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Issue 1, Volume 10, January 2011

Title of the Paper: **Frequencies of Propagation of Electromagnetic Waves in a Hexagonal Waveguide**

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Authors: **Arti Vaish, Harish Parthasarathy**

Abstract: In this work, cut-off frequencies of propagation of electromagnetic waves in a hexagonal waveguide are calculated using two-dimensional (2-D) finite element method. The numerical approach is a standard one and involves six finite elements. A new type of hexagonal waveguide structure for the simple homogeneous dielectric case has been considered. The starting point is Maxwell's equations in conjunction to the exponential dependence of the fields on the Z-coordinates. For the homogeneous case, it results in the Helmholtz equations. Finally, finite element method has been used to derive approximate values of the possible propagation constant for each frequency.

Keywords: Finite-element-method, Variational principle, Eigenvector, Matrix Equation, frequencies of propagation, hexagonal waveguide

Title of the Paper: **Secure and Highly Efficient Three Level Key Management Scheme for MANET**

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Authors: **Wan An Xiong, Yao Huan Gong**

Abstract: MANET(Moving Ad hoc Network) is a convenient infrastructure-less communication network which is commonly susceptible to various attacks. Many key management schemes for MANETs are presented to solve various security problems. Identity (ID)-based cryptography with threshold secret sharing ,ECC and Bilinear Pairing computation is a popular approach for the key management design. In this article, we adopt these approaches to construct tree structure and cluster structure ad hoc network which has three level security communication framework. After constructing the security structure, we evaluate the security performance and efficiency of the scheme in detail.

Keywords: Three Level Key Management, Elliptic Curve Cryptography, Bilinear Pairing Computation, (n,t) Threshold Key Distribution, ID-based key management

Title of the Paper: **Selection of Polynomials for Cyclic Redundancy Check for the use of High Speed Embedded – An Algorithmic**

Procedure[DOWNLOAD FULL PDF](#)Authors: **A. Ahmad, L. Hayat**

Abstract: Cyclic Redundancy Check (CRC) technique which is widely used tools in globally standardized telecommunications systems for dealing with data errors detection and correction have not been fully standardized. Most of the CRCs in current use have some weakness with respect to strength or construction. Standardization of CRCs would allow for better designed CRCs to come into common use is primarily limited due to the complexity of search procedures of the primitive characteristic polynomials. To this direction this paper proposes a method of simplifying the computation and complexity of the search procedure of the primitive characteristic polynomials in order to facilitate implementation of the circuitry for high-speed CRC computation in standard CMOS technology.

Keywords: Cyclic Redundancy Check, CRC, Linear Feedback Shift Registers, LFSRs, Primitive Polynomial Primitive Characteristic Polynomial, Power Dissipation, Exclusive-OR, D-Flip-Flop

Title of the Paper: **Performance Evaluation of Distributed Database on PC Cluster Computers**

[DOWNLOAD FULL PDF](#)Authors: **Sorapak Pukdesree, Vitalwonhyo Lacharoj, Parinya Sirisang**

Abstract: Presently, Information is very importance aspect to be recognized on every application. Modern organizations have stored and managed their information using database management system. The proprietary DBMSs Software is very expensive license to spend depending on the scale of capability to handle their transactions. Therefore this research would like to represent the distributed database methodology that can be scalable to improve performance the database system to meet business requirements. To implement the distributed database methodology, researcher will use an open source DMBS named MySQL Cluster as research's tool. MySQL Cluster deploys on distributed database technology that can be scaled the performance dynamically on the PC Clustering computers. MySQL Cluster can provide higher performance with significantly lower cost than enterprise DBMSs based on PC Clustering computers. This research focuses on the small and medium of enterprise businesses in Thailand which their incomes are less than one and a half million dollar per year. Most of their budget have been spent on productions rather than invested on information technology section. Therefore SMEs businesses in Thailand can utilize this research's information to make their plans for the database management system to meet the requirements of their businesses.

