dwp-last-1-1

November 21, 2024

Here we installed the necessary libraries and read our data.

[ ]:
```
import pandas as pd
import matplotlib.pyplot as plt
import re
import numpy as np
from tabulate import tabulate
# .txt dosyasını okuma
file_path = '/content/outputacm.txt'
df = pd.read_csv(file_path, delimiter='\t', header=None)  # 'delimiter' ve␣
↪'header' ayarları veri yapınıza göre değişebilir.
```

[ ]:
```
print(df)
```

```
                                                        0
0                                                  629814
1       #*Automated Deduction in Geometry: 5th Interna…
2                                #@Hoon Hong,Dongming Wang
3                                                  #t2006
4                                                      #c
…                                                      …
235946  #cProceedings of the 2008 International Confer…
235947                                          #index36827
235948  #!Recently support vector machine (SVM) has be…
235949  #*Complexity of scheduling with analog network…
235950                                          #@Olga Gous

[235951 rows x 1 columns]
```

We have seen the necessary information of our data

[ ]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 235951 entries, 0 to 235950
Data columns (total 1 columns):
 #   Column  Non-Null Count   Dtype
---  ------  --------------   -----
 0   0       235951 non-null  object
```

```
dtypes: object(1)
memory usage: 1.8+ MB
```

[ ]:
```
df.describe()
```

[ ]:
```
              0
count    235951
unique   144423
top      #t2006
freq      18716
```

We looked at how many lines were duplicated.

[ ]:
```
df.duplicated()
```

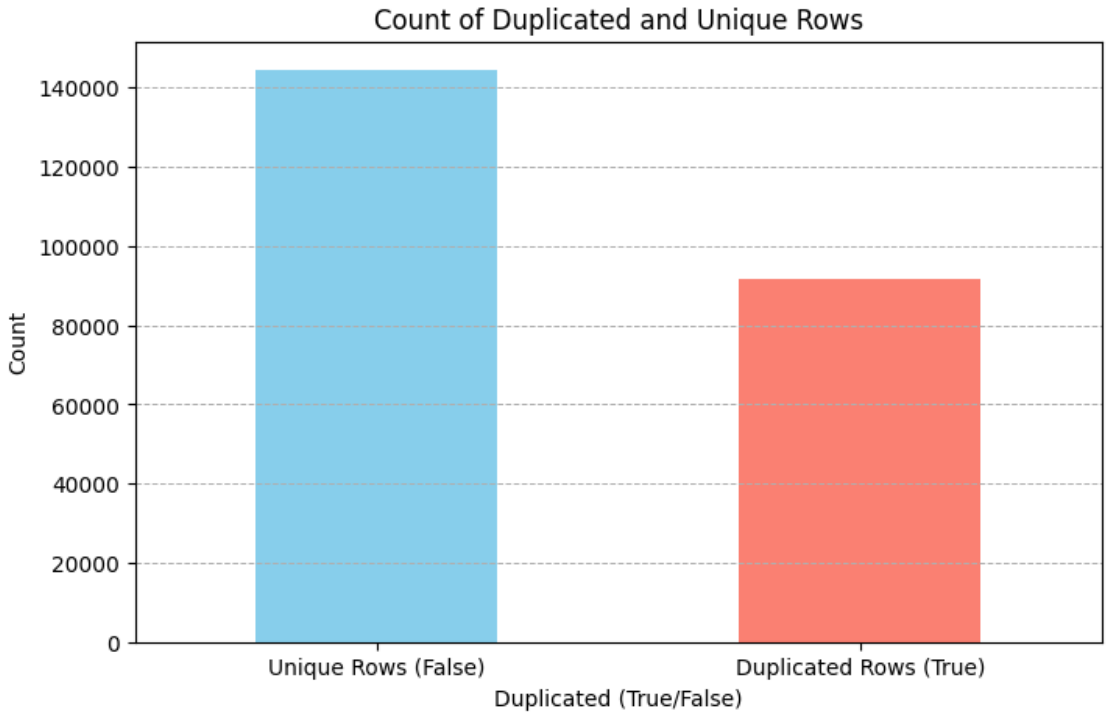
[ ]:
```
0         False
1         False
2         False
3         False
4         False
          …
235946     True
235947    False
235948    False
235949    False
235950    False
Length: 235951, dtype: bool
```

[ ]:
```
duplicated_counts = df.duplicated().value_counts()


print(duplicated_counts)
```

```
False    144423
True      91528
Name: count, dtype: int64
```

[ ]:
```
plt.figure(figsize=(8, 5))
duplicated_counts.plot(kind='bar', color=['skyblue', 'salmon'])
plt.title('Count of Duplicated and Unique Rows')
plt.xlabel('Duplicated (True/False)')
plt.ylabel('Count')
plt.xticks([0, 1], ['Unique Rows (False)', 'Duplicated Rows (True)'],␣
 ↪rotation=0)
plt.grid(axis='y', linestyle='--', linewidth=0.7)
plt.show()
```



We looked at the first 5000 lines of output and examined which information was in which lines in the data.

[ ]:
```
with open('outputacm.txt', 'r') as file:
    lines = file.readlines()
    for line in lines:
        print(line.strip())
```

```
Streaming output truncated to the last 5000 lines.
#%303219
#%582100
#%120321
#!This paper proposes a full-body layered deformable model (LDM) inspired by
manually labeled silhouettes for automatic model-based gait recognition from
part-level gait dynamics in monocular video sequences. The LDM is defined for
the fronto-parallel gait with 22 parameters describing the human body part
shapes (widths and lengths) and dynamics (positions and orientations). There are
four layers in the LDM and the limbs are deformable. Algorithms for LDM-based
human body pose recovery are then developed to estimate the LDM parameters from
both manually labeled and automatically extracted silhouettes, where the
automatic silhouette extraction is through a coarse-to-fine localization and
extraction procedure. The estimated LDM parameters are used for model-based gait
recognition by employing the dynamic time warping for matching and adopting the
combination scheme in AdaBoost.M2. While the existing model-based gait
recognition approaches focus primarily on the lower limbs, the estimated LDM
```

parameters enable us to study full-body model-based gait recognition by utilizing the dynamics of the upper limbs, the shoulders and the head as well. In the experiments, the LDM-based gait recognition is tested on gait sequences with differences in shoe-type, surface, carrying condition and time. The results demonstrate that the recognition performance benefits from not only the lower limb dynamics, but also the dynamics of the upper limbs, the shoulders and the head. In addition, the LDM can serve as an analysis tool for studying factors affecting the gait under various conditions.

#*Analysis on Gender of Silkworms by MRI Technology
#@Cong Liu,Zhao Hui Ren,Hong Zhi Wang,Pei Qiang Yang,Xue Long Zhang
#t2008
#cProceedings of the 2008 International Conference on BioMedical Engineering and Informatics - Volume 02
#index39331
#!At present silkworm cocoons, dried, boiled and reeled, are the female and male mix, so it's very difficult to produce high grade raw silk in large quantity. In the progress of the silk reeling what we can do to separate the complex of female and male silkworms still encounters presently certain difficulties. In this paper the intrinsic relaxation time of the free water and the bound water in silkworms was analyzed and the relaxation model of silkworm was established by use of the proportion difference of the free water and the bound water in the silk gland tissue of the midriff. Finally the gender of the silkworm has been distinguished exactly without destruction by the T2 weighted imaging of magnetic resonance imaging (MRI) technology in the experiment designed. The result of experiment has enormous instruction significance to the production of the silkworm cocoon mixed at the present time.

#*Back to the Future?
#@Norman Chonacky
#t2008
#cComputing in Science and Engineering
#index39332
#!Editor-in-chief Norman Chonacky draws attention to Greg Wilson's argument that we aren't preparing students to be computationalists who will be able to call their work science.

#*Encouraging blended learning and ICT use at Universitat de València to improve the learning process with the .LRN platform: best practices and tools
#@Vicente Cerverón-Lleó,Paloma Moreno-Clari,Sergio Cubero,Darío Roig,Agustín Lopez-Bueno
#t2007
#cProceedings of the 2007 Euro American conference on Telematics and information systems
#index39333
#!The Universitat de València, one of the largest, oldest and most varied in Spain, concerned about the efficiency of the learning processes in the context of the convergence process towards the Higher Education European Space,

has conducted educative innovation experiences in several degrees, diversifying learning activities. Interested in enhancing traditional classroom learning by use of ICT (with progressive blended learning introduction) has established a learning management system to enhance the learning and communication processes for the whole university. The overall goal was to build skills in ICT use in order to improve learning process quality and student participation. This paper describes the starting point, the selection and implementation of an Open Source Learning Management System for the whole university, and the achievements on ICT use and expansion. Evaluation results of 2-years current campuswide use of LMS "Aula Virtual", conclusions and future work are also included.

#*Embedded Deterministic Test Exploiting Care Bit Clustering and Seed Borrowing
#@Adam B. Kinsman,Nicola Nicolici
#t2008
#cProceedings of the 9th international symposium on Quality Electronic Design
#index39334
#!Embedded deterministic test is a manufacture test paradigm that combines the compression advantage of built-in self-test with the high fault coverage of deterministic stimuli, inherent to methods based on automatic test pattern generation and external testers. Despite enabling the use of low-cost testers for rapidly achieving high fault coverage, embedded deterministic test must consciously use the available tester channel bandwidth to ensure non-disruptive scaling to future devices of increased complexity. The focus of this paper is to show how exploitation of care bit clustering in a test set combined with a low cost implementation for on-chip decompressors based on seed borrowing, facilitates an increased utilization of the tester channel bandwidth, and hence improved compression of deterministic stimuli.

#*An Efficient Permutation Approach for Classical and Bioequivalence Hypothesis Testing of Biomedical Shape Study
#@Chunxiao Zhou,Yongmei Michelle Wang
#t2008
#cProceedings of the 2008 International Conference on BioMedical Engineering and Informatics - Volume 02
#index39335
#!A new statistical permutation analysis method is presented in this paper to efficiently and accurately localize regionally specific shape differences between groups of 3D biomedical images. It can improve the system's efficiency by approximating the permutation distribution of the test statistic with Pearson distribution series. This procedure involves the calculation of the first four moments of the permutation distribution, which are derived theoretically and analytically without any permutation. Furthermore,bioequivalence testing aims for practical significances between the two groups that are statistically significant with the shape differences larger than a desired threshold. Experimental results based on both classical and bioequivalence hypothesis tests using simulated data and real biomedical images are presented to demonstrate the advantages of the proposed approach.

#*An improved implementation of activity based costing using wireless mesh networks with MIMO channels
#@Lyonel Laulié,Ismael Soto,Rolando Carrasco
#t2006
#cProceedings of the 10th WSEAS International Conference on APPLIED MATHEMATICS
#index39336
#%99806
#!The next paper brings the development of an improve implementation of Activity-based costing using Wireless Mesh Networks with MIMO channels. The study of the efficiency of this implementation in MIMO channels, is simulated with Space-Time Block Coding with convolutional codification and BPSK modulation, to show that this way of manages costing and the correct exploitation of wireless technologies in communications, generate new value to enterprises. Also the monetary differences of the costs, the impact of the use of better channels are presented.

#*Computer-mediated learning
#@
#t2008
#cACM SIGCSE Bulletin
#index39337

#*Configurable data memory for multimedia processing
#@Eero Aho,Jarno Vanne,Timo D. Hämäläinen
#t2008
#cJournal of Signal Processing Systems
#index39338
#%279781
#%520366
#%523199
#%252670
#%449336
#%442020
#%446773
#%447024
#%443503
#%439642
#%577890
#%619911
#%335436
#%441776
#%174162
#%473153
#%175168
#%108094
#!In modern multimedia applications, memory bottleneck can be alleviated with special stride data accesses. Data elements in stride access can be retrieved in parallel with parallel memories, in which the idea is to increase memory

bandwidth with several memory modules working in parallel and feed the processor with only necessary data. Arbitrary stride access capability with interleaved memories is described in previous research where the skewing scheme is changed at run time according to the currently used stride. This paper presents the improved schemes which are adapted to parallel memories. The proposed novel parallel memory implementation allows conflict free accesses with all the constant strides which has not been possible in prior application specific parallel memories. Moreover, the possible access locations are unrestricted and the accessed data element count equals to the number of memory modules. Timing and area estimates are given for Altera Stratix FPGA and 0.18 micrometer CMOS process with memory module count from 2 to 32. The FPGA results show 129 MHz clock frequency for a system with 16 memory modules when read and write latencies are 3 and 2 clock cycles, respectively. The complexity of the proposed system is shown to be a trade-off between application specific and highly configurable parallel memory system.

#*EducationPaving the way for computational thinking
#@Mark Guzdial
#t2008
#cCommunications of the ACM
#index39339
#!Drawing on methods from diverse disciplines---including computer science, education, sociology, and psychology---to improve computing education.

