<u>An </u>Independent credit rating of banks in Iran

Purpose

The aim of this study is to independently ~~conduct~~ perform credit rating of Iranian banks in terms of fulfilling their obligations toward their depositors (i.e., foreign beneficiaries).

Method

First, rating criteria were established using reference institutions²' rating models as well as the <u>Capital Adequacy, Asset Quality, Management, Earnings, Liquidity, and Sensitivity</u> ~~CAMELS~~ (CAMELS~~capital adequacy, asset quality, management, earnings, liquidity, and sensitivity~~) rating system. The final rating scale including the criteria was then developed using the Fuzzy Delphi Method. ~~At last~~Finally, banks were rated ~~applying~~ using the <u>Preference Ranking Organization Method for Enrichment Evaluation (</u>PROMETHEE~~ (preference ranking organization method for enrichment evaluation~~).

Findings

After selecting 32 criteria based on the results of the Fuzzy Delphi Method, the sub-criteria were considered to have equal weights based on experts²' opinions. The study population ~~included~~ consisted of 21 banks licensed by Markazi Bank (the Central Bank of Iran) and ~~also admitted to the~~listed in the Tehran Stock Exchange and Iran Fara Bourse Co. in the period 2012-2016.

Conclusion

According to the results of the research, among the banks surveyed in ~~the country~~Iran, Khavarmianeh Bank (the Middle East Bank) and Ayandeh Bank (Future Bank) were respectively ranked first and last in terms of credit rating.

Keywords: Independent credit rating~~,~~; ~~the ~~PROMETHEE~~,~~; ~~the ~~banking industry~~,~~; Fuzzy Delphi Method

Integrating process planning and scheduling with regard to multiple objectives using constraint-based planning

Purpose

The present study ~~aimed to~~aims to apply various flexibilities~~, including~~ (e.g., machine and tool flexibil~~it~~ies) ~~y,~~ for tool approach direction and to consider qualitative parameters based on the fuzzy inference system in order to optimize process planning and scheduling using a constraint-based planning approach.

Method

Many approaches have been introduced to solve <u>Integrated Process Planning and Scheduling</u> (IPPS) problems. In this research ~~study~~, constraint-based planning was used for ~~problem~~ problem-solving due to the multitude of research variables and the complexity of the response space. The score of the quality parameters in the model ~~were~~ was ~~first~~ calculated using the fuzzy inference system. Then, the optimal solution was obtained after providing other inputs and solving the problem using constraint-based planning.

Findings

To evaluate the efficiency of the integrated model, an example extracted from previous studies was solved at three low, medium, and high delivery modes using IBM ILOG Cplex software.

Conclusion

The study findings documented the proper performance of the constraint-based planning approach in reaching optimal solutions within a finite time. In other words, the findings from numerical experiments indicate that the proposed model has ~~an~~ acceptable performance and ~~that~~ the proposed algorithm solves the IPPS problem properly. ~~; h~~Hence, the proposed method is suitable for multi-objective hybrid optimization.

Keywords: ~~Integration of process planning and scheduling~~IPPS~~,~~; constraint-based planning~~,~~; process planning~~,~~; scheduling~~,~~; fuzzy inference system

The effect of mastery learning model on nursing students~~'~~' clinical education: A systematic review

Introduction & purpose

Learning is the goal of teaching as such various learning models have been proposed in different sciences. ~~Mastery~~ The mastery learning model is one of the new educational models ~~in which~~concerning clinical competence ~~is concerned~~. This study aimed to systematically review the implications of the mastery learning model in clinical education among nursing students.

Method

The present study was a systematic review of ~~Farsi~~ Persian (namely, IranMedex, SID, and Magiran) and English (namely, ERIC, PubMed, Ovide, Elsevier, and ProQuest) databases using keywords such as learning, mastery learning, nursing education, and clinical education for the period 2007 to 2018.

Findings

All relevant articles using the model were detected~~, of which~~ and then 10 (six English and four Farsi) articles me~~et~~ing the inclusion criteria ~~and~~ were reviewed. Six of these studies were carried out after 2015. The review of the articles revealed that clinical education using the mastery learning model could lead to active learning and clinical competence in nursing students.