Keywords: High Performance Computing, PC Clustering Computers, Database, MySQL Cluster, Distributed Database, Distributed Processing

Issue 2, Volume 10, February 2011

Title of the Paper: **Predict Strength of Rubberized Concrete Using Artificial Neural Network**

[DOWNLOAD FULL PDF](#)Authors: **A. Abdollahzadeh, R. Masoudnia, S. Aghababaei**

Abstract: In this paper, behaviour of rubberized concrete was modelled using artificial neural network ANN and obtained results were compared to experimental data. Experimental test include recycling 5, 10, 15 and 20% percentage of concrete aggregate with different powder size 0.2, 0.4, 0.6, 0.8 mm of rubber. Results demonstrate high ability of ANN in Prediction of compressive strength of rubberized concrete compared to MLR ($R^2 = 0.9650$ and $RMSE = 0.017$). Finally, the performance of each model was evaluated using the Root Mean Square Error (RMSE), Correlation Coefficient (R), Correlation of determination (R^2), and Mean Absolute Relative Error (MARE).

Keywords: Rubberized concrete, Artificial neural network, Multi linear regression, Root Mean Square

Title of the Paper: **New Standards for Competitive Distinctions: A Practical Model**

[DOWNLOAD FULL PDF](#)Authors: **Edson Pacheco Paladini, Fabricia Goncalves De Carvalho**

Abstract: This paper discusses how to create a knowledge modeling processes for strategic management. Innovation is the main strategy for the management approach. Basic concepts of knowledge management were used to support a proposed model that involves people in strategic decisions. The search for solutions to problems in the field of innovation management is justified by the stiff competition companies now face. In this situation, corporations need to transform their culture by giving incentives to the search for creative and innovative solutions generated by their human resources. This position is essential for organizations that attempt to create new standards of action and establish competitive distinctions.

Keywords: Strategic decisions; knowledge modeling; innovation management

Title of the Paper: **Predict Soil Erosion with Artificial Neural Network in Tanakami (Japan)**

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Authors: **A. Abdollahzadeh, M. Mukhlisin, A. El Shafie**

Abstract: In recent years using artificial neural networks has increased as powerful tool with capability to predict linear and nonlinear relationships in complex engineering problems. Using this toolbox has been significant in different civil engineering fields, especially hydrological problems for various important parameters with different variables and complex mathematical equation. Predict soil erosion has been studied as one of the important parameters of the catchment management in this study. To obtain data artificial rainfall was used in a catchment located in Jakujo Rachidani in Tanakami area. Artificial network has developed for predict soil erosion and this results compared with obtained results from Multi Linear Regression (MLR). The results show high ability of ANN to Prediction of soil erosion compared to MLR. The performance of each model is evaluated using the Mean Square Error (MSE), Root Mean Square Error (RMSE) Correlation Coefficient(R), Correlation of determination (R²), Mean Absolute Relative Error (MARE).

Keywords: Soil Erosion, Catchment, Modeling, Artificial neural network, Multi linear regression, Mean Square Error

Title of the Paper: **Orthogonal Software Architecture Design for Radar Data Processing System with Object-oriented Component and COM Interface**

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Authors: **Zhongzhi Li, Xuegang Wang, Xuelian Yu**

Abstract: Large scale software system is usually developed by software engineering method, and it needs good architecture and reusable components. Radar data processing system is a complex software system; it needs to complete many tasks such as multi-sensor data fusion, target tracking, data storing and displaying, remote controlling, etc. Based on orthogonal software architecture and component-based software engineering, we propose a new method, orthogonal software architecture with object-oriented component and COM interface in this paper, and we use the proposed method to complete the architecture and components design for radar data processing software system. By eliminating correlation between components, we can improve the reusability and maintainability of component. At the same time, we use COM interface to implement mixed language programming and system integration. After the system development and test, it proves that the new software architecture is reasonable and applicable.

Keywords: Orthogonal software architecture; Component-based software engineering; Object-oriented component; Component object model (COM); Module; Radar data processing system

Issue 3, Volume 10, March 2011

Title of the Paper: **A Comparative Analysis of Methods for Probability Estimation Tree**

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Authors: **Na Chu, Lizhuang Ma, Ping Liu, Yiyang Hu, Min Zhou**

Abstract: In this paper, we address the problem of probability estimation of decision trees. This problem has received considerable attention in the areas of machine learning and data mining, and techniques to use tree models as probability estimators have been suggested. We make a comparative study of six well-known class probability estimation methods, measured by classification accuracy, AUC and Conditional Log Likelihood (CLL). Comments on the properties of each method are empirically supported. Our experiments on UCI data sets and our liver disease data sets show that the PETs algorithms outperform traditional decision trees and naive Bayes

significantly in classification accuracy, AUC and CLL respectively. Finally, a unifying pseudocode of algorithm is summarized in this paper.

