preparing. The prepared system outfits are appeared to deliver arbitrary yields with appropriations in which the genuine unique information could sensibly live. Of note is the high difference of the circulations featuring the threats of depending on any single arrangement. This is something that imaginable maintains an extensive variety of ANN relapse and characterization issues. Regardless of whether the best system parameters could be recognized the condition of the arbitrary weight introduction will affect the last outcome; subsequently by considering a system gathering the effect of this impact can be uncovered. There are various potential roads for further work.

Stefan Truck et al [7] in paper “Modeling and Forecasting Velocity In The Gold Market”, they add to the literature by utilizing an extensive number of factual methodologies with the end goal to model and conjecture the day by day instability and Value-at-Risk in the gold spot showcase. Therefore, they recognize distinctive time skylines including a sub-time of continuously however just somewhat expanding gold costs, a sub-time of significantly expanding gold costs and, at long last, a sub-time of high unpredictability in the gold market. Both in-test and out-of-test estimates are assessed utilizing suitable gauge assessment measures.

Binbin He et al [8] in paper “A Spatial Data Mining Method for Mineral Resources Potential Assessment”, author proposed spatial data mining method for mineral resources potential assessment, which the spatial characteristics and uncertainty of geology data was reasonable to consider. The method mainly include continuous geological spatial data discretization, spatial relationship abstracting and attribute transforming, mining metallogenic association rules and quality assessment, comprehensive evaluation of metallogenic association rules and assessment.

P. Gumiel et al [9] in paper -“Analysis of the fractal clustering of ore deposits in the Spanish Iberian Pyrite Belt”, they proposed examination of the spatial characteristics of the mineralization utilizing fractal strategies, over a scope of scales, and incorporated inside a GIS gives new data, of potential import to the investigation of VHMS stores. They utilize these perceptions to reenact the dispersion of mineral stores dependent on a generally basic multifractal display, compelled by the spatial appropriation of other topographical and geophysical parameters.

Sunil Kumar et al [10] in paper “Missing QoS-Values Predictions using Neural Networks for Cloud Computing Environmentsthey”, had recreated the artificial neural system display and processed the execution of the calculations as far as MSE and R. The forecast of missing QoS-values figured utilizing BR calculation accomplished a precision of 89% for reaction time and 93% for throughput QoS datasets.

Kitsuchart Pasupa et al [11] in paper “Prediction of Reference Evapotranspiration with Missing Data in Thailand”, they plan to assess the product evapotranspiration by ANNs from climatic information in Thailand and contrast the execution and the PenmanMonteith technique. As missing information is inescapable, they likewise incorporated the missing information circumstance into the examination. This can be comprehended by desire amplification calculation. The exactness of the forecast diminishes when the measure of missing qualities increments.

N.A. Setiawan et al [12] in paper “Missing Attribute Value Prediction Based on Artificial Neural Network and Rough Set Theory”, they proposes ANN with RST (ANNRST) trait decrease is proposed. Contrasting with the k-NN ascription strategy, ANNRSST beats with its most extreme and normal precision. Fake neural system (ANN) joined with harsh set hypothesis (RST), named as ANNRSST, and is proposed to foresee missing estimations of trait. The expectation of missing estimations of property is connected on coronary illness information from UCI datasets.

Iffat A. Gheyas n et al [13] in paper “A neural network-based framework for the reconstruction of incomplete data sets”, they proposed a novel nonparametric calculation Generalized relapse neural system Ensemble for Multiple Imputation (GEMI). They contrast their calculations and 25 mainstream missing information attribution calculations on 98 genuine world and engineered datasets for different level of missing qualities. The adequacy of the calculations is assessed as far as precision of yield characterization

Shrutilipi Bhattacharjee et al [14] In paper “Spatial Interpolation to Predict Missing Attributes in GIS Using Semantic Kriging”, they had used geostatistical evaluate to forecast the missing characteristic regards from the watched estimations of known including data centers, a general kind of which is implied as kriging in the field of geographic information structure and remote identifying.

A. Sarangi et al [15] In paper “Geostatistical Methods For Prediction Of Spatial Variability Of Rainfall In A Mountainous Rregion” they had utilize distinctive geostatistical strategies for expectation of precipitation fluctuation over mountain utilizing exploratory information examination methods. They had utilized geostatistical estimators are utilized to foresee the missing quality qualities from the watched estimations of known encompassing information focuses, a general type of which is alluded as kriging in the field of geographic data framework and remote detecting.

Hehua Yanhehua et al [16] In paper “Industrial Big Data Analytics for Prediction of Remaining Useful Life Based on Deep Learning”, they used the estimation for current gigantic data examination data acquiring and preprocessing with the ultimate objective to achieve higher desire precision and the best usage of cleaned data the limit of significant making sense of how to accomplish comprehension and gaining from enormous data is used.CONCLUSION.

In this review paper, we reviewed multiple papers related to data mining and prediction of geographical data loss in order to memory complexity and time Complexity hence it is comes to know that Hadoop is better than big data in

terms of time complexity and space complexity. We also studied different prediction algorithm for predicting geological missing data.

3.CONCLUSION

Based on the characteristics of the technical and economic data of mining enterprises, the prediction and interpolation methods of the technical and economic data are analyzed.

The prediction model of the mineral products price is built using BP neural network. The prediction results show that the prediction model practicability of the prediction model is strong and the prediction accuracy of the prediction model is high.

The prediction and interpolation model of the geological missing data is built using techniques of geostatistics and BP neural network. It has been proved that most of the geological missing data can be predicted and interpolated by using the model, and the results of prediction and interpolation are reliable.

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