

Distance Measures of Uncertain Preference Ordinals and Their Application in Multi-criteria Group Decision-making

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Abstract

In order to solve the multiple-criteria group decision-making problems, this paper proposes a new method that expresses the decision makers' preference information on alternatives in the form of uncertain preference ordinals (UPOs). To compare two different UPOs, an ordinal addition strategy is proposed to ensure that the two UPOs have the same number of ordinals. The comparison is followed by the introduction to a family of distance measures between two UPOs and various weighted distance measures between two sets of UPOs. Meanwhile, the author discusses the similarity degrees between two UPOs and puts forward the method to determine the integrated weights of the decision makers. Next, an approach is designed to apply the distance measures to the MCGDM. Based on the proposed distance measures, the approach basically establishes the integrated satisfaction degrees for different alternatives, and uses them to rank the alternatives in the MCGDM. Finally, the proposed approach is proved feasible and advantageous through the example analysis.

Keywords

Distance Measures, Integrated Similarity Degree, Multiple Criteria Group Decision-making (MCGDM), Uncertain Preference Ordinals (UPOs).

Research on the Search of External Knowledge of Enterprise Alliance Based on Ant Swarm Intelligence Theory

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Abstract

In recent years, the external environment faced by enterprises is becoming more and more complicated. As a result, a larger pool of companies chooses to handle the unforeseen external environment by establishing corporate alliance. The rise of new trade protectionism is an extra blockage for businesses to enter new markets. Only by aligning with each other can enterprises take full advantage of resource networks in market expansion. From the characteristics of enterprise alliance, we use the ant colony theory under the swarm intelligence theory to discuss the process of external knowledge search of enterprise alliances and offer some suggestions on knowledge search, which is expected to be a good theoretical perspective.

Keywords

Enterprise Alliance, External Knowledge Search, Swarm Intelligence.

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Research on Emergency Supplies Consumption Forecast Model Based on ARMA

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Abstract

Emergency supplies consumption forecast is an important basis for formulating emergency support plan and rationally planning and preparing emergency resources. Based on ARMA, this paper puts forward a forecast model of emergency supplies consumption. Firstly, carry out the data stationary process and then identify and establish the model which is adopted to forecast the emergency supplies consumption of a unit in 2015. After comparing the predicted data with the real data, the results show that the model can accurately predict the emergency supplies consumption, proving that the model is feasible.

Keywords

ARMA Model, Consumption Forecast, Emergency Supplies.

pages 2705-2710

Trade Gravity Model-based Empirical Study on Sino-CEEC Agricultural Products Trade under the "16+1 Cooperation" Mechanism

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Abstract

Since the introduction of the "16+1 cooperation" mechanism, the trade of agricultural products has continued to expand at a fast growth rate between China and the 16 Central and Eastern European countries (CEEC), which is marked by relatively high market concentration. Therefore, this paper analyzes Sino-CEEC agricultural products trade through building the gravity model and using the 2006-2015 panel data. It is discovered that the economic scale has a significantly positive impact, and the geographical distance has a significantly negative impact on the trade; Sino-CEEC agricultural products trade is fit to Linder's "demand similarity theory"; the bilateral difference of gross domestic product per capita (GDPPC) hinders the development of the agricultural products trade; the "16+1 cooperation" mechanism is promoting the expansion of agricultural products trade between China and five Central European countries, although the effect is not significant.

Keywords

Agricultural Products Trade, Demand Similarity Theory, Gravity Model, 16+1 Cooperation, 16 Countries in Central and Eastern Europe (CEEC).

Research on Node File Demand Similarity and File Demand Prediction

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Abstract

The uniqueness of point-to-point content distribution network (P2P CDN) calls for an intelligent recommendation technology suitable for P2P CDN environment. This paper applies the intelligent recommendation technology to the basic method of P2P CDN. Specifically, the users' behaviors in P2P CDN are acquired to study the file demand presented by users, and the intelligent recommendation technology is adopted to disclose the similarity of file demand between users and to predict the users' file demand. Moreover, recommendation algorithms based on file classification and overlapping demand are proposed according to the features of the P2P CDN node user, the recommendation algorithm based on file classification and the recommendation algorithm based on overlapping requirements are proposed.

Keywords

Content Distribution Network, File Demand Similarity, File Demand Prediction, Point-To-Point.

Comprehensive Highway Transportation Loads–resources Consumption Equilibrium Research

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Abstract

As an indicator of road transportation load, "car kilometer" applies to the unified measurement of freight transport, passenger transport, and car transport across mainland China. To meet the demand of highway transportation, we firstly conducted a comparative analysis between the calculated comprehensive load capacity and the comprehensive load demand of road transports in all of the mainland Chinese provinces to obtain their strength levels. Secondly, we analyzed the current rates of highway resource utilization and revealed the overall relationship between the marginal consumption levels of highway resources in each province. Finally, a transportation loads - resources consumption (short for TL-RC) equilibrium model (also known as the six grids equilibrium model) was established, by which the balance state of each province was evaluated and the corresponding suggestions were put forward at the provincial level.

Keywords

Car Kilometer, Comprehensive Highway Resource Consumption, Comprehensive Highway Transportation Load, Comprehensive Transport Load Demand Six-Grids Model, TL-RC Equilibrium.