#*The face of social networks
#@
#t2008
#cProceedings of the first workshop on Online social networks
#index39340

#*CACM online
#@
#t2008
#cCommunications of the ACM
#index39341

#*Leakage power-aware clock skew scheduling: converting stolen time into leakage power reduction
#@Min Ni,Seda Ogrenci Memik
#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39342
#%563480
#%514924
#%300468
#%89939
#!Clock skew scheduling has been traditionally considered as a tool for improving the clock period in a sequential circuit. Timing slack is "stolen"

from fast combinational blocks to be used by slower blocks to meet a more stringent clock cycle time. Instead, we can leverage on the borrowed time to achieve leakage power reduction during gate sizing and/or dual Vth assignment. In this paper, we present the first approach to the best of our knowledge for integrating clock skew scheduling, threshold voltage assignment, and gate sizing into one optimization formulation. Over 29 circuits in the ISCAS89 benchmark suite, this integrated approach can reduce leakage power by as much as 55.83% and by 18.79% on average, compared to using combinational circuit based power optimization on each combinational block without considering clock skews. Using a 65nm dual Vth technology library, this corresponds to a 23.87% peak reduction (6.15% on average) in total power at the ambient operating temperature. The average total power reduction further increases to 9.83% if the high temperature library of the same process technology is used.

#*A simple and effective real-time eyes detection human detection without training procedure
#@Ching-Tang Hsieh,Eugene Lai,Chi-Liang Shen,Yeh-Kuang Wu
#t2006
#cProceedings of the 6th WSEAS International Conference on Signal, Speech and Image Processing
#index39343
#%607230
#%368109
#%374504
#%417969
#!An effective and real-time eyes detection system based on the symmetric and geometric relationships of human-eyes region in gray-level images is presented. In order to reduce the search effort and eliminate the noise impact, we first perform the edge processing with Sobel filter. We then make use of the characteristics of symmetric relationship of human-eyes region to find out the possible regions of human eyes. Moreover, we use the geometric characteristic of human-eyes region to preliminarily exclude the region without eyes and reach the locations of possible eyes regions as quickly as we can,. Finally, to merge all possible regions with eyes into one and to exclude the regions without human eyes effectively, the eyes verification process is also proceeded. The superior performance of the eyes detection of the proposed method is justified in experiments on a large number of images. The demonstration of our work is available at: http://www.ee.tku.edu.tw/~dsp/tkufd

#*Modifying Contracts with Larissa Aspects
#@David Stauch
#t2008
#cElectronic Notes in Theoretical Computer Science (ENTCS)
#index39344
#%296394
#%370984
#%375675
#%351364

#%434859
#!This paper combines two successful techniques from software engineering, aspect-oriented programming and design-by-contract, and applies them in the context of reactive systems. For the aspect language Larissa and contracts expressed with synchronous observers, we show how to apply an aspect asp to a contract C and derive a new contract C^', such that for any program P which fulfills C, P with asp fulfills C^'. We validate the approach on a medium-sized example.

#*Obtaining adaptation of virtual courses by using a collaborative tool and learning design
#@Luisa M. Romero-Moreno,F. Javier Ortega,José A. Troyano
#t2007
#cProceedings of the 2007 Euro American conference on Telematics and information systems
#index39345
#!In this work is described a collaborative tool Learning Activity Management System, LAMS (Macquarie University, Australia) which has been developed for designing, managing and delivering online collaborative learning activities. It provides teachers with a highly intuitive visual authoring environment for creating sequences of learning activities. These activities can include a range of individual tasks, small group work and whole class activities based on both content and collaboration. Then a methodology to apply this tool is described.

#*Kicking the tires of software transactional memory: why the going gets tough
#@Richard M. Yoo,Yang Ni,Adam Welc,Bratin Saha,Ali-Reza Adl-Tabatabai,Hsien-Hsin S. Lee
#t2008
#cProceedings of the twentieth annual symposium on Parallelism in algorithms and architectures
#index39346
#%424703
#%430434
#%414295
#%606377
#!Transactional Memory (TM) promises to simplify concurrent programming, which has been notoriously difficult but crucial in realizing the performance benefit of multi-core processors. Software Transaction Memory (STM), in particular, represents a body of important TM technologies since it provides a mechanism to run transactional programs when hardware TM support is not available, or when hardware TM resources are exhausted. Nonetheless, most previous researches on STMs were constrained to executing trivial, small-scale workloads. The assumption was that the same techniques applied to small-scale workloads could readily be applied to real-life, large-scale workloads. However, by executing several nontrivial workloads such as particle dynamics simulation and game physics engine on a state of the art STM, we noticed that this assumption does not hold. Specifically, we identified four major performance bottlenecks that were unique to the case of executing large-scale workloads on an STM: false

conflicts, over-instrumentation, privatization-safety cost, and poor amortization. We believe that these bottlenecks would be common for any STM targeting real-world applications. In this paper, we describe those identified bottlenecks in detail, and we propose novel solutions to alleviate the issues. We also thoroughly validate these approaches with experimental results on real machines.

#*Formal Verification of a Grid Resource Allocation Protocol
#@Mathias Dalheimer,Franz-Josef Pfreundt,Peter Merz
#t2008
#cProceedings of the 2008 Eighth IEEE International Symposium on Cluster Computing and the Grid
#index39347
#!As the adoption of grid technology moves from science to industry, new requirements arise. In todays grid middlewares, the notion of paying for a job is a secondary requirement. In addition, the concept of selling computational power on a market is not established. On the other hand, the lack of billing capabilities hinders the commercial adoption.In this paper, we present our resource allocation protocol that suits the needs of commercial solution providers. We have developed an auction-based resource broker which uses a distributed agent infrastructure to communicate the user's requirements to resource providers and monetary prices back. The protocol has been formally verified and guarantees certain properties - for example, we can guarantee that the right stakeholder is billed for a job.

#*Bookisms
#@Paul Gray
#t2007
#cInformation Systems Management
#index39348
#!In this issue we review three books, two of which deal with knowledge and knowledge management and the third deals with the many collaboration techniques coming to market. The first two are solid works by people who are leaders in the field, including Laurence Prusak, coauthor with Tom Davenport of the most widely read Knowledge management book (Davenport and Prusak, 1995) published in the United States (see review in Volume 15, No. 3, Summer 1998 issue of ISM) and Ikujiro Nonaka (1991) from Japan who wrote the original knowledge management article in Harvard Business Review. The third book, Wikinomics, by Don Tapscott and coauthor, praises collaboration developments from Wikis to MySpace and beyond, written in a breathless, advertising style that may not appeal to everyone.

#*Improved Multiple Description Framework Based on Successively Refinable Quantization and Uneven Erasure Protection
#@Sorina Dumitrescu,Ting Zheng
#t2008
#cProceedings of the Data Compression Conference
#index39349

#*Computer science olympiad: exploring computer science through competition
#@Iretta B. Kearse,Charles R. Hardnett
#t2008
#cProceedings of the 39th SIGCSE technical symposium on Computer science education
#index39350
#!Generating interest in specialized areas of Computer Science (CS) is one of the goals of the department of Computer and Information Science at Spelman College as with most departments. Achieving this goal in a new, exciting, and innovative manner provided the inspiration to establish the Spelman College Computer Science Olympiad (SC CS Olympiad). The SC CS Olympiad is patterned after the Olympics athletic event. Students participate in the Olympiad as a part of a team as with the Olympics. In addition, there are several events for competition as there are in the Olympics. The events are designed to expose students to the interesting breadth of CS over several days. In this paper, the events are in the following categories: Cryptography, Robotics, Website Design, Hardware and Software Integration, and Programming. Teams use their CS knowledge and problem-solving skills to complete hands-on exercises in each area. Each teams receives points based on the quality of their results from the exercise. In this paper, we present the implementation, results, and future directions of the Spelman College Computer Science Olympiad.

#*A bioinformatics track in computer science
#@Sami Khuri
#t2008
#cACM SIGCSE Bulletin
#index39351
#!In this paper, we describe the bioinformatics track we created to better prepare students for health, medical and life science professions. Our program was motivated by the fact that bioinformatics training is in high demand. Many universities have responded to this demand by creating majors in bioinformatics, while others by creating minors in bioinformatics. Our response was less extreme as we opted for a computer science track in bioinformatics which we describe in this article.

#*The study of drug-reaction relationships using global optimization techniques
#@M. A. Mammadov,A. M. Rubinov,J. Yearwood
#t2007
#cOptimization Methods Software
#index39352
#%122119
#%283769
#!In this paper we develop an optimization approach for the study of adverse drug reaction (ADR) problems. This approach is based on drug-reaction relationships represented in the form of a vector of weights, which can be defined as a solution to some global optimization problem. Although it can be used for solving many ADR problems, we concentrate on two of them here: the

accurate identification of drugs that are responsible for reactions that have occurred, and drug-drug interactions. Based on drug-reaction relationships, we formulate these problems as an optimization problem. The approach is applied to cardiovascularn-type reactions from the Australian Adverse Drug Reaction Advisory Committee (ADRAC) database. Software based on this approach has been developed and could have beneficial use in prescribing.

#*ICT integration in the classroom: Challenging the potential of a school policy
#@Jo Tondeur,Hilde van Keer,Johan van Braak,Martin Valcke
#t2008
#cComputers Education
#index39353
#%435718
#%477259
#!Despite the assumption that the integration of ICT influences the entire school system, research focusing on ICT in schools is generally limited to the study of variables at class level. In contrast to these studies, the present research explores ICT integration from a school improvement approach. More particularly, it examines the local school policy with respect to ICT integration from both the principal's perspective and perceptions of teachers. Furthermore, it studies the relationship between school policies and the actual use of ICT in the classroom. To answer the research questions, a representative sample of 53 primary school principals was interviewed. In addition, the interview data were supplemented with survey data of 574 teachers from the same 53 schools. What emerged from the analyses was that school-related policies, such as an ICT plan, ICT support and ICT training have a significant effect on class use of ICT. In addition, the findings from the interviews indicate that school policies are often underdeveloped and underutilised. The discussion section focuses on challenges to improve the potential of an ICT school policy.

#*Path coverings with paths
#@J. McGee,C. A. Rodger
#t2001
#cJournal of Graph Theory
#index39354
#!In this paper, we give two new proofs of a result of Heinrich, Langdeau and Verrall that provide necessary and sufficient conditions for the existence of a set S of 3-paths in Kn having the property that each 2-path in Kn lies in exactly one path in S. These are then used to consider the case n ≡ 3 (mod 4) when no such exact covering is possible, and to solve the problem of covering (k-1)-paths with k-paths for all k ≥ 3. © 2001 John Wiley & Sons, Inc. J Graph Theory 36: 156–167, 2001 This research is supported by NSF grant DMS 9531722 and ONR grant N00014-97-1-1067.

#*A time-dependent LMS algorithm for adaptive filtering
#@Yuu-Seng Lau,Zahir M. Hussian,Richard Harris
#t2003

#cProceedings of the 2nd WSEAS International Conference on Electronics, Control and Signal Processing
#index39355
#%169988
#%602850
#%172406
#!A novel approach for the least-mean-square (LMS) estimation algorithm is proposed. The approach utilizes the conventional LMS algorithm with a time-varying convergence parameter µn rather than a fixed convergence parameter µ. It is shown that the proposed time-varying LMS algorithm (TVLMS) provides reduced mean-squared error and also leads to a faster convergence as compared to the conventional fixed parameter LMS algorithm. This paper presents a performance study for the proposed TV-LMS algorithm and other two main adaptive approaches: the least-mean square (LMS) algorithm and the recursive least-squares (RLS) algorithm. These algorithms have been tested for noise reduction and estimation in single-tone sinusoids and nonlinear narrow-band FM signals corrupted by additive white Gaussian noise. The study shows that the TV-LMS algorithm has a computation time close to conventional LMS algorithm with the advantages of faster convergence time and reduced mean-squared error.

#*Architecture 2
#@
#t2008
#cProceedings of the 22nd annual international conference on Supercomputing
#index39356

#*Visual Support In Automated Tracing
#@Jane Cleland-Huang,Rafal Habrat
#t2007
#cProceedings of the Second International Workshop on Requirements Engineering Visualization
#index39357
#!Automated traceability facilitates the dynamic generation of candidate links between requirements and other software artifacts. It provides an alternative option to the arduous and error-prone process of manually creating and maintaining a trace matrix. However the result set contains both true and false links which must therefore be evaluated by an analyst. Current approaches display the candidate links to the user in a relatively bland textual format. This position paper proposes several visualization techniques for helping analysts to evaluate sets of candidate links. The techniques are illustrated using examples from the Ice Breaker System.

#*Modeling of the Effect of Crosstalk in Apoptotic Pathways on Caspase-3 Activation
#@Jinki Kim,Gwan-Su Yi
#t2007
#cProceedings of the 2007 Frontiers in the Convergence of Bioscience and Information Technologies

#index39358
#!Apoptosis is a physiologically crucial process for the control of cellular development and homeostasis in multi-cellular organisms. It occurs as a result of signal cascades in a complex cellular network. Although individual apoptotic signal pathways have been revealed, it is difficult to explain the effect of collaborative responses in apoptosis system. In the present work, we propose a mathematical model for crosstalk between the death receptor and the mitochondria-dependent pathway. The crosstalk in this model is a key element to ensure bistability, an important feature for the completion of apoptotic events. Our analysis suggests that the crosstalk between positive feedback loops in two major apoptotic pathways can perform an important role in terms of maintaining bistability. We show that the crosstalk can enhance feedback strength, leading to irreversible caspase-3 activation.