Keywords: Probability estimation tree, Decision trees, Classification, Joint distribution, AUC, Conditional log likelihood

Title of the Paper: **The Influence of Antecedent Factors of IS/IT Utilization Towards Organizational Performance - A Case Study of IAIN Raden Fatah Palembang**

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Authors: **Rika Kharlina Ekawati, Achmad Nizar Hidayanto**

Abstract: Information technology is one thing that is important in supporting the operational success of an organization. In an uncertain environment, information is needed primarily to support the performance of organization in decision-making. Information Systems is an orderly combination of human, hardware, software and communication network of data resources, which collect, modify, and distribute information within an organization to support organizational decision-making and control. But before the IS/IT is implemented, it is worth considering the antecedent factors that may be used as reference to see the history before the IS/IT is implemented, whether antecedent factors of IS/IT implementation has correlation and influence on organizational performance. Antecedent factors consist of six aspects, which are social factors, attitudes, support conditions, system complexity, long-term consequences and habits. This study aims to find empirical evidence that there is correlation and influence between antecedent factors of IS/IT implementation and organizational performance. Using Pearson correlation analysis and Regression analysis for the testing, the results obtained showed that attitude, facilitating conditions and system complexity have correlation with organizational performance. Among these, only attitude and facilitating condition that influence organizational performance.

Keywords: Information System, Information Technology, Antecedent Factors, Organizational Performance, Utilization Model.

Title of the Paper: **A Study on Factors Influencing Power Consumption in Multithreaded and Multicore CPU's**

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Authors: **Vijayalakshmi Saravanan, Senthil Kumar Chandran, Sasikumar Punnekkat, D. P. Kothari**

Abstract: The ever-growing demand for computational power and high performance has led to a rapid growth in the semiconductor industry. This evolution has seen a continuous increase in CPU performance and the number of transistors on a chip has roughly doubled every two years – proving Moore's law. An inevitable consequence when achieving this is that more functional units, deeper pipelining and larger cache sizes have had to be implemented on the CPU chip. The result is a significant increase in the power consumption. Achieving high performance with low power consumption has been the traditional goal in high-end processors. In order to accomplish high performance, multithreaded and multicore CPUs have become the recent trend in semi-conductor technology. The purpose of this paper is to statistically analyse various factors that affect power, to study their relationship, and to quantify their influence on power consumption in multithreaded and multicore CPUs. The paper also discusses recent advancements in power savings through the implementation of power-limiting micro-architectural features (e.g. out-of-order execution, branch prediction, caching and prefetching) in contemporary multi-core processors, such as Intel Nehalem and AMD's Istanbul processors.

Keywords: Power consumption, statistical analysis, power-limiting factors

Issue 4, Volume 10, April 2011

Title of the Paper: **A New Immune Clone Algorithm to Solve the Constrained Optimization Problems**

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Authors: **Liang Zhou, Jianguo Zheng**

Abstract: In recent years, the constrained optimization problems have become a hot topic among the interest of scholars. In this paper, a new improved artificial immune algorithm is proposed and then used for solving constrained optimizations problems (COPs). This algorithm will treat these COPs as multi-objective optimization problems, and it is based on the concept of Pareto optimization to solve COPs. The mechanism of clone is imported into this new immune algorithm,

at the same time, the new improved immune algorithm consists some new concepts, such as linear non-equilibrium recombination operator and preference difference, which can build an efficient immune model for solving this kind of multi-object problems. Finally, simulation on some test functions show that the new immune clone algorithm can obtain better results compared with the existing algorithms.

Keywords: Constrained optimization, Multi-object optimization, linear non-equilibrium recombination operator, immune, clone, preference difference, Pareto optimization

Title of the Paper: **Performance Evaluation of Artificial Neural Networks for Spatial Data Analysis**

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Authors: **Akram A. Moustafa, Ziad A. Alqadi, Eyad A. Shahroury**

Abstract: The artificial neural network training algorithm is implemented in MATLAB language. This implementation is focused on the network parameters in order to get the optimal architecture of the network that means (the optimal neural network is the network that can reach the goals in minimum number of training iterations and minimum time of training). Many examples were tested and it was shown that using one hidden layer with number of neuron equal to the square of the number of inputs will lead to optimal neural network by mean of reducing the number of training stages (number of training iterations) and thus the processing time needed to train the network.