Conclusion

The mastery learning model, as a new educational model for clinical education of nursing and paramedical students, could be taught to university lecturers and faculty members.

Keywords: Learning~~,~~; mastery learning~~,~~; nursing education~~,~~; clinical education

The effect of transactional and transformational leadership style on quality of ~~work life~~problem-solving

Abstract

This study aimed to examine the effect of transactional and transformational leadership style on the quality of ~~work~~ work-life among the staff of Khorramshahr Ports and Maritime Administration. To this end, a standard questionnaire was developed to assess the research variables ~~was prepared~~. ~~When the~~After confirming the reliability and validity of the questionnaire ~~were confirmed~~, it was distributed among all staff of Khorramshahr Ports and Maritime Administration (i.e., statistical population). Data were analyzed using the Kolmogorov-Smirnov test, independent samples t-test, Pearson correlation, and regression to investigate the research hypotheses. ~~The~~ Based on the obtained findings, ~~suggested that~~ transformational leadership had a significant positive impact on the quality of ~~work~~ work-life~~;~~. ~~however,~~ In comparison, transactional leadership had a significant negative effect on this variable.

Keywords: Transformational leadership~~,~~; transactional leadership~~,~~; quality of ~~work~~ work-life

A review of models on heat exchange between ~~the~~ human body and environment

Abstract

~~To observe~~Observing the thermal comfort standards is one of the prerequisites in buildings' design~~ing~~ and ~~constructing~~construction ~~buildings~~. Thermal comfort standards are usually derived from existing standards, particularly those of the American Society of Heating, Cooling, and Air Conditioning Engineers (ASHRAE). These standards are extracted according to North America's climatic, racial, and cultural conditions. Regarding Iran's different climatic and cultural conditions, ~~the observance of~~incorporating these standards ~~does~~ does not necessarily ensure thermal comfort in buildings so that the standards should be ~~adapted~~ tailored to the conditions of each region. ~~For this purpose~~Thus, a better understanding of the definitions, models, and mathematical relationships is required. This article presents a review of the mathematical relationships explaining heat exchange between the human body and the environment.

Keywords: Thermal comfort; thermal control; hypothalamus; heat loss

Dynamic equivalent modeling of winds and generators in a wind farm using a neural regression model and clustering

Abstract

~~With increasing~~An increase in wind farm size, wind speed variation, and the number of generators has resulted in ~~,~~equivalent modeling of winds and generators ~~is carried out to~~for reduc~~inge~~ computation complexity and simulation time. In this study, input wind velocities of turbines were assumed in a given interval. Next, ~~, and~~by ~~proposing~~ designing a neural regression model ~~and constructing its structure~~, the effect of input wind velocities on output power ~~as well as~~and their importance in feature-space clustering ~~was~~ are discussed. ~~This is while~~Compared to neural regression models, conventional regression methods ~~become~~ are more complicated due to the complexity of the dynamic relationship between output power and wind velocity. Following the regression analysis, an equation was proposed to calculate the entries of the feature space matrix. Then, fuzzy clustering was presented and applied ~~on~~to the concerned feature space~~; hence,~~. Finally, wind velocities were clustered and then equivalenced in each cluster. A feature of fuzzy clustering is that it does not easily get stuck in a local optimum. ~~Afterwards, a~~ In the next step, according to some specific equations, equivalent parameters were calculated for the equivalent generator in each cluster. In this study, a strong regression model was developed and also equivalent modeling results highly similar to the accurate model were obtained for equivalent winds and generators.

Keywords: Equivalent modeling method~~,~~; output active power feature~~,~~; multi-machine representation method~~,~~; clustering algorithm~~,~~; neural regression

Pattern recognition in control charts using the support vector machine for financial process monitoring: ~~The~~ A case study of the US Dollar to Iranian Rial exchange rate

Abstract

Decision-making based on changes in financial indices is of utmost importance in the economy. In recent years, the use of control charts to aid decision-making in financial processes has been of interest to researchers. Despite extensive research on pattern recognition in control charts, studies on autoregressive processes have been limited to Autoregressive integrated moving average (ARIMA) models. In this paper, a support vector machine (SVM)-based method was proposed to recognize patterns of changes in financial processes using the generalized autoregressive conditional heteroskedasticity (GARCH) model. The performance of the proposed method~~'s performance~~ was evaluated using simulation studies based on criteria including the average sequence length and percentage of correct pattern recognition. The results showed that the proposed method had a good average sequence length and a high percentage of correct recognition. Finally, the method was used to recognize patterns of changes in the US Dollar to the Iranian Rial exchange rate.