#*On the Approximation of Correlation Clustering and Consensus Clustering
#@Paola Bonizzoni,Gianluca Della Vedova,Riccardo Dondi,Tao Jiang
#t2008
#cJournal of Computer and System Sciences
#index39359
#%109692
#%335106
#%285820
#%251778
#%376499
#%311767
#%230639
#%107808
#%451796
#%75231
#%175004
#%184711
#!The Correlation Clustering problem has been introduced recently [N. Bansal, A. Blum, S. Chawla, Correlation Clustering, in: Proc. 43rd Symp. Foundations of Computer Science, FOCS, 2002, pp. 238-247] as a model for clustering data when a binary relationship between data points is known. More precisely, for each pair of points we have two scores measuring the similarity and dissimilarity respectively, of the two points, and we would like to compute an optimal partition where the value of a partition is obtained by summing up the similarity scores of pairs involving points from the same cluster and the dissimilarity scores of pairs involving points from different clusters. A closely related problem is Consensus Clustering, where we are given a set of partitions and we would like to obtain a partition that best summarizes the input partitions. The latter problem is a restricted case of Correlation Clustering. In this paper we prove that Minimum Consensus Clustering is APX-hard even for three input partitions, answering an open question in the literature, while Maximum Consensus Clustering admits a PTAS. We exhibit a combinatorial and practical 45-approximation algorithm based on a greedy technique for Maximum Consensus Clustering on three partitions. Moreover, we prove that a PTAS exists

for Maximum Correlation Clustering when the maximum ratio between two scores is at most a constant.

#*10B
#@
#t2008
#cProceedings of the 40th annual ACM symposium on Theory of computing
#index39360

#*Implementation and Analysis of New Lightweight Cryptographic Algorithm Suitable for Wireless Sensor Networks
#@Woo Kwon Koo,Hwaseong Lee,Yong Ho Kim,Dong Hoon Lee
#t2008
#cProceedings of the 2008 International Conference on Information Security and Assurance (isa 2008)
#index39361
#!Sensor devices have critical resource constraints such as processing speed, memory size and energy supply. Especially, energy consumption affects the network lifetime so that energy efficiency is an important requirement for wireless sensor networks (WSNs). It means that it is a considerable matter to choose the energy- and memory-efficient cryptographic algorithm suitable for wireless sensor networks. TinySec, de facto security architecture for wireless sensor networks, supports traditional cryptographic algorithms such as RC5 and Skipjack while the traditional cryptographic algorithms might be unsuitable for 8-bit computing devices of which wireless sensor networks consist. Accordingly, it is necessary to evaluate the traditional cryptographic algorithms and 8-bit oriented cryptographic algorithm in performance but there is no work in this area. In this paper, we consider another candidate HIGHT, designed to be proper to ubiquitous 8-bit computing devices (e.g. sensor node or RFID tag), for wireless sensor networks. After implementing new lightweight HIGHT on Mica2 and analyzing the performance between HIGHT and the traditional cryptographic algorithms, we can conclude that HIGHT, outstanding in security and efficiency, is recommended for TinySec as like traditional cryptographic algorithms on TinySec. Hence, we recommend new lightweight candidate HIGHT to be added to security module in TinySec.

#*Combinatorial complexity bounds for arrangements of curves and surfaces
#@K. L. Clarkson
#t1988
#cProceedings of the 29th Annual Symposium on Foundations of Computer Science
#index39362
#!The authors study both the incidence counting and the many-faces problem for various kinds of curves, including lines, pseudolines, unit circles, general circles, and pseudocircles. They also extend the analysis to three dimensions, where they concentrate on the case of spheres, which is relevant for the three-dimensional unit-distance problem. They obtain upper bounds for certain quantities. The authors believe that the techniques they use are of independent interest.

#*An approach to quality engineering of TTCN-3 test specifications
#@Helmut Neukirchen,Benjamin Zeiss,Jens Grabowski
#t2008
#cInternational Journal on Software Tools for Technology Transfer (STTT)
#index39363
#!Experience with the development and maintenance of large test suites specified using the Testing and Test Control Notation (TTCN-3) has shown that it is difficult to construct tests that are concise with respect to quality aspects such as maintainability or usability. The ISO/IEC standard 9126 defines a general software quality model that substantiates the term “quality” with characteristics and subcharacteristics. The domain of test specifications, however, requires an adaption of this general model. To apply it to specific languages such as TTCN-3, it needs to be instantiated. In this paper, we present an instantiation of this model as well as an approach to assess and improve test specifications. The assessment is based on metrics and the identification of code smells. The quality improvement is based on refactoring. Example measurements using our TTCN-3 tool TRex demonstrate how this procedure is applied in practise.

#*A Control Theory Approach to Improve the Real-Time Capability of Multi-Threaded Microprocessors
#@Uwe Brinkschulte,Mathias Pacher
#t2008
#cProceedings of the 2008 11th IEEE Symposium on Object Oriented Real-Time Distributed Computing
#index39364
#!Our aim is to investigate if it is possible to control the throughput (IPC rate) of a thread running on a simultaneous multi-threaded microprocessor by a closed feedback loop. We showed in previous experimental studies that the proposed approach works. In this paper we discuss the control theory approach from a theoretical point of view. We develop a mathematical model of a general purpose multi-threaded microprocessor enhanced with a closed feedback controller and use control theory methods to investigate properties like stability and settling time.

#*High Performance Sleep-Wake Sensor Systems Based on Cyclic Cellular Automata
#@Y. M. Baryshnikov,E. G. Coffman,K. J. Kwak
#t2008
#cProceedings of the 7th international conference on Information processing in sensor networks
#index39365
#%571954
#%307018
#!Our contribution in this paper is a scalable, easily implemented, self-organizing, energy conserving intrusion-detection sensor system applying concepts from cellular automata theory. The system self-assembles periodic wake-sensor barriers (waves) that sweep the sensor field; it is highly effective even

in the case of frequent communication failures, sensor failures, large obstacles, and when intruders know sensor locations.

#*Elements for a modular dynamic geometry system
#@M. Freixas,R. Joan Arinyo,A. Soto-Riera
#t2008
#cProceedings of the 2008 ACM symposium on Applied computing
#index39366
#%171465
#%334504
#%531842
#!Dynamic geometry systems are tools for geomotric visualization. They allow the user to define geometric elements, establish relationships between them and explore the dynamic behavior of the remaining geometric elements when one of them is moved. In this work we propose a modular architecture for dynamic geometry systems built upon a set of functional units which will allow to apply some well known results from the Geometric Constraint Solving field.

#*Optimality conditions for a nonconvex set-valued optimization problem
#@María Alonso,Luis Rodríguez-Marín
#t2008
#cComputers Mathematics with Applications
#index39367
#%587619
#%526696
#%236794
#%293706
#%162187
#!In this paper we study necessary and sufficient optimality conditions for a set-valued optimization problem. Convexity of the multifunction and the domain is not required. A definition of K-approximating multifunction is introduced. This multifunction is the differentiability notion applied to the problem. A characterization of weak minimizers is obtained for invex and generalized K-convexlike multifunctions using the Lagrange multiplier rule.

#*Near real-time fire alert system in South Africa: from desktop to mobile service
#@Diane K. Davies,Hein F. Vosloo,Suresh Santhana Vannan,Philip E. Frost
#t2008
#cProceedings of the 7th ACM conference on Designing interactive systems
#index39368
#%8847
#%289803
#%536011
#!We present a design case study of a near-real time alert system warning of vegetation fires that threaten to disrupt electricity flow along power transmission lines in South Africa. Fire is one of the main causes of outages on South Africa's extensive power grid. For Eskom (South Africa's largest

electricity company), knowing where and when these fires occur saves money, resources and time. The system was primarily designed to provide the locations of vegetation fires, detected from satellite data, to the mobile phones of field supervisors via SMS (short message service). The system adapts an existing desktopaccessible internet application to provide fire alerts to nonexpert users via mobile phones. It demonstrates how usability and access to needed information is enhanced by changing the output to a mobile service.

#*Classifying web genres in context: A case study documenting the web genres used by a software engineer
#@Michela Montesi,Trilce Navarrete
#t2008
#cInformation Processing and Management: an International Journal
#index39369
#%35062
#%303905
#%435806
#%231204
#%305396
#%318976
#%299798
#%306090
#%304091
#%425438
#%428825
#%611488
#%576779
#%238446
#%558053
#!This case study analyzes the Internet-based resources that a software engineer uses in his daily work. Methodologically, we studied the web browser history of the participant, classifying all the web pages he had seen over a period of 12 days into web genres. We interviewed him before and after the analysis of the web browser history. In the first interview, he spoke about his general information behavior; in the second, he commented on each web genre, explaining why and how he used them. As a result, three approaches allow us to describe the set of 23 web genres obtained: (a) the purposes they serve for the participant; (b) the role they play in the various work and search phases; (c) and the way they are used in combination with each other. Further observations concern the way the participant assesses quality of web-based resources, and his information behavior as a software engineer.

#*Title Page i - Volume 2
#@
#t2008
#cProceedings of the 2008 International Conference on BioMedical Engineering and Informatics - Volume 02
#index39370

#*Reflection effects of the sea in the GSM telecommunication systems: measurements, tests and suggestions
#@N. Erol Ozguner,Dogan Dibekci,I. Hakki Cavdar,Arif Dolma,O. Mete Sasmaz
#t2005
#cProceedings of the 4th WSEAS International Conference on Telecommunications and Informatics
#index39371
#!In this study, reflection effects of the sea in the GSM networks are described. In the GSM networks, especially some BTSs (Base Station Transceiver) have to be designed near the sea so some radio waves propogates uncontrolly from BTS and these waves propogates far away via the sea. This situation is not prefereed for GSM cell planner. In this study, two BTSs which are located Black Sea in Turkey are researched (about 97 km from eachother). Normally, although these two BTSs are not neighbour eachother but drive test shows that BTS1's signal influences BTS2's signals. This abnormal situaiton was determined with drive tests and finally, some suggesitons were offered.

#*A Legacy for Living Systems: Gregory Bateson as Precursor to Biosemiotics, 1 edition
#@Jesper Hoffmeyer
#t2008
#c
#index39372
#!Gregory Bateson s contribution to 20th century thinking has appealed to scholars from a wide range of fields dealing in one way or another with aspects of communication and epistemology. A number of his insights were taken up and developed further in anthropology, psychology, evolutionary biology and communication theory. But the large, trans-disciplinary synthesis that, in his own mind, was his major contribution to science received little attention from the mainstream scientific communities. This book represents a major attempt to revise this deficiency. Scholars from ecology, biochemistry, evolutionary biology, cognitive science, anthropology and philosophy discuss how Bateson's thinking might lead to a fruitful reframing of central problems in modern science. Most important perhaps, Bateson's bioanthropology is shown to play a key role in developing the set of ideas explored in the new field of biosemiotics. The idea that organismic life is indeed basically semiotic or communicative lies at the heart of the biosemiotic approach to the study of life. The only book of its kind, this volume provides a key resource for the quickly-growing substratum of scholars in the biosciences, philosophy and medicine who are seeking an elegant new approach to exploring highly complex systems.

#*Towards a Usenet-Like Discussion System for Users of Disconnected MANETs
#@Julien Haillot,Frederic Guidec
#t2008
#cProceedings of the 22nd International Conference on Advanced Information Networking and Applications - Workshops

#index39373
#!Applications that rely on the publish-subscribe model (such as those dedicated to news or event distribution) require a communication model whereby information can flow towards any interested receiver rather than towards set destinations. Content-based communication is a style of communication that perfectly fits the needs of such applications. Yet supporting this kind of communication in partially or intermittently connected mobile ad hoc networks (MANETs) is still a challenge, for end-to-end content-driven routing structures can hardly be constructed and maintained in such environments. In this paper we provide an overview of a protocol we designed to support opportunistic, delay-tolerant, content-based communication in a disconnected MANET. We also describe our project of using this protocol to implement a peer-to-peer, Usenet-inspired discussion system.

#*Editorial
#@Venkatesan (Venki) Muthukumar,dr.ir. Lech Jozwiak
#t2008
#cJournal of Systems Architecture: the EUROMICRO Journal
#index39374

#*Entertainment Technology
#@
#t2008
#cComputers in Entertainment (CIE)
#index39375

#*Secure Health Monitoring Network against Denial-Of-Service Attacks Using Cognitive Intelligence
#@Rajani Muraleedharan,Lisa Ann Osadciw
#t2008
#cProceedings of the Communication Networks and Services Research Conference
#index39376
#!Secure and energy efficient transmission is a main concern in many wireless sensor network applications. In this paper, two types of denial-of-service attacks that affect the routing layer are analyzed and an energy efficient countermeasure is proposed. The performance of the application solely depends on accuracy and reliability of information updated in a timely fashion. The adaptive nature of network demands a cognitive algorithm, used in detecting and re-routing the information upon link failure due to physical, resource depletion or intrusion by an adversary. The proposed method, does not require any additional hardware, hence the survivability of the sensors is maintained, making the application robust, cost effective and energy efficient.

#*Shadows
#@
#t2008
#cProceedings of graphics interface 2008
#index39377

#*An extended CAP file to support high performance embedded java
#@Jesse Van Beurden,Greg Knowles,Graham Bignell
#t2003
#cProceedings of the 2nd WSEAS International Conference on Electronics, Control and Signal Processing
#index39378
#%558975
#%246679
#!The fundamental security features inherent in Java make it an attractive platform for embedded systems when security is a primary concern. Standard Java is however too resource heavy to be considered a serious contender in the embedded market. The Java 2 Micro Edition (J2ME) Connected, Limited Device Configuration (CLDC), and Java Card are two lightweight Java platforms designed specifically for use in embedded applications. This paper describes the first part of a project to develop a highly optimised Java Card and J2ME compatible microprocessor that can execute all Java instructions natively in hardware. We have developed an emulator of the Java Card virtual machine (JCVM), and optimisations to the Java Card packaging system (CAP files). These optimisations give speed increases in the resolution of data located in external packages. We have used the emulator to formalise the Java Card instructions in the context of our optimisations, and in this paper we will show how the complex JCVM instructions such as invokevirtual can be implemented. Through utilising the optimisations and formalisations developed in this stage of the project, we can design a high performance, minimum overhead microprocessor specifically suited to embedded Java.