Keywords: Artificial neural network (ANN), Back-propagation, training rate and training iteration (epochs), hidden layer, net simulation, multilayer perceptron (MLP)

Title of the Paper: **Improving Arabic Information Retrieval System using N-Gram Method**

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Authors: **Rammal Mahmoud, Sanan Majed, Zreik Khaldoun**

Abstract:

Keywords: Arabic language, Indexing, N-grams, Information Retrieval, Word segmentation

Issue 5, Volume 10, May 2011

Title of the Paper: **Designing Test Engine for Computer-Aided Software Testing Tools**

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Authors: **Xue-Ying Ma, Bin-Kui Sheng**

Abstract: With the rapid development of software scale and programming languages, it is impossible to test software manually. The case for automating the software testing process has been made repeatedly and convincingly by numerous testing professionals. Automated tests can promote the efficiency of software testing and then to increase software productivity, improve software quality, and reduce cost in almost all processes of software engineering. White-box testing is one of the most important software testing strategies that can detect error even when the software specification is vague or incomplete. This paper gives a detailed description of the design and implementation of a testing engine. The testing engine, which is the kernel of a developed structured software-testing tool for the Visual Basic and C/C++ language, mainly consists of three components: program analyzer, source code instrumentation tool and intermediate database. In the testing engine, a block division mechanism and a new block-based CFG model are introduced and some block-based test adequacy criteria are extended. The programs are divided into a sequence of blocks and then instrumented and compiled in the testing engine, and all the information related to the test is saved in the intermediate database. The testing engine, acting as an agency, associates the testing automation module with instrumented executable program rather than the source code, and therefore the testing tool can easily be developed to accommodate new requirements and different testing adequacy criteria. It is also convenient to build a testing environment for multi-languages by modifying the program analyzer only, due to the flexibility of the software architecture.

Keywords: Computer-aided software test, testing engine, program instrumentation, Intermediate database, object-oriented software-testing

Title of the Paper: **The Computer Aided Analysis of the Bus Accidents Oriented to the Numerical Simulation of the Injury of the Human Body**

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Authors: **Xiao-Yun Zhang, Xian-Long Jin, Jie Shen**

Abstract: While bus accidents tend to draw public concerns in China, much recent research has only focused on the analyses of car accidents due to relative high rates. However, the research dedicated itself to the scope of reconstructing and analyzing traffic accidents involving bus and quasi bus vehicle. Thus, the paper here is to represent a comprehensive method for the reconstruction of bus accidents, introducing analysis of human body injury as an auxiliary approach to verify the results of simulation in order to improve the accuracy of whole judgments, apart from using the technique of trajectory optimization as conventional reconstructions of car accidents, which ignore human body injury. According to clinical results and information collecting and concluding from the accident sites, the studies of body injury, which work as a kind of feedback in order to check and guide ordinary simulations, were carried out investigating the severity levels and dynamic response of human body under the given conditions calculated from common method. Within the method, the corresponding modifications of modeling, calculating and simulating need to be made, relating to the comparisons between predicted injury parameters and practical effects on victims. Through the demonstrations of the reconstructions and analyses of two real-life paradigms regarding bus accident, this paper indicates the general routing of the method for common cases. The research looks at applying two useful numerical reconstruction techniques, namely Multi-body body dynamics and trajectory optimization methods. With the help of two numerical modeling skills, preliminary results indicate that the combined reconstruction method can reflect the process of bus accident reasonably well. In comparison with conventional methods, the method provides more reliability as well as accuracy.

Keywords: Bus accident; accident reconstruction; injury; occupant kinematics; trajectory optimization

Title of the Paper: **An Optimization for the Design of a Simple Asynchronous Processor**

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Authors: **Sun-Yen Tan, Wen-Tzeng Huang**

Abstract: The asynchronous circuit style is based on micropipelines, a style used to develop asynchronous microprocessors at Manchester University. This paper has presented some engineering work on developing a micropipeline Stump processor. The work presented in this paper demonstrates that VHDL can be used to describe the behaviour of micropipelined systems. It also shows a comparison of 2-phase and 4-phase implementations in transistor count, speed, and energy. Though the nature of the work is mainly engineering, there are some significant new insights gained in the course of the work. The 2-phase circuits have good performance in speed. This is due to the rising and falling transitions of the 4-phase circuits following the same routes. Asymmetric delays with fast reset circuit can be applied to improve the performance. The fastest speed is 1.55 MIPS for the two-phase synthesized processor and the lowest power consumption is 362.33 fJ for the synthesized four-phase long hold processor.

