Special Issue on Software Application to Economic Analysis and Business Management

# Guest Editorial

As software is now ubiquitous in the business world, many software applications have been developed specially for economic analysis and business management evaluation and forecasting in the past several years. As business becomes more rely on software, so does the science of studying business and economic analysis. These fields benefitted greatly from the rise in quantity and power of the special software as well.

Papers are invited for this special issue on "Software Application to Economic Analysis and Business Management." Papers included in this special issue review the current literature on the subject, continue on to show an original case study, research and/or experimentation, and end with a logical continuation of the research and in what direction future development should proceed.

In the paper titled "New Ratio DEA Software for Measuring Efficiency of Industrial Departments," the authors suggest that as the environmental problem becomes more and more serious in the development of society, it has drawn a lot of attentions from every government. Industry prompts the development of economy, however, meanwhile it also produces a lot of pollutions, such as smoke pollution and waste. Evaluating the efficiency of the departments of industry help local government decide which departments should be developed in priority. In this study, the new ratio model in data envelopment analysis (DEA) is proposed and applied to evaluating the industrial departments of Chongqing City of China. Moreover, some suggestions are given. Huang et al. think that the design of DNA code is the key step in DNA computing. The definition of DNA code, the constraints of DNA encoding and the corresponding formula are firstly described in this article, and then the design of DNA encoding based on immune clone algorithm is introduced. Simulation experiments show that DNA molecular chains that satisfy specific constraints and the corresponding thermodynamic characteristics can be produced based on immune clone selection algorithm. Using immune clone selection algorithm can improve the efficiency of encoding by, and using a series of constraints can produce very stable DNA sequences. It laid a good foundation for DNA computing. In the article of Guo and Zheng, the important issues of China's environmental pollution and its internal reasons have been explored by means of the software MATLAB which has been widely applied to the economics fields due to its powerful mathematical and graphical functions.

In the analysis of mass data analysis and forecasting based on cloud computing, owing to the low limitation of Cloud Computing, different fields (such as telecommunications, tourism and medical industry etc.) can combine their industrial specialty and professional skills with Internet to construct many small clouds in Cloud Computing. In addition, like many gear wheels in the machines, many small clouds support a large cloud that is composed of different services to provide users with general-purpose applications in Cloud Computing. By the concept of Parallel Computing, the authors build a small cloud for statistical forecasting service (FaaS, Forecasting as a Service) with integrating Cloud Computing and data mining methods based on R, PHP and MySQL. The greatest advantage on R is that it is open and free. Moreover, R code can combine with PHP code to be a web page. Furthermore, it can solve the installation and extension problems by cloud computing that makes enterprises not that "heavy".

In "Small and Medium Enterprises Risky Prediction System Based on Cloud Computing", the authors establish the system of C2FAST and improve Cloud-R based on cloud computing and parallel computing. Small and medium enterprises can implement data mining technology on the systems to obtain the relevant financial information and financial risk prediction models. Molecular beacon deoxyribonucleic acid computing is a new research focus on intelligent control theory in recent years. It is also a new bionic algorithm. It is well known that how to determine or tune the proportional integral derivative controller parameters is very important, because these parameters have a great influence on the stability and the performance of the control system. Parameter turning of proportional integral derivative controller by using molecular beacon deoxyribonucleic acid computing can avoid system early-ripe and find global optimal solution rapidly. Molecular beacon is a single strand of deoxyribonucleic acid base pairs formed their own part of the hairpin-like fluorescent probes, the use of molecular beacon can readily detect the concentration of deoxyribonucleic acid molecule which matches it in test tube, the result of detection can decide which needs to be copied and which needs to be discarded. The molecular beacon deoxyribonucleic acid computing has high reliability and is easy to operate for proportional integral derivative controller parameter tuning. The result of simulation proves that molecular beacon deoxyribonucleic acid computing algorithm has greater advantages than traditional algorithm. Molecular beacon deoxyribonucleic acid computing is bound to have very great impact on intelligent control in the future. This judgment is in an article titled with "Parameter Turning of PID Controller Based on Molecular Beacon DNA Computing." In "Pinning Control of Complex Network by a Single Controller," with assuming irreducibility and symmetry of the couplings, the authors prove that a single controller can pin a coupled complex network to a homogenous solution, which is investigated in both continuous-time and discrete-time cases. Sufficient conditions are presented to guarantee the convergence of the pinning process locally and globally. The efficiency of the derived-results


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is illustrated by numerical simulation.

Besides, there are also some other discussions about Software Application for Economic Analysis and Business Management in this special issue, which is worth reading and in-depth study. Please find them.

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