Keywords: Financial processes; the GARCH model; control chart; pattern recognition; support vector machine; exchange rate

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Data exchange space, secure algorithms~~,~~ and cyber risks
Abstract

~~As most of~~ Today, most of the services needed by ~~today's~~ communities are provided online~~,~~. ~~In~~ and in most cases, the exchange of important information such as office letters (e.g., EOrg), personal information, and bank statements~~, etc., is being~~ is an inevitable issue. Thus, ~~exchanged,~~ network security and protection ~~is~~ have to be highly considered~~paramount and inevitable~~. ~~It should also be noted~~In this regard, with ~~that with~~ the expansion of Internet facilities, cyber-attacks to gain unauthorized access to or destroy information are continuously growing. ~~Thus~~Hence, the purpose of this article ~~was~~ is to explain the need for information security ~~with the use of~~using secure protocols in the expansive world of networks and connections.

Keywords: Security~~,~~; information~~,~~; network~~,~~; malware~~s,~~; attacks

An advanced model of prestressed concrete block permeable pavement

Abstract

Due to the increased price of bitumen, the use of concrete pavements is growing in most countries. In recent years, the use of concrete as an alternative to asphalt pavements has ~~an~~ extensive development and ~~has~~ attracted the attention of engineers and designers. Concrete pavements are known as durable pavements. The use of prestressed concrete block permeable pavement has many advantages such as high strength and durability, quick and simple implementation, traffic passing ability immediately after pavement implementation, block recycling possibility, environmental adaptability, and ~~beauty,~~aesthetic aspects. Moreover, it reduces ~~reducing~~ water spray on the pavement surface, ~~eliminating~~eliminates water ponding, and ~~increasing~~increases drainage. The use of this type of pavements plays a significant role in achieving sustainable development and green engineering. ~~Accordingly, this~~This paper ~~introduced~~introduces a prestressed concrete block permeable pavement as a new road pavement model. ~~It should be noted that the~~The study was carried out based on the authors~~'~~' previous experience in implementing such pavements and ~~as well as~~their previous research along with studies of others in the field.

Keywords: Pavement~~,~~; prestressed concrete pavement~~,~~; permeable

In vivo labe~~l~~lling and tracking of human umbilical cord matrix~~-~~ derived stem cells using MRI

Purpose

In vivo labe~~l~~lling and tracking of umbilical cord stem cells using magnetic resonance imaging

Materials and method

After 48 hours of incubation, human umbilical cord matrix~~-~~ derived stem cells were labeled by endocytosis with ultra~~-~~small superparamagnetic iron oxide (USPIO) particles. Subsequently, Prussian blue iron staining and atomic absorption spectrometry were performed to prove the presence of iron nanoparticles in the cells. The nanoparticles showed iron oxide in the cells. Moreover, they were ~~and were~~ detected over a time period after injection into a rabbit~~'~~'s brain using magnetic resonance imaging.

Findings

It was shown that the stem cells could be labeled ~~with the use of~~using USPIO particles. Moreover, Prussian blue iron staining confirmed the presence of USPIO particles inside the cytoplasm of these cells. Further, the T2-weighted scans at 1.5 Tesla were 660 and 120 ms, and areas with variable signals in T2 imaging would be detectable for up to one week~~,~~; however, they ~~but~~ would decrease and disappear subsequently.

Conclusion

It is concluded that USPIO particles can label human umbilical cord matrix~~-~~ derived stem cells. Also, using these particles, it is possible to ~~and also can~~ track and observe ~~them~~these cells in a completely non-invasive and acceptable way during a limited period of time.

Keywords: Stem cell~~,~~; labe~~l~~lling~~,~~; in vivo~~,~~; cell tracking