Keywords: Asynchronous design, Micropipelines, Processor, VHDL, Synthesis

Issue 6, Volume 10, June 2011

Title of the Paper: **A Novel Image Encryption Algorithm Using Pixel Shuffling and BASE 64 Encoding Based Chaotic Block Cipher (IMPSBEC)**

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Authors: **G. A. Sathishkumar, K. Bhoopathy Bagan**

Abstract: The image encryption is widely used to secure transmission of data in an open internet and internet works. Each type of data has its own unique features; therefore different data requires a different type of encryption algorithm. Most of the present day techniques are suitable for textual data and they are not suitable for multi-media content rich data such as images. Combined with nonlinear dynamic (chaotic) maps, a new algorithm is developed and applied to image based cryptosystems. In this proposed algorithm, we propose a pixel shuffling, base 64 encoding based algorithm, which is a combination of block permutation, pixel permutation and value transformation. In general, diffusion and permutation is performed in an iterative fashion. These two methods are opened and operated alternatively in every round of encryption process; at least four such chaotic sub keys are employed in every round of primitive encryption process. Decryption has the same structure, which operates in reverse order. The statistical analysis shows

that the proposed algorithm has good immunity to various attacks and it is suitable for various software and hardware applications. A new approach is proposed to generate a random-bit sequence with a high degree of randomness. The proposed algorithm is a better alternative to satisfy the need for information security services. The performance analysis of the proposed new approach is tested for randomness by carrying out various testing rules and statistical test. Results of the various types of analysis are encouraging and imply that the proposed approach is very successfully able to adeptly trade offs between the speed and protection. Hence it is suitable for the real-time transmission of image and wireless communication applications.

Keywords: Image encryption, Base 64 encoding, chaotic maps, logistic map and block cipher

Title of the Paper: **LDAG: A New Model for Grid Workflow Applications**

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Authors: **Guiping Wang, Yan Wang**

Abstract: Grid workflow and its application are one of main focuses of Grid Computing. Due to data or control dependencies between tasks and the requirement of no directed circuit, Directed Acyclic Graph (DAG) is a natural model for Grid workflow, and has been extensively used in Grid workflow modeling. For some workflow applications, there may exist another requirement that each task should be accomplished at an expected stage, that is, at a given level. In this paper, we discuss such workflow applications in depth, and propose a new DAG model, which we called LDAG. In LDAG, each node possesses a level. Several cases of the level of nodes are discussed in detail. For a reasonable one of these cases, we propose the topological sorting algorithm. The algorithm consists of two phases, namely Level Adjusting and Topological Sorting. We discuss some relevant problems, such as choice of stack or queue, the determination of directed circuit, complexity of the algorithm, etc. The experiment and analysis of LDAG and topological sorting algorithm show its correctness and efficiency in modeling grid workflow.

Keywords: Directed Acyclic Graph (DAG), LDAG; Grid workflow; Level; Topologic sorting; Directed circuit

Title of the Paper: **Certain Investigation on MRI Segmentation for the Implementation of CAD System**

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Authors: **J. Jaya, K. Thanushkodi**

Abstract: The aim of this work is to develop Computer Aided Diagnosis (CAD) system for the detection of brain tumor by using parallel implementation of ACO system for medical image segmentation applications due to the rapid execution for obtaining and extracting the Region of Interest (ROI) from the images for diagnostic purposes in medical field. For ROI segmentation, metaheuristic based Parallel Ant colony Optimization (PACO) approach has been implemented. The system has been simulated in the Mat lab for the parallel processing, using the master slave approach and information exchange. The scheme is tested up to 10 real time MRI brain images. Here parallelism is inherent in program loops, which focused on performing searching operation in parallel. The computational results shows that parallel ACO systems uses the concept of the parallelization approach enabled the utilization of the intensity similarity measurement technique because of the capability of parallel processing. Medical image segmentation and detection at the early stage played vital roles for many health-related applications such as medical diagnostics, drug evaluation, medical research, training and teaching. Due to the rapid progress in the technologies for segmenting digital images for diagnostic purposes in medical field parallel Ant based CAD system are technologically feasible for Medical Domain which will certainly reduce the mortality rate.