#*Symmetric distributed coding of stereo omnidirectional images
#@Vijayaraghavan Thirumalai,Ivana Tosic,Pascal Frossard
#t2008
#cImage Communication
#index39379
#%240316
#%309481
#%183210
#!This paper presents a distributed coding scheme for the representation of 3D scenes captured by a pair of omnidirectional cameras with equivalent computational resources and transmission capabilities. The images are captured at different viewpoints and are encoded independently. A joint decoder exploits the correlation between images for improved decoding quality. The distributed coding is built on the multi-resolution representation of spherical images, whose information is split into two partitions. The encoder then transmits one partition after entropy coding, as well as the syndrome bits resulting from the channel encoding of the other partition. The joint decoder exploits the intra-view correlation by predicting one partition from the other partition. At the same time, it exploits the inter-view correlation using block-based disparity estimation between images from different cameras. Experiments demonstrate that the distributed coding solution performs better than a scheme where images are

handled independently. Furthermore, the coding rate stays balanced between the different cameras, which permits to avoid hierarchical relations between vision sensors in camera networks.

#*Soil moisture estimation using MODIS and ground measurements in eastern China
#@L. Wang,J. J. Qu,S. Zhang,X. Hao,S. Dasgupta
#t2007
#cInternational Journal of Remote Sensing
#index39380
#!Recent technological advances in remote sensing have shown that soil moisture can be measured by microwave remote sensing under some topographic and vegetation cover conditions. However, current microwave technology limits the spatial resolution of soil moisture data. It has been found that the Normalized Difference Vegetation Index (NDVI) and Land Surface Temperature (LST) are related to surface soil moisture; therefore, a relationship between ground observed soil moisture and satellite NDVI and LST products can be developed. Three years of 1 km NDVI and LST products from the Moderate Resolution Imaging Spectroradiometer (MODIS) have been combined with ground measured soil moisture to determine regression relationships at a 1 km scale. Results show that MODIS NDVI and LST are strongly correlated with the ground measured soil moisture, and regression relationships are land cover and soil type dependent. These regression relationships can be used to generate soil moisture estimates at moderate resolution for study area.

#*Design and simulation of micromachined gyroscope
#@N. AbuAlarraj,H. Hassan,H. Ibrahim
#t2007
#cProceedings of the 1st WSEAS International Conference on Computational Chemistry
#index39381
#!In this paper a MEMS vibrating rate gyroscope design based on previous work [1] was analyzed to get its mechanical characteristics. In this design, bended beams were used for the inner and outer structures. Electrostatic force is applied on the comb drive electrodes of the gyroscope to create motion in the drive mode direction. The excitation of the gyroscope's drive mode and the deflection of the inner mass due to Coriolis force is simulated using ANSYS FEA software. The simulation results show resonance frequencies of 3769 Hz for the drive mode and 3661 Hz for the sense mode, maximum displacement of 5.07 μm in drive mode and 6.89nm in sense mode, the mechanical sensitivity is 0.00689 μm/(°/s), and the frequency mismatch of 2.86%.

#*Model Checking Medium Access Control for Sensor Networks
#@Paolo Ballarini,Alice Miller
#t2006
#cProceedings of the Second International Symposium on Leveraging Applications of Formal Methods, Verification and Validation
#index39382
#!We describe verification of S-MAC, a medium access control protocol designed

for wireless sensor networks, by means of the PRISM model checker. The S-MAC protocol is built on top of the IEEE 802.11 standard for wireless {\itad hoc} networks and, as such, it uses the same randomised back off procedure as a means to avoid collision. In order to minimise energy consumption, in S-MAC, nodes are periodically put into a sleep state. Synchronisation of the sleeping schedules is necessary for the nodes to be able to communicate. Intuitively, energy saving obtained through a periodic sleep mechanism will be at the expense of performance. In previous work on S-MAC verification~\cite{yehees}, a combination of analytical techniques and simulation has been used to confirm the correctness of this intuition for a simplified (abstract) version of the protocol in which the initial schedules coordination phase is assumed correct. We show how we have used the PRISM model checker to verify the behaviour of S-MAC and compare it to that of IEEE 802.11.

#*Object view of normatively regulated activities
#@Dzenana Donko,Zikrija Avdagic
#t2008
#cProceedings of the 2008 international workshop on Software Engineering in east and south europe
#index39383
#!This paper describes basic components and principles for support of the normatively regulated organizational activities. These activities are characterized by precise objective or purpose, participation of actors as role-holders, and norms and rules that govern the performance of these activities. Particular aspect and modeling of the normatively regulated activities are presented. Some aspects of object view on normatively regulated activities are described, with particular case of procurement activity.

#*Electric load combined forecasting model weights optimization using an improved particle swarm algorithm
#@Jiang Chuanwen,Ma Yuchao,Liu Yong,Lu Jianyu,Wang Liang
#t2005
#cProceedings of the 9th International Conference on Circuits
#index39384
#%100002
#%570421
#!The Electric load series always presents complex phenomenon because of the influence of many complicated facts, various forecasting results can be obtained by using different models for a given electric power utility. The combined forecasting model is recognized as an appreciative method. The paper introduces an improved Particle swarm optimization (PSO) for electric load combination forecasting model weight optimization. The new method applies a self-adaptive weight scale operator to avoid being trapped in the local optimum in conventional Particle swarm optimization. The proposed method has been examined and tested on a practical system. The test results show that the improved PSO has better convergence and faster calculation speed than the basic PSO, and the presented combination forecast model has improved the accuracy.

#*Embracing ambiguity in the design of non-stigmatizing digital technology for social interaction among senior citizens
#@T. Sokoler,M. S. Svensson
#t2007
#cBehaviour & Information Technology
#index39385
#%106031
#%344997
#%315357
#%325039
#%78336
#!In this paper we report our early experience with the design of technology for senior citizens. We take as our point of departure a pre-study of the ways in which older adult living occurs at three different senior housing facilities in southern Sweden. We contribute to the current debate concerning the ways in which digital technology can be designed to enable new types of living arrangements for the ever growing population of older people. We focus on technology designed to support the social rather than physical challenges of growing older. In particular we discuss how designing for social interaction can circumvent the stigma associated with being lonely in light of diminishing social networks, changed patterns of interactions with family, moving to a new neighbourhood, and the loss of a spouse. We will suggest that designers, in the design of digital technology for social interaction, deliberately leave room for ambiguity to make it possible for people to leave their intentions of use unarticulated. Furthermore, recognizing that many everyday activities already act as enablers for social interaction, we suggest utilizing such activities as an approach for design. We will support our suggestions by introducing three perspectives: a perspective emphasizing that the population of older adults is one of resourceful individuals; a perspective on social interaction emphasizing its circumstantial nature as an inherent part of everyday activities; and a perspective on the role of digital technology emphasizing its role as merely one of many resources present for human action. Finally, we will present an example concept showing how an enhanced TV remote control may be designed to enable social interactions without inflicting too much on the original experience of watching TV and most importantly, without stigmatizing the people using the remote control as lonely individuals craving the company of others.

#*IMIS 2008 - Message from the Workshop Organizers
#@
#t2008
#cProceedings of the 2008 International Conference on Multimedia and Ubiquitous Engineering
#index39386

#*N-FindR method versus independent component analysis for lithological identification in hyperspectral imagery
#@C. Gomez,H. Le Borgne,P. Allemand,C. Delacourt,P. Ledru
#t2007

#cInternational Journal of Remote Sensing
#index39387
#%318311
#%514888
#!The current study addresses the problem of the identification of each natural material present in each pixel of a hyperspectral image. Two end member extraction methods from hyperspectral imagery were studied: the N-FindR method and the independent component analysis (ICA). The N-FindR is an automatic technique that selects extreme points (end members) of an n-dimensional scatter plot. It assumes the existence of pure pixels in the distribution, which is infrequent in practice. ICA is a blind source separation technique studied in the signal processing community, which allows each spectrum of natural elements (end member spectra) to be extracted from the observation of some linear combinations of these. It considers a more realistic situation than N-FindR, assuming a spectra mixture for all the pixels. To increase the robustness of ICA, continuum-removed reflectance spectra were used and an iterative algorithm was introduced that takes into account a major part of the available information. The end member abundances were estimated by the fully constrained least squares spectral mixture analysis (FLCS). The end member identification and quantification were carried out on two surficial formations of a semi arid region located in the Rehoboth region, in Namibia, from hyperspectral Hyperion data. It appears that the two end member extraction methods have a similar potential. Whichever end member extraction method is used, the analysis of the rock abundance maps produces a lot of geological information: the distribution of natural elements is in line with the field observations and allows the description of the formation processes of surficial units.

#*An Integrated Design Of Flexure Hinges And Topology Optimization For Monolithic Compliant Mechanism
#@Chien-Jong Shih,Chih-Feng Lin,Hsin-Yi Chen
#t2006
#cJournal of Integrated Design Process Science
#index39388
#!When considering the engineering design process, structures resembling hinges are typically encountered in final structural topology optimization. Although the topology optimization can generate the most desired outcome for layout and approximate hinges alike, their manufacturability from a practical standpoint is in question. This paper proposes an multi-objective optimum design synthesis, using the analytic single-axis flexure formulation integrated with the formal optimization, as a post design process to obtain optimum flexural specifications with locations for promoting the overall performance of a monolithic compliant structure generated by topology optimization. The result verifies that the optimum location of hinge-like structures have been produced at the end of topology optimization. Consequently, a simple alternative design process is recommended for the integration of mechanical flexure hinges into the final product.

#*A Flexible Spatio-Temporal Indexing Scheme for Large-Scale GPS Track Retrieval

#@Longhao Wang,Yu Zheng,Xing Xie,Wei-Ying Ma
#t2008
#cProceedings of the The Ninth International Conference on Mobile Data Management
#index39389
#!The increasing popularity of GPS device has boosted many Web applications where people can upload, browse and exchange their GPS tracks. In these applications, spatial or temporal search function could provide an effective way for users to retrieve specific GPS tracks they are interested in. However, existing spatial-temporal index for trajectory data has not exploited the characteristic of user behavior in these online GPS track sharing applications. In most cases, when sharing a GPS track, people are more likely to upload GPS data of the near past than the distant past. Thus, the interval between the end time of a GPS track and the time it is uploaded, if viewed as a random variable, has a skewed distribution. In this paper, we first propose a probabilistic model to simulate user behavior of uploading GPS tracks onto an online sharing application. Then we propose a flexible spatio-temporal index scheme, referred to as Compressed Start-End Tree (CSE-tree), for large-scale GPS track retrieval. The CSE-tree combines the advantages of B+ Tree and dynamic array, and maintains different index structure for data with different update frequency. Experiments using synthetic data show that CSE-tree outperforms other schemes in requiring less index size and less update cost while keeping satisfactory retrieval performance.

#*Routing and data collection
#@
#t2008
#cProceeding of the 1st ACM international workshop on Foundations of wireless ad hoc and sensor networking and computing
#index39390

#*Middleware: just another level for orchestration
#@Tiziana Margaria,Bernhard Steffen
#t2007
#cProceedings of the 2007 Workshop on Middleware for next-generation converged networks and applications
#index39391
#%415205
#%438363
#%266329
#%271281
#%349446
#!In this paper we advocate to introduce a common modelling pattern for all the different layers of middleware based on services. This opens the possibility to flexibly choose the adequate levels for realizing specific features, and it allows all stakeholders to get a global picture of the overall scenario, a central factor when considering the convergence in networks and applications. Moreover, it allows to apply validations methods like model-based testing and

model checking homogeneously, throughout the whole modelling hierarchy, from the underlying converging platforms to the user level.

#*Improved Compensation of HPA Nonlinearities Using Digital Predistorters with Dynamic and Multi-dimensional LUTs
#@Scott H. Melvin,Mohan Baro,Majed Jandali,Jacek Ilow
#t2008
#cProceedings of the Communication Networks and Services Research Conference
#index39392
#!Orthogonal frequency division multiplexing (OFDM) has been widely adopted in communications systems due to its high spectral efficiency and resistance to multipath fading and impulse noise. However, because of its large peak-to-average power ratio (PAPR), OFDM is highly sensitive to nonlinear distortion. In wireless systems, where to achieve acceptable power efficiency, the high power amplifiers (HPAs) operate near the saturation point, OFDM signals cause spectral regrowth leading to prohibitively high levels of adjacent channel interference (ACI). This paper investigates two signal predistortion techniques that attempt to mitigate these effects. The first approach assumes the HPA is memoryless, meaning that the output only depends on the current input. A predistorter using a one-dimensional (1-D) look up table (LUT) which has non-uniform bin spacing in amplitude is proposed. This non-uniform spacing allows the LUT to produce a better estimate of the inverse gain characteristic of the HPA. The second approach attempts to utilizes a two dimensional (2-D) LUT which is capable of linearizing amplifiers with memory effects where the amplifier gain has a dependency on the short-term average power of the input signal. Multiple LUTs are constructed over the range of the input signal with each LUT being employed over a specific range of short-term average power.