Keywords: ACO, CAD system, MRI, PACO, ROI and Segmentation

Issue 7, Volume 10, July 2011

Title of the Paper: **Applying Data Mining and Grey QFD to Mine the Dynamic Trends for Computer Life Cycle-oriented Green Supply**

[DOWNLOAD FULL PDF](#)

Authors: **Chih-Hung Hsu, An-Yuan Chang, Hui-Ming Kuo**

Abstract: Green products can reduce the environmental burden during design and disposal. The most approved technique to evaluate the environmental profile of a green product is the life cycle assessment. Data mining has also been successfully applied in many fields. However, little research has been done in the quality function deployment of mining the dynamic trends of

customer requirements and engineering characteristics, using data mining and grey theory. This study proposed an approach to use data mining and grey theory in quality function deployment for mining dynamic trends of the computer life cycle-oriented green supply. An Empirical example is provided to demonstrate the applicability of the proposed approach. Certain advantages may be observed when the dynamic and future requirements trends were identified, using the proposed approach. Since CRs can change rapidly, the database of CRs must be updated continually; therefore, the proposed approach in this study, will continually mine the database and identify the dynamic trends for the designers and manufacturers. The results of this study can provide an effective procedure of mining the dynamic trends of CRs and ECs for improving customer satisfaction and green competitiveness in the marketplace.

Keywords: Data mining, Grey theory, Quality function deployment, Dynamic trends, Life cycle, Green supply

Title of the Paper: **Cryptanalysis of Simplified-DES using Computational Intelligence**

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Authors: **Vimalathithan R., M. L. Valarmathi**

Abstract: Cryptanalysis with Computational Intelligence has gained much interest in recent years. This paper presents an approach for breaking the key used in Simplified-Data Encryption Standard (S-DES) using Genetic algorithm (GA), Particle Swarm Optimization (PSO) and a novel approach called Genetic Swarm Optimization (GSO) obtained by combining the effectiveness of GA and PSO. Ciphertext-only attack is embraced here and an optimum key is produced based on Letter Frequency analysis as Cost function. The key is optimized using the capabilities of Computational Intelligence and the experimental results indicate GSO is an effective tool which runs through less time to break the key used in S-DES and reduces the search space nearly by a factor of 6.

Keywords: Cryptanalysis, ciphertext-only attack, Genetic Algorithm, Particle Swarm Optimization, Genetic Swarm Optimization, cost, plaintext and ciphertext

Title of the Paper: **Enhancements to Reputation Based Trust Models for Improved Reliability in Grid Computing**

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Authors: **Srivaramangai P., Rengaramanujam Srinivasan**

Abstract: A Grid integrates, coordinates resources and users from different domains. Grid computing is an interconnected computer system, where machines share resources that are highly heterogeneous. Grid computing and its related technologies will only be adopted by users, if they are confident that their data and privacy are secured, and the system is as scalable, robust and reliable as of their own, in their places. Trust and reputation systems have been recognized as playing an important role in decision making on the internet. Reputation based systems can be used in a Grid to improve the reliability of transactions. Reliability is the probability that a process will successfully perform its prescribed task without any failure at a given point of time. Hence, ensuring reliable transactions plays a vital role in grid computing. To achieve reliable transactions, mutual trust must be established between the initiator and the provider. Trust is measured by using reputation, where reputation is the collective opinion of others. The main purpose of security mechanisms in any distributed environment such as the Grid is to provide protection against malicious parties. There is a whole range of security challenges that are yet to be met by traditional approaches. Traditional security mechanisms such as authentication, and authorization, typically protect resources from malicious users, by restricting access to only authorized users. However, in many situations users have to protect themselves from those who offer resources so that the problem, in fact, is reversed. Information providers can deliberately mislead by providing false information; traditional security mechanisms are unable to protect against this type of security threat. Trust and reputation systems, on the other hand, can very well provide protection against such threats. Reputation models can be modeled in such a way they it could provide reliability for both users and providers. Reputation systems provide a way for building trust through social control, by utilizing community based feedbacks about past experiences of peers to help making recommendations and judgments on the quality and reliability of the transactions. Reputation and trust systems are soft security mechanisms which can assure behavior conformity. In this paper two new reputation based trust models are proposed. The first, model, Model 1, uses a new factor called compatibility, which is based on Spearman's rank correlation. The feed backs of the recommenders which are incompatible with those of the initiator are eliminated by using the compatibility factor. Model 2 is an improvement over the Model 1. In this model, new factors are included for measuring the direct trust. In order to effectively evaluate the trustworthiness of different entities and to address various malicious behaviors, this comprehensive trust model based on reputation, is proposed. Two important factors – context and size, are incorporated in evaluating the trustworthiness of entities.

Keywords: Grid computing, Reputation, Trust, Reliability

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