#*LOBSTER: a European platform for passive network traffic monitoring
#@Demetris Antoniades,Panagiotis Trimintzios,Michalis Polychronakis,Sven Ubik,Antonis Papadogiannakis,Vladimir Smotlacha
#t2008
#cProceedings of the 4th International Conference on Testbeds and research infrastructures for the development of networks & communities
#index39393
#%98064
#%417467
#!Over the past few years we have been witnessing a large number of new programs and applications which generate prolific amounts of questionable, if not illegal, traffic that dominates our networks. Hoping from one port to another and using sophisticated encoding mechanisms, such applications have managed to evade traditional monitoring tools and confuse system administrators. In this paper we present a concerted European effort to improve our understanding of the Internet through the LOBSTER passive network traffic monitoring infrastructure. By capitalizing on a novel Distributed Monitoring Application Programming Interface which enables the creation of sophisticated applications on top of commodity hardware, LOBSTER empowers a large number of researchers and system administrators into reaching a better understanding of the kind of traffic that

flows through their networks. We have been running LOBSTER for more than a year now and we have deployed close to forty sensors in twelve countries in three continents. Using LOBSTER sensors • we have captured more than 600,000 sophisticated cyberattacks which attempted to masquerade themselves using advanced polymorphic approaches • we have monitored the traffic of entire NRENs making it possible to identify the magnitude (as well as the sources) of file-sharing (peer to peer) traffic.

#*A versatile sample injection system for miniaturised isotachophoresis devices
#@S. J. Baldock,P. R. Fielden,N. J. Goddard,H. R. Kretschmer,J. E. Prest,B.J. Treves Brown
#t2008
#cMicroelectronic Engineering
#index39394
#!A variable-volume sample injector design is presented and evaluated for performing sample introduction protocols for carrying out miniaturised isotachophoresis (ITP) separations. The microdevice design features a wide bore sample loop channel connected to a narrower bore separation channel via a short injection channel angled at 45^o. An additional side arm channel located at the injection point enabled a range of injection strategies, using a gravity-fed system, to be implemented and assessed. A model analyte was used to demonstrate the versatility of the injector design for low and high sample loading regimes suitable for concentrated and dilute sample solutions, respectively.

#*A Novel Approach for Intelligent Route Finding through Cumulative Proximity Evaluation
#@Yang Yaw Chang,Stephen Yung,Raymond Chiong
#t2008
#cProceedings of the 2008 Second Asia International Conference on Modelling & Simulation (AMS)
#index39395
#!Today, the increased traffic and complex modern road network have made finding a good route from one location to another a non-trivial task. Many search algorithms have been proposed to solve the problem, and the most well-known being Dijkstra's algorithm, Johnson's algorithm and A*. While these algorithms are effective for path finding, they are wasteful in terms of computation. In this paper, we present a study to examine both uninformed search and heuristic search based on some major cities and towns in Borneo Island. We propose a novel algorithm for intelligent route finding using better evaluation criteria and the notion of cumulative proximity score. We show that this proposed technique is able to reduce the time and space required in computation, and also produce better result in terms of accuracy and shortness of path found.

#*Weak parametric failure equivalences and their congruence formats
#@Xiaowei Huang,Li Jiao,Weiming Lu
#t2008
#cProceedings of the fourteenth symposium on Computing: the Australasian theory - Volume 77

#index39396
#%259709
#%508709
#%220960
#%210910
#%599606
#%155743
#%602415
#!Weak equivalences are important behavioral equivalences in the course of specifying and analyzing the reactive systems using process algebraic languages. In this paper, we propose a series of weak equivalences named weak parametric failure equivalences, which take two previously-known behavioral equivalences, i.e., the weak failure equivalence and the weak impossible future equivalence, as their special cases. More importantly, based on the idea of the structural operational semantics, a series of rule formats are further presented to congruence format for their corresponding weak parametric failure equivalences, i.e., a specific equivalence is further congruent in any languages satisfying its corresponding congruence format. This series of rule formats reflect the gradual changes in the weak parametric failure equivalences. We conclude that, when the weak parametric failure equivalences become coarser, their corresponding rule formats turn tighter.

#*Actuation Design of Two-Dimensional Self-Reconfigurable Robots
#@Ming-Chiuan Shiu,Hou-Tsan Lee,Feng-Li Lian,Li-Chen Fu
#t2008
#cProceedings of the 2008 IEEE International Conference on Sensor Networks, Ubiquitous, and Trustworthy Computing (sutc 2008)
#index39397
#!Self-reconfigurable robots have the ability to change the shape of multiple cooperative modules in the different working environment. One of the main difficulties in building the self-reconfigurable robots is the mechanical complexity and necessary number for achieving certain mechanisms. In this paper, a novel design of a self-reconfigurable robot, called "Octabot", is described. The Octabot robot is a two-dimensional self-reconfigurable robot with modules composed of eight e-type electromagnet actuators. The magnetic force characteristics based on FEM are first analyzed, and mechanical design and system properties are described in detail. A group of Octabots can be easily expanded to a large scale if needed in any case. Via examining the basic mechanical functionalities, the Octabot in self-reconfiguration shows its satisfactory performance.

#*Preface: active mining
#@Masayuki Numao,Tu-Bao Ho
#t2007
#cNew Generation Computing
#index39398

#*On the Use of Mutual Information to Compare the Performance of Wireless Sensor

Networks in Detection Applications
#@Benedito J. B. Fonseca Jr.,John A. Gubner
#t2008
#cProceedings of the 7th international conference on Information processing in sensor networks
#index39399
#%282258
#%610206
#!The problem of choosing among candidate wireless sensor networks (WSNs) that send data to a fusion center to detect a binary phenomenon in nature is considered. Viewing the system as a communication channel in which nature is the transmitter and the fusion center is the receiver, it is intuitive to prefer the system that provides the highest mutual information between the phenomenon and the received signal at the fusion center. This paper reviews existing literature on this criterion and provides complementary results showing that, under a Bayesian framework, a WSN that provides equal or higher mutual information than other WSNs results in equal or better detection performance only in very restrictive settings. This paper also presents a bound on the detection performance of a WSN having the highest mutual information, and it is shown that the bound becomes tight as the mutual information approaches its maximum. Similar conclusions are obtained in the Neyman-Pearson framework.

#*Real-Time Computerized Annotation of Pictures
#@Jia Li,James Z. Wang
#t2008
#cIEEE Transactions on Pattern Analysis and Machine Intelligence
#index39400
#!Developing effective methods for automated annotation of digital pictures continues to challenge computer scientists. The capability of annotating pictures by computers can lead to breakthroughs in a wide range of applications, including Web image search, online picture-sharing communities, and scientific experiments. In this work, the authors developed new optimization and estimation techniques to address two fundamental problems in machine learning. These new techniques serve as the basis for the Automatic Linguistic Indexing of Pictures - Real Time (ALIPR) system of fully automatic and high speed annotation for online pictures. In particular, the D2-clustering method, in the same spirit as k-means for vectors, is developed to group objects represented by bags of weighted vectors. Moreover, a generalized mixture modeling technique (kernel smoothing as a special case) for non-vector data is developed using the novel concept of Hypothetical Local Mapping (HLM). ALIPR has been tested by thousands of pictures from an Internet photo-sharing site, unrelated to the source of those pictures used in the training process. Its performance has also been studied at an online demo site where arbitrary users provide pictures of their choices and indicate the correctness of each annotation word. The experimental results show that a single computer processor can suggest annotation terms in real-time and with good accuracy.

#*State estimation for linear impulsive control systems

#@Tatiana F. Filippova,Oksana G. Vzdornova
#t2005
#cProceedings of the 9th WSEAS International Conference on Systems
#index39401
#!The paper deals with the state estimation problem for impulsive control system described by linear differential equations containing impulsive terms (or measures). Models of this kind arise in applied areas ranging from space navigation to investment problems as well as ecological management. The aim of the paper is to find the external set-valued estimates of the reachable sets of impulsive control systems with special ellipsoidal constrains on the admissible values of control functions and on the initial state vectors. Basing on the techniques of so-called ellipsoidal calculus we give a new state estimation approach that uses the impulsive structure of the control problem and is based on external ellipsoidal approximation of a convex union of ellipsoids. The examples of construction of such external state estimates for linear impulsive control systems are given.

#*Static analysis of active XML systems
#@Serge Abiteboul,Luc Segoufin,Victor Vianu
#t2008
#cProceedings of the twenty-seventh ACM SIGMOD-SIGACT-SIGART symposium on Principles of database systems
#index39402
#%26651
#%102192
#%249971
#%327720
#%320260
#%521162
#%559022
#!Active XML is a high-level specification language tailored to data-intensive, distributed, dynamic Web services. Active XML is based on XML documents with embedded function calls. The state of a document evolves depending on the result of internal function calls (local computations) or external ones (interactions with users or other services). Function calls return documents that may be active, so may activate new subtasks. The focus of the paper is on the verification of temporal properties of runs of Active XML systems, specified in a tree-pattern based temporal logic, Tree-LTL, that allows expressing a rich class of semantic properties of the application. The main results establish the boundary of decidability and the complexity of automatic verification of Tree-LTL properties.

#*A 242mW, 10mm21080p H.264/AVC high profile encoder chip
#@Yu-Kun Lin,De-Wei Li,Chia-Chun Lin,Tzu-Yun Kuo,Sian-Jin Wu,Wei-Cheng Tai,Wei-Cheng Chang,Tian-Sheuan Chang
#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39403

#!A 1080p high profile H.264 encoder is designed by the robust reusable silicon IP methodology and fabricated in a 0.13μm CMOS technology with an area of 10 mm2 and 242mW at 145MHz. Compared to the state-of-the-art design targeted at 720p baseline, this design reduces 53.4% power and 46.7% area through parallelism enhanced throughput and cross stage sharing pipeline.

#*Physical mobile interaction with dynamic physical object
#@Johannes Vetter,John Hamard,Massimo Paolucci,Enrico Rukzio,Albrecht Schmidt
#t2007
#cProceedings of the 9th international conference on Human computer interaction with mobile devices and services
#index39404
#%347441
#!The proposed demonstration offers the possibility to access and interact with (web) services through Physical Mobile Interaction (PMI) with tag-based dynamic physical objects such as papers. Our demonstration supports several direct manipulation gestures in the real world and deals with physical objects able to provide system feedback to the user during the course of the interaction.

#*Theory and formal methods
#@
#t2008
#cProceedings of the 39th SIGCSE technical symposium on Computer science education
#index39405

#*BlockLib: a skeleton library for cell broadband engine
#@Markus Ålind,Mattias V. Eriksson,Christoph W. Kessler
#t2008
#cProceedings of the 1st international workshop on Multicore software engineering
#index39406
#%437149
#%238901
#%106435
#%332092
#%261999
#!Cell Broadband Engine is a heterogeneous multicore processor for high-performance computing and gaming. Its architecture allows for an impressive peak performance but, at the same time, makes it very hard to write efficient code. The need to simultaneously exploit SIMD instructions, coordinate parallel execution of the slave processors, overlap DMA memory traffic with computation, keep data properly aligned in memory, and explicitly manage the very small on-chip memory buffers of the slave processors, leads to very complex code. In this work, we adopt the skeleton programming approach to abstract from much of the complexity of Cell programming while maintaining high performance. The abstraction is achieved through a library of parallel generic building blocks, called BlockLib. Macro-based generative programming is used to reduce the

overhead of genericity in skeleton functions and control code size expansion. We demonstrate the library usage with a parallel ODE solver application. Our experimental results show that BlockLib code achieves performance close to hand-written code and even outperforms the native IBM BLAS library in cases where several slave processors are used.

#*Pandemic simulation of antivirals + school closures: buying time until strain-specific vaccine is available
#@S. M. Mniszewski,S. Y. Del Valle,P. D. Stroud,J. M. Riese,S. J. Sydoriak
#t2008
#cComputational Mathematical Organization Theory
#index39407
#!A strain-specific vaccine is unlikely to be available in the early phases of a potential H5N1 avian influenza pandemic. It could be months and at the current production rate may not provide timely protection to the population. Intervention strategies that control the spread of infection will be necessary in this situation, such as the use of the US stockpile of antiviral medication coupled with a 6-month school closure. The agent-based simulation model, EpiSimS, was used to assess the impact of this intervention strategy followed by three different vaccine approaches: (1) 2-dose, 80% effective, (2) 1-dose, 30% effective, and (3) 1 dose, 80% effective. Simulations show that the combination of antivirals, school closures, and a strain-specific vaccine can reduce morbidity and mortality while in effect. A significant second infection wave can occur with current vaccine technology once school closures are relaxed, though an ideal vaccine is able to contain it. In our simulations, worker absenteeism increases in all cases mostly attributed to household adults staying home with children due to the school closures.

#*Special Session 9B: Embedded Tutorial: Nanoelectronics - What Next? From Moore's Law to Feynman's Vision
#@
#t2008
#cProceedings of the 26th IEEE VLSI Test Symposium
#index39408

#*Minimization of tree pattern queries with constraints
#@Ding Chen,Chee-Yong Chan
#t2008
#cProceedings of the 2008 ACM SIGMOD international conference on Management of data
#index39409
#%35780
#%337097
#%97241
#%311102
#%231589
#%113092
#%371263

#!Tree pattern queries (TPQs) provide a natural and easy formalism to query tree-structured XML data, and the efficient processing of such queries has attracted a lot of attention. Since the size of a TPQ is a key determinant of its evaluation cost, recent research has focused on the problem of query minimization using integrity constraints to eliminate redundant query nodes; specifically, TPQ minimization has been studied for the class of forward and subtype constraints (FT-constraints). In this paper, we explore the TPQ minimization problem further for a richer class of FBST-constraints that includes not only FT-constraints but also backward and sibling constraints. By exploiting the properties of minimal queries under FBST-constraints, we propose efficient algorithms to both compute a single minimal query as well as enumerate all minimal queries. In addition, we also develop more efficient minimization algorithms for the previously studied class of FT-constraints. Our experimental study demonstrates the effectiveness and efficiency of query minimization using FBST-constraints.

#*Search survey for S/V Tenacious: Gulf of Farallones and approaches to San Francisco Bay
#@Ed Saade
#t2008
#cACM SIGMOD Record
#index39410
#!On January 28th, 2007, Jim Gray sailed his 40 foot sailboat, Tenacious, on a day cruise to the Farallon Islands off San Francisco and was reported overdue when he didn't return as scheduled. The immediate and comprehensive above water search for Jim and Tenacious was suspended on February 16, 2007. Shortly after this, Fugro Pelagos, Inc., conducted an extensive search of the seabed to look for evidence of the whereabouts of the sailing vessel, Tenacious. Approximately 1000km2 was surveyed between February, 2007 and May 31st, 2007 when the effort was suspended. This paper summarizes the search survey for S/V Tenacious, the areas and techniques used in the survey, the findings of the survey, and the results and recommendations provided by Fugro Pelagos, Inc.

#*Sensing liquid density using resonant flexural plate wave devices with sol–gel PZT thin films
#@Jyh-Cheng Yu,Huang-Yao Lin
#t2008
#cMicrosystem Technologies
#index39411

#*Determination of particle distributions in microfluidic systems under the influence of electric fields
#@Andreas Heeren,Monika Fleischer,Dieter Kern
#t2008
#cMicroelectronic Engineering
#index39412
#!One of the challenges in biological applications of nanotechnology is the manipulation of micro and nanoparticles in microfluidic systems. In one

approach, the short-range forces exerted on particles by electric fields, e.g. via dielectrophoresis, can be utilized for this purpose. By a combination of dielectrophoresis and electroosmosis it is possible to act on particles in larger volumes. In this work a new method for examining particle distributions in microfluidic devices is presented together with results of experiments in which the method was used to investigate the combination of dielectrophoresis and electroosmosis.

#*Patterns of ERP Adoption and Implementation in China and Some Implications
#@David H. Brown,Susan He
#t2007
#cElectronic Markets
#index39413
#%446916
#%249646
#%436387
#%463062
#!Against a background of rapid change, this paper looks at recent experiences of adopting and implementing ERP. Of particular interest is the growing presence of domestic suppliers and, in this context, the implementation experiences of firms using domestic systems as well as the established international systems such as SAP. The research uses a combination of 20 mini-cases and a single in-depth case study and interprets these through a critical success factor perspective. The outcome confirms previous literature but contributes further by establishing the changing dynamic between international and domestic suppliers, the particular importance of training and employee retention, and the role of context in determining implementation factors.

#*GPE4CGSP: interoperability between heterogeneous grid infrastructures
#@Song Wu,Kang Xiao,Li Qi
#t2007
#cProceedings of the 2007 Asian technology information program's (ATIP's) 3rd workshop on High performance computing in China: solution approaches to impediments for high performance computing
#index39414
#%383144
#%113370
#%110978
#%446992
#!In this paper we present GPE4CGSP, which targets the interoperability between GPE (Grid Programming Environment) and CGSP (ChinaGrid Support Platform). The web services technique and gridftp data transfer protocol are used to implement the interoperation between GPE and CGSP. Grid application can be deployed to CGSP through GPE. Without modification, GPE client can freely visit and use the resources in CGSP. Typically, end users can submit jobs to CGSP through GPE application client. GPE4CGSP provides one feasible way for the interoperability of heterogeneous grid infrastructures. The evaluation proves that the job execution time of GPE4CGSP is less than that of GPE4GTK.

#*ICT in emerging energy markets
#@Terje Gjengedal
#t2006
#cProceedings of the 5th WSEAS International Conference on Circuits, Systems, Electronics, Control & Signal Processing
#index39415
#!Statkraft is presently implementing a new control centre system that will replace the five existing control centre solutions by one new multi site solution. The existing control centres are characterized by five independent and different systems, they have different functionality, and communication is carried out by serial solutions based on proprietary protocols. The new control centre solution will be one integrated system with common t tools and functionality. It will be a flexible system that allows redesigning the control centre structure and dispatch of the operation tasks when needed. The new control system is presently under installation, and the full functionality should be in place by the end of 2006. The new system will give a much better flexibility in defining, dispatching and organizing the process control and the power plant and hydro system operations than the present system. It is of a great benefit that all users now will use the same type of functionality, and that they have access to the same type and quality audited information. The operators will be more integrated into the same working processes, and exchange of information, experiences and view points in between regions will be far easier than before. Since all operators are using the same system, it will also be easier to maintain, develop and exchange the competence between the regions. Hence, an even more professional and efficient process control may be achieved.

#*3-D topologies for networks-on-chip
#@Vasilis F. Pavlidis,Eby G. Friedman
#t2007
#cIEEE Transactions on Very Large Scale Integration (VLSI) Systems
#index39416
#%618192
#%96952
#%579852
#%447900
#%461117
#%202465
#%301237
#%247471
#%442492
#%289143
#%301293
#!Several interesting topologies emerge by incorporating the third dimension in networks-on-chip (NoC). The speed and power consumption of 3-D NoC are compared to that of 2-D NoC. Physical constraints, such as the maximum number of planes that can be vertically stacked and the asymmetry between the horizontal and vertical communication channels of the network, are included in speed and power

consumption models of these novel 3-D structures. An analytic model for the zero-load latency of each network that considers the effects of the topology on the performance of a 3-D NoC is developed. Tradeoffs between the number of nodes utilized in the third dimension, which reduces the average number of hops traversed by a packet, and the number of physical planes used to integrate the functional blocks of the network, which decreases the length of the communication channel, is evaluated for both the latency and power consumption of a network. A performance improvement of 40% and 36% and a decrease of 62% and 58% in power consumption is demonstrated for 3-D NoC as compared to a traditional 2-D NoC topology for a network size of N = 128 and N = 256 nodes, respectively.

#*Power-aware dynamic placement of HPC applications
#@Akshat Verma,Puneet Ahuja,Anindya Neogi
#t2008
#cProceedings of the 22nd annual international conference on Supercomputing
#index39417
#%26881
#%616896
#%47823
#%115982
#%421905
#%423392
#%313199
#!High Performance Computing applications and platforms have been typically designed without regard to power consumption. With increased awareness of energy cost, power management is now an issue even for compute-intensive server clusters. In this work, we investigate the use of power management techniques for high performance applications on modern power-efficient servers with virtualization support. We consider power management techniques such as dynamic consolidation and usage of dynamic power range enabled by low power states on servers. We identify application performance isolation and virtualization overhead with multiple virtual machines as the key bottlenecks for server consolidation. We perform a comprehensive experimental study to identify the scenarios where applications are isolated from each other. We also establish that the power consumed by HPC applications may be application dependent, non-linear and have a large dynamic range. We show that for HPC applications, working set size is a key parameter to take care of while placing applications on virtualized servers. We use the insights obtained from our experimental study to present a framework and methodology for power-aware application placement for HPC applications.

#*Towards a framework for mining and analysing spatio-temporal datasets
#@M. Bertolotto,S. Di Martino,F. Ferrucci,T. Kechadi
#t2007
#cInternational Journal of Geographical Information Science
#index39418
#%332882

#%319289
#%356021
#%368076
#!High-resolution spatio-temporal datasets are being collected every day to record the behaviour of several natural phenomena. However, data-mining techniques are needed to extract relevant patterns from very large repositories and reveal spatial and temporal patterns in the behaviour of these phenomena. To this aim, we propose a system for mining data with spatial and temporal characteristics, and for visualizing and interpreting the results. Within this system, we have developed two complementary 3D visualization environments, one based on Google Earth and one relying on a Java3D graphical user interface. In this paper, we illustrate the main features of the system we have developed, and report on the main results we have obtained by analysing the Hurricane Isabel dataset.

#*Performance Analysis of Cache and Scratchpad Memory in an Embedded High Performance Processor
#@Wanessa Pereira Dias,Emilia Colonese
#t2008
#cProceedings of the Fifth International Conference on Information Technology: New Generations
#index39419
#!The objective of this article is to present a comparative study of an embedded processor performance using architecture with cache or scratchpad memory in relation to an architecture with only external Synchronous Dynamic Random Access Memory. For this analysis the ADSP-BF533 of Analog Devices, a high performance processor, was used. The adjusted memory space was configured and analyzed during the process of a small data volume, and great data volume, in three different speeds of the core, and in one same speed of the processor external memory. The scratchpad memory has shown better performance in programs with small data volume; however the cache memory had a better performance for large data allocation.

#*Cooperation among peers in an ad hoc network to support an energy efficient IM service
#@Danyu Zhu,Matt Mutka
#t2008
#cPervasive and Mobile Computing
#index39420
#%314219
#%297621
#%619970
#%482805
#%316498
#!Continuous wireless wide area network (WWAN) access for mobile devices in future pervasive systems may be limited by battery power and may generate extensive data telecommunication costs. In this paper, we develop a new message notification protocol (MNP) to enable mobile users to maintain a continuous

presence at their instant messaging (IM) server while avoiding long, idle connections. In MNP, mobile users cooperatively share a single message notification channel to reduce users' telecommunication charges and extend a device's battery life. A device may turn off its WWAN interface for most of the time to save power, and only needs to contact the IM server when needed. Precise group information does not need to be maintained by a mobile device. Message notification exchanged between the IM server and the peer group is represented by a compressed Bloom filter to further reduce the protocol overhead and provide additional privacy and security. The results of performance evaluation show that the MNP protocol could be able to save significant energy consumed in a mobile device.

#*Mobio threat: A mobile game based on the integration of wireless technologies
#@Wilian Segatto,Eduardo Herzer,Cristiano L. Mazzotti,João R. Bittencourt,Jorge Barbosa
#t2008
#cComputers in Entertainment (CIE)
#index39421
#%305629
#!Pervasive gaming is a new genre that became possible due to the development of communication technologies, especially wireless ones. In this area of gaming, players must physically walk to certain places of the game area to reach their objectives and missions. They may also interact with the environment and with real objects. Nowadays, there are just a few pervasive games developed, and all of them have limitations concerning localization tracking, hardware flexibility, signal coverage, and cheap setup. In this context, an innovative game, called moBIO Threat // Disease Control, was developed on the basis of the integration of multiple wireless technologies, mixing their capabilities and neutralizing their limitations. It utilizes RFID, IrDA, and QR Code technologies for object interaction, Bluetooth for exchanging information between players who are physically close and the IEEE 802.11 Wi-Fi protocol to connect all of the players with the game server. From what we observed, moBIO Threat provides a completely different game experience, with social gaming and collaboration being strong attributes of the game. This article describes the development of the game and other details about the project and about pervasive gaming.

#*Efficient feature correspondence for image registration
#@Muhammad Saleem,Adil Masood Siddiqui,Imran Touqir
#t2006
#cProceedings of the 6th WSEAS International Conference on Signal, Speech and Image Processing
#index39422
#%479235
#%449466
#%281387
#!Feature correspondence is an important step in image registration. Chamfer matching is a process of establishing the feature correspondence of an object (subimage) in an image where both the subimage and the image are binary. Chamfer

matching establishes correspondence based on low level features. It is the process of locating the template within the image by shifting the template within the image and at each shift position determining the sum of distances of closest object points in the template and the image. The smaller the sum, the closer object points in the template and the image. Correspondence is achieved by calculating the minimum distance out of all the translations which is computationally expensive. The problem is further aggravated if reference image is of much greater dimensions as compared to template image. Since the reference image consists of objects and background, calculating the minimum distance for all the pixel locations becomes time consuming. In this paper a method to decrease the computation time of existing technique is presented, to make existing schemes suitable for real time registration.

#*A generalization of a Ramsey-type theorem on hypermatchings
#@Paul Baginski
#t2005
#cJournal of Graph Theory
#index39423
#!For an r-uniform hypergraph G define N(G, l; 2) (N(G, l; n)) as the smallest integer for which there exists an r-uniform hypergraph H on N(G, l; 2) (N(G,l; n)) vertices with clique(H) < l such that every 2-coloring (n-coloring) of the edges of H implies a monochromatic (zero-sum) copy of G. Our results strengthen a Ramsey-type theorem of Bialostocki and Dierker on zero-sum hypermatchings. As a consequence, we show that for any n ≥ 2, r ≥ 2, and l > r + 1, N(n rr, l;2) = N(n rr, l; n) = (r + 1)n - 1. © 2005 Wiley Periodicals, Inc. J Graph Theory

#*Improvements to the alignment process in a commercial vector scan electron beam lithography tool
#@K. E. Docherty,S. Thoms,P. Dobson,J. M. R. Weaver
#t2008
#cMicroelectronic Engineering
#index39424
#%461826
#!This paper examines the desirable properties of marker patterns for use in correlation-based alignment systems and demonstrates alignment accuracies of better than 1nm. A framework for evaluating different classes of marker patterns has been developed and a figure of merit for marker patterns used in correlation-based alignment has been defined. We show that Penrose tilings have many desirable properties for correlation-based alignment. An alignment system based on correlation and using marker patterns derived from Penrose tilings has been developed and implemented on a commercial Vistec VB6 UHR EWF electron beam lithography tool. A new method of measuring alignment at the sub-nm level using overlaid gratings and a Fourier Transform based analysis scheme is introduced.

#*Cryptanalysis of a password authentication scheme over insecure networks
#@Tao Xiang,Kwok-wo Wong,Xiaofeng Liao
#t2008

#cJournal of Computer and System Sciences
#index39425
#!The security of a password authentication scheme using smart cards proposed by Liao et al. [I.-E. Liao, C.-C. Lee, M.-S. Hwang, A password authentication scheme over insecure networks, J. Comput. System Sci. 72 (2006) 727-740] is analyzed. Three kinds of attacks are presented in different scenarios.

#*Continuous time regulator for linear systems with constrained control
#@N. H. Mejhed
#t2005
#cProceedings of the 9th WSEAS International Conference on Systems
#index39426
#%210447
#%458848
#!In this work, A time varying control law is proposed for linear continuous-time systems with non Symmetrical constrained control. Necessary and sufficient conditions allowing us to obtain the largest non-symmetrical positively invariant polyhedral set with respect to (w.r.t) the system in the closed loop are given. The asymptotic stability of the origin is also guaranteed. The case of symmetrical constrained control is obtained as a particular case. The performances of our regulator with respect to the results of [3] are shown with the help of an example.

#*Managing inter-domain traffic in the presence of bittorrent file-sharing
#@Srinivasan Seetharaman,Mostafa H. Ammar
#t2008
#cACM SIGMETRICS Performance Evaluation Review
#index39427
#%23984
#%117995
#%98663
#!Overlay routing operating in a selfish manner is known to cause undesired instability when it interacts with native layer routing. We observe similar selfish behavior with the BitTorrent protocol, where its performance-awareness causes it to constantly alter the routing decisions (peer and piece selection). This causes fluctuations in the load experienced by the underlying native network. By using real BitTorrent traces and a comprehensive simulation with different network characteristics, we show that BitTorrent systems easily disrupt the load balance across inter-domain links. Further, we find that existing native layer traffic management schemes suffer from several downsides and are not conducive to deployment. To resolve this dilemma, we propose two BitTorrent strategies that are effective in resolving the cross-layer conflict.

#*Data quality enhancing software for asset management: state of the art evaluation
#@Sasa Baskarada,Jing Gao,Shien Lin,Ging Sun Yeoh,Andy Koronios
#t2005
#cProceedings of the 4th WSEAS International Conference on Applied Mathematics

and Computer Science
#index39428
#%77910
#%86376
#%84685
#!This paper places a special focus on data quality (DQ) issues associated with asset management (AM) systems and on how software can assist in dealing with those various DQ issues. It does not intend to merely be a review of DQ software, but rather aims to identify limitations of such software solutions when used in conjunction with AM applications. Therefore, this paper can be valuable to practitioners, researchers and software developers who are specializing in, studying, developing or adopting a computerized software solution for data quality maintenance in AM systems.

#*Implementation of a Coarse-Grained Reconfigurable Media Processor for AVC Decoder
#@B. Mei,B. Sutter,T. Aa,M. Wouters,A. Kanstein,S. Dupont
#t2008
#cJournal of Signal Processing Systems
#index39429
#%243117
#%441542
#%334319
#%612498
#%279465
#%543446
#%292676
#!Architecture for Dynamically Reconfigurable Embedded Systems (ADRES) is a templatized coarse-grained reconfigurable processor architecture. It targets at embedded applications which demand high-performance, low-power and high-level language programmability. Compared with typical very long instruction word-based digital signal processor, ADRES can exploit higher parallelism by using more scalable hardware with support of novel compilation techniques. We developed a complete tool-chain, including compiler, simulator and HDL generator. This paper describes the design case of a media processor targeting at H.264 decoder and other video tasks based on the ADRES template. The whole processor design, hardware implementaiton and application mapping are done in a relative short period. Yet we obtain C-programmed real-time H.264/AVC CIF decoding at 50 MHz. The die size, clock speed and the power consumption are also very competitive compared with other processors.

#*Improving Model Driven Architecture with Requirements Models
#@Narayan Debnath,María Carmen Leonardi,María Virginia Mauco,Germán Montejano,Daniel Riesco
#t2008
#cProceedings of the Fifth International Conference on Information Technology: New Generations
#index39430

#!Model Driven Architecture (MDA) is a software development framework based on automatic transformations of models. The first of these models, the Computation Independent Model (CIM), is used to define the business system, and it is usually represented with UML models. Natural language is widely used in Requirements Engineering as it is generally understandable by stakeholders encouraging their participation. Therefore, in order to enhance the first stages of MDA software development, we propose to define natural language oriented requirements models and derive from them a CIM. To achieve this integration we describe in this paper an automatic process to derive a business class diagram representing the structural aspects of a CIM starting from natural language oriented models.

#*Road Intersections as Pervasive Computing Environments: Towards a Multiagent Real-Time Collision Warning System
#@Flora Dilys Salim,Licheng Cai,Maria Indrawan,Seng Wai Loke
#t2008
#cProceedings of the 2008 Sixth Annual IEEE International Conference on Pervasive Computing and Communications
#index39431
#!Embedded with sensors and appropriate computational entities, a road intersection can be viewed as a pervasive computing environment. The crash rate in road intersections demonstrates the need for a fast and accurate collision detection system. We suggest that an intersection collision detection system should be able to adapt to different types of intersections for faster collision detection. Moreover, a real-time application-level communication protocol to warn affected drivers is required. An intersection agent that takes vehicular status information from vehicle agents and learns, detects and warns collisions at a road intersection is proposed. The issues, challenges, and cost of a multiagent collision avoidance system are discussed. A communication protocol that is designed specifically with intersection safety in mind is presented here.

#*Simulation of stress urinary incontinence for in-vitro studies
#@Florian Marti,Nadine Blunschi,Thomas Leippold,Bert Müller
#t2008
#cTechnology and Health Care
#index39432
#!A simulation system that generates dynamic bladder pressures for the use of testing and examining artificial urinary sphincters is designed, implemented, and compared to in-vivo measurements of Valsalva and coughing profiles. Cylinder and piston, which are integrated into the universal testing machine, simulating the bladder are connected with explanted sow urethras. The AMS 800™ artificial urinary sphincter closes the urethra with well-defined external pressures. In order to select appropriate profiles for the bladder pressure, 34 Valsalva and coughing profiles of 6 patients were evaluated with respect to amplitude, pressure raise, dwell time, and half width.

#*Aspect-oriented specification of threat-driven security requirements

#@Dianxiang Xu,Vivek Goel,Kendall E. Nygard,W. Eric Wong
#t2008
#cInternational Journal of Computer Applications in Technology
#index39433
#%618972
#%291101
#%124669
#%254552
#%104346
#%375675
#%259278
#%575294
#%566973
#!This paper presents an aspect-oriented approach to integrated specification of functional and security requirements based on use-case-driven software development. It relies on explicit identification of security threats and threat mitigations. We first identify security threats with respect to use-case based functional requirements in terms of security goals and the STRIDE category. Then, we suggest threat mitigations for preventing or reducing security threats. To capture the crosscutting nature of threats and mitigations, we specify them as aspects that encapsulate pointcuts and advice. This provides a structured way for separating functional and security concerns and for analysing the interaction between them.

#*Temporal and Spatial Partitioning of a Time-Triggered Operating System Based on Real-Time Linux
#@Roman Obermaisser,Bernhard Leiner
#t2008
#cProceedings of the 2008 11th IEEE Symposium on Object Oriented Real-Time Distributed Computing
#index39434
#!Real-time Linux variants are becoming prominent solutions for the development of embedded systems. Compared to traditional real-time operating systems, embedded system engineers can leverage solutions and knowhow from the Linux development community (e.g., development tools, applications, drivers). Due to the availability of implementations of Internet protocols and network drivers, Linux also facilitates the implementation of embedded systems connected to the Internet. The goal of this paper is to evaluate experimentally the capabilities of the Real-time Linux variant RTAI/LXRT with respect to partitioning between different application software modules. Partitioning ensures that a failure caused by a design fault in one application software module cannot propagate to cause a failure in other application software modules, e.g., by blocking access to the CPU or by overwriting memory. Partitioning is important when building mixed-criticality systems comprising both non safety-critical software modules and safety-related ones. Even at the same level of criticality, partitioning improves the robustness of an embedded system. The experimental results described in this paper point out several limitations of RTAI/LXRT Linux concerning fault isolation. Based on these results, we propose modifications to

improve the partitioning with respect to temporal and spatial interference.

#*Sugeno integral of monotone functions based on Lebesgue measure
#@Yao Ouyang,Jinxuan Fang
#t2008
#cComputers Mathematics with Applications
#index39435
#%250343
#!Roman-Flores et al. [H. Roman-Flores, A. Flores-Franulic, Y. Chalco-Cano, The fuzzy integral for monotone functions, Applied Mathematics and Computation 185 (2007) 492-498] gave some optimal upper bounds for the Sugeno integral of continuous and strictly monotone functions and provided Yong-type inequalities for the Sugeno integral. These results are generalized to monotone functions in this paper. Two algorithms are given for calculating the Sugeno integral of monotone functions based on Lebesgue measure. Several illustrative examples are presented.

#*An overview of Virtual Machine (VM) technology and its implementation in I.T. student labs at Utah Valley State College
#@George D. Hickman
#t2008
#cJournal of Computing Sciences in Colleges
#index39436
#%5480
#%101852
#%106925
#!Businesses and industry are rapidly integrating Virtual Machine (VM) technology into their IT infrastructure to lower power, cooling, and space requirements in the data center. Properly configured VMs increase both uptime and security. VMs are also implemented on workstations for software testing and application isolation. Utilizing VMs in educational environments provides an inexpensive and easily replicated environment for student lab assignments and experimentation. This paper describes both desktop and server VMs, describes how they function, and compares some of the VMs available in the marketplace. It concludes with examples of how desktop VMs are utilized in student IT labs at Utah Valley State College to enhance learning experiences in courses teaching Operating Systems, Data Communications theory, Information Security, and Computer Forensics.

#*An Embedded Systems graduate education for Singapore
#@Ian McLoughlin,Doug Maskell,Srikanthan Thambipillai,Wooi-Boon Goh
#t2007
#cProceedings of the 13th International Conference on Parallel and Distributed Systems - Volume 02
#index39437
#!In early 2003, the Singapore Economic Development Board identified Embedded Systems as a major ‘new growth area’ for the Singapore economy, building upon the existing infrastructure of technological companies, and proven

ability for companies both local and overseas, to conduct advanced research and development, as well as specialist production, in Singapore. In response to this, Nanyang Technological University School of Computer Engineering proposed, and deployed, a part-time graduate masters’ programme in embedded systems. This paper discusses the need for such an embedded education in Singapore, the syllabus and course coverage which has been developed, and the response of students and industry to the initiative. Pitfalls and problems are identified at each stage.

#*Understanding and Implementing the Finite Element Method, by Mark Gockenbach
#@Staff
#t2007
#cScientific Programming
#index39438

#*Handy navigation in ever-changing spaces: an ethnographic study of firefighting practices
#@Sebastian Denef,Leonardo Ramirez,Tobias Dyrks,Gunnar Stevens
#t2008
#cProceedings of the 7th ACM conference on Designing interactive systems
#index39439
#%620480
#%446168
#!This paper presents an ethnographic study, conducted to gain an insight of the practices around navigation of firefighters on the first line of intervention. We argue that the common approach of looking only at the technical aspects is incomplete. We show instead, that navigation of firefighters in ever-changing spaces is a collective craft or art, where technology is only one of the relevant pieces, but not the only one. Therefore design should take a deep look at existing navigation practices of firefighters. In order to identify relevant work practices, we conducted our ethnographic study to find out patterns of navigation work and based on our findings, we provide an outline of how the navigation practices can be supported by ubiquitous computing.

#*Semanta: your personal email semantic assistant
#@Simon Scerri
#t2008
#cProceedings of the 13th international conference on Intelligent user interfaces
#index39440
#%352545
#!The complete lack of structure and semantics in email content is one reason why data channeled between the sender and the recipient is hard to be correctly interpreted and acted upon. This causes information overload, tedious personal information management, and jeopardizes the disconnected workflow that is characteristic of email. Through Semanta, we will show how by extending the current email model to support light-weight semantics pertaining to the purposes of email messages, we can substantially reduce the occurrence of these problems.

#*Election year: what the electronics industry needs---and can expect---from the incoming administration
#@Tiffany Sparks,Pete Weitzner,Luc Burgun,Russell Lefevre,Todd Cutler,Clayton Parker,Vicki Hadfield,Chris Rowen
#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39441
#!The DAC community will have an opportunity to offer its perspective and thoughts on the political landscape in the United States. With election season in full swing, the country is about to elect a new administration that could be from a new party.

#*Flare mitigation strategies in extreme ultraviolet lithography
#@Insung Kim,Alan Myers,Lawrence S. Melvin III,Brian Ward,Gian Francesco Lorusso,Rik Jonckheere,Anne-Marie Goethals,Kurt Ronse
#t2008
#cMicroelectronic Engineering
#index39442
#!This study investigates various approaches to flare mitigation in EUVL. We evaluate the effectiveness of rule-based correction by defining a design where the critical dimension uniformity is used as a measure of the quality of the correction. We also describe the outcome of a model-based correction and the limits of this approach. Finally, we discuss the calculation of accurate full-chip flare maps which are required to implement a rule-based solution. Our results clearly indicate that it is possible to implement an effective flare variation compensation using rule-base correction with current EDA technology, provided that highly accurate full-chip flare maps having the required resolution are available.

#*Essence: A constraint language for specifying combinatorial problems
#@Alan M. Frisch,Warwick Harvey,Chris Jefferson,Bernadette Martínez-Hernández,Ian Miguel
#t2008
#cConstraints
#index39443
#%36704
#%37158
#%211514
#%604995
#%484425
#!Essence is a formal language for specifying combinatorial problems in a manner similar to natural rigorous specifications that use a mixture of natural language and discrete mathematics. Essence provides a high level of abstraction, much of which is the consequence of the provision of decision variables whose values can be combinatorial objects, such as tuples, sets, multisets, relations, partitions and functions. Essence also allows these combinatorial objects to be nested to arbitrary depth, providing for example sets of partitions, sets of

sets of partitions, and so forth. Therefore, a problem that requires finding a complex combinatorial object can be specified directly by using a decision variable whose type is precisely that combinatorial object.

#*Regular issue
#@
#t2007
#cComputational Intelligence and Neuroscience
#index39444

#*Multiplicative perturbation bounds for spectral and singular value decompositions
#@Wen Li
#t2008
#cJournal of Computational and Applied Mathematics
#index39445
#%22145
#%283046
#%280679
#!Let H be a Hermitian matrix, and H@?=D^*HD be its perturbed matrix. In this paper, the multiplicative perturbations for both spectral decompositions and singular value decompositions are studied and some new perturbation bounds for these decompositions are presented. Our results improve some existing bounds.

#*Electronic case management in New South Wales, Australia
#@Timothy Webb
#t2007
#cInformation and Communications Technology Law
#index39446
#!In the last five years there has been a concerted movement towards electronic case management ("ECM") to enhance the efficiency of legal proceedings in New South Wales. This paper provides a detailed overview of the relevant developments, from legislative reform by the NSW Government, to the making of appropriate instruments, rules and practice notes.

#*A strategy for evaluating feasible and unfeasible test cases for the evolutionary testing of object-oriented software
#@José Carlos Bregieiro Ribeiro,Mário Zenha Rela,Francisco Fernandéz de Vega
#t2008
#cProceedings of the 3rd international workshop on Automation of software test
#index39447
#%417922
#%542574
#%434490
#!Evolutionary Testing is an emerging methodology for automatically producing high quality test data. The focus of our on-going work is precisely on generating test data for the structural unit-testing of object-oriented Java programs. The primary objective is that of efficiently guiding the search

process towards the definition of a test set that achieves full structural coverage of the test object. However, the state problem of object-oriented programs requires specifying carefully fine-tuned methodologies that promote the traversal of problematic structures and difficult control-flow paths - which often involves the generation of complex and intricate test cases, that define elaborate state scenarios. This paper proposes a methodology for evaluating the quality of both feasible and unfeasible test cases - i.e., those that are effectively completed and terminate with a call to the method under test, and those that abort prematurely because a runtime exception is thrown during test case execution. With our approach, unfeasible test cases are considered at certain stages of the evolutionary search, promoting diversity and enhancing the possibility of achieving full coverage.

#*Evaluation of nanomechanical, nanotribological and adhesive properties of ultrathin polymer resist film by AFM
#@Adam Koszewski,Zygmunt Rymuza,Freimut Reuther
#t2008
#cMicroelectronic Engineering
#index39448
#!In this study atomic force microscope (AFM) was used to test the nanomechanical, nanotribological and adhesive properties of a 200nm thick thermoplastic polymer resists mr-I 7000E devoted for nanoimprint lithography (NIL). For these experiments a modified silicon cantilever with a spherical tip was used. All experiments were carried out in elevated temperatures from 25 to 125^oC except mechanical tests carried out in 25^oC only. In this paper the complete methodology, experimental setup along with the results of the estimation of Young's modulus (Figs. 4 and 5), friction force (Fig. 6) and pull-off force (Fig. 7) for mr-I 7000E are presented and discussed.

#*Experiencing real-world interaction: results from a NFC user experience field trial
#@Arjan Geven,Peter Strassl,Bernhard Ferro,Manfred Tscheligi,Harald Schwab
#t2007
#cProceedings of the 9th international conference on Human computer interaction with mobile devices and services
#index39449
#%153650
#%91976
#%577058
#%108273
#!Mobile devices equipped with near-field communication can be used in a variety of settings to interact with the real world. In this study, we assessed user experiences with such mobile devicesfor different groups of users to better understand the possibilities of NFC in real-world interaction, based on a complementary set of studies (diary study, online survey, experience study, focus group and idea development workshop) in a large field-trial, wherea group of 75 users interacted with NFC-services. The studies show a large variety in application domains and business potential. However, analyses of the current

situation also show user experience breakdowns due to functional failures, missing feedback, inconsistent interaction models and absent affordances.

#*Creating Mac Widgets with Dashcode (Firstpress)
#@William Murray,Chris Pappas
#t2008
#c
#index39450
#!In 100 pages, you will learn to create and use widgets using Dashcode. Widgets are simple, typically small applications for a specific purpose, such as a weather report, a calculator, a stock quote, and the like that reside on the Mac Dashboard. Building these before Dashcode was time consuming though not hard; but now, you can whip up a widget fast. Creating Mac Widgets with Dashcode teaches you how. Up to date with Leopard The fast and easy way to learn to build widgets. Youll be building widgets in an hour. Dashcode makes widget development simple. What youll learn Basics of Dashcode development Using templates Using JavaScript for more complex widgets Including user input in your widget Using scripting with your widget Importing data into your widget Who is this book for? Anyone interested in taking a shot at doing widgets. Widgets are easy and are quite popular, so there are a lot of hackers interested in doing it. Widgets can be built for a users specific needs, and you dont need to be a programmer to do it.

#*Ontology-based intelligent decision support agent for CMMI project monitoring and control
#@Chang-Shing Lee,Mei-Hui Wang,Jui-Jen Chen
#t2008
#cInternational Journal of Approximate Reasoning
#index39451
#%24723
#%560466
#%147509
#%226825
#!This paper presents an ontology-based intelligent decision support agent (OIDSA) to apply to project monitoring and control of capability maturity model integration (CMMI). The OIDSA is composed of a natural language processing agent, a fuzzy inference agent, and a performance decision support agent. All the needed information of the OIDSA, including the CMMI ontology and the project personal ontology, is stored in an ontology repository. In addition, the natural language processing agent, based on the Chinese Dictionary, periodically collects the information of the project progress from project members to analyze the features of the Chinese terms for semantic concept clustering. Next, the fuzzy inference agent computes the similarity of the planned progress report and actual progress report, based on the CMMI ontology, the project personal ontology, and natural language processing results. Finally, the performance decision support agent measures the completed percentage of the progress for each project member. The results provided by the OIDSA are sent to the project manager for evaluating the performance of each project member. The experimental

results show that the OIDSA can work effectively for project monitoring and control of CMMI.

#*Estimating and mapping grass phosphorus concentration in an African savanna using hyperspectral image data
#@O. Mutanga,L. Kumar
#t2007
#cInternational Journal of Remote Sensing
#index39452
#!We tested the utility of imaging spectroscopy and neural networks to map phosphorus concentration in savanna grass using airborne HyMAP image data. We also sought to ascertain the key wavelengths for phosphorus prediction using hyperspectral remote sensing. The remote sensing of foliar phosphorus has received very little attention as compared to nitrogen, yet it plays an equally important role in explaining the distribution and feeding patterns of herbivores. Band depths from two continuum-removed absorption features as well as the red edge position (REP) were input into a backpropagation neural network. Following a series of experiments to ascertain the optimum wavelengths, the best trained neural network was used to predict and ultimately to map grass phosphorus concentration in the Kruger National Park. The results indicate that the best trained neural network could predict phosphorus distribution with a coefficient of determination of 0.63 and a root mean square error (RMSE) of 0.07 (28% of the mean observed phosphorus concentration) on an independent test data set. Our results also show that the absorption feature located in the shortwave infrared (R 2015-2199) contains more information on phosphorus distribution, a region that has hardly been explored before in most spectroscopic experiments for phosphorus as compared to the visible bands. Overall, the study demonstrates the potential of imaging spectroscopy in mapping grass phosphorus concentration in savanna rangelands.

#*Robinson’s implicit function theorem and its extensions
#@A. L. Dontchev,R. T. Rockafellar
#t2008
#cMathematical Programming: Series A and B
#index39453
#!S. M. Robinson published in 1980 a powerful theorem about solutions to certain “generalized equations” corresponding to parameterized variational inequalities which could represent the first-order optimality conditions in nonlinear programming, in particular. In fact, his result covered much of the classical implicit function theorem, if not quite all, but went far beyond that in ideas and format. Here, Robinson’s theorem is viewed from the perspective of more recent developments in variational analysis as well as some lesser-known results in the implicit function literature on equations, prior to the advent of generalized equations. Extensions are presented which fully cover such results, translating them at the same time to generalized equations broader than variational inequalities. Robinson’s notion of first-order approximations in the absence of differentiability is utilized in part, but even looser forms of approximation are shown to furnish significant information about

solutions.

#*Guest Editorial
#@Paul Valckenaers
#t2008
#cEngineering Applications of Artificial Intelligence
#index39454

#*Evolution styles to the rescue of architectural evolution knowledge
#@Olivier Le Goaer,Dalila Tamzalit,Mourad Chabane Oussalah,Abdelhak-Djamel Seriai
#t2008
#cProceedings of the 3rd international workshop on Sharing and reusing architectural knowledge
#index39455
#%285684
#%114399
#%213025
#%120716
#%441849
#%521113
#%483135
#%598612
#!The core idea is to consider software-architecture evolution tasks as a knowledge that must be clearly modeled and properly managed. The main expected benefit is the reuse of existing and already available evolution expertise rather than reinventing it, sometimes awkwardly and thus avoid time-consuming redundant evolution activities. For this purpose, we propose to use the evolution style concept as a neutral interchange format to capitalize and transfer knowledge about domain-specific evolution tasks. In this paper we put the focus on how it is possible to reason on evolution-styles description libraries through a classification scheme. Specifically, we present the "evolution shelf", an infrastructure to perform (a) incremental acquisition of new evolution descriptions and (b) retrieval of evolution descriptions matching with a given context. Our shelf, dedicated to software architects, relies on well-known repository techniques while updating them to support and exploit the evolution-style concept.

#*ProSem: scalable wide-area publish/subscribe
#@Badrish Chandramouli,Jun Yang,Pankaj K. Agarwal,Albert Yu,Ying Zheng
#t2008
#cProceedings of the 2008 ACM SIGMOD international conference on Management of data
#index39456
#%336341
#%313307
#!We demonstrate ProSem, a scalable wide-area publish/subscribe system that supports complex, stateful subscriptions as well as simple ones. One unique

feature of ProSem is its cost-based joint optimization of both subscription processing and notification dissemination. ProSem uses novel reformulation techniques to expose new alternatives for processing and disseminating data using standard stateless content-driven network components.

#*Performance Evaluation of Computer and Telecommunication Systems
#@Mohammad S. Obaidat
#t2008
#cSimulation
#index39457

#*Power and thermal considerations in single- and multi-core systems
#@
#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39458

#*Prohibition-based MAC protocols for QoS-enhanced mesh networks and high-throughput WLANs
#@Chi-Hsiang Yeh,Richard Wu
#t2007
#cProceedings of the 13th International Conference on Parallel and Distributed Systems - Volume 01
#index39459
#!To achieve high throughput in wireless networks, collision rate must be very small, while communication overheads (e.g., RTS/CTS dialogues) and channel idleness (e.g., due to backoff) should be both relatively small as compared to data packet durations. Low collision rate is also essential to QoS provisioning in any network employing exponential backoff or a similar strategy. Our proposed solution to the preceding contradicting requirements is to employ prohibition-based mechanisms, which replace the functionality ofRTS/CTS dialogues that have been shown to suffer from high communication overhead but only provide limited protection against the hidden terminal problem while in multihop networking environments. The resultant prohibition-based MAC protocols combine binary countdown with busytone, thus inheriting important advantages from both worlds including collision freedom/controllability, prioritization capability, and elimination of hidden terminals. They can also support asynchronous operations which are of practical importance.

#*BlueBus: a scalable solution for localized mobile service in a public bus
#@Yow Kin Choong,Chen Lin,Liu Xiaoyu
#t2007
#cProceedings of the 4th international conference on mobile technology, applications, and systems and the 1st international symposium on Computer human interaction in mobile technology
#index39460
#!Mobile Commerce as know as M-Commerce getting more and more important with the fast development of the World Wide Web. The idea is to conduct commerce, using a

mobile device, such as mobile phones and PDAs while on the move. In this paper, we introduce the system called BlueBus, which is aim to provide localized and Bluetooth based mobile data services. User can enjoy those services for free by using their hand phones. The system consists of three components --- the Administration Server, the on-board device and the end-user mobile devices. Several mobile services have been developed in the system and more services can be added into the system in the future development. The access points of the system named BlueBox may be installed in various public places, such as public bus, MRT trains, shopping malls, airports and so on.

#*Sensor Selection for Minimizing Worst-Case Prediction Error
#@Abhimanyu Das,David Kempe
#t2008
#cProceedings of the 7th international conference on Information processing in sensor networks
#index39461
#%12405
#%109039
#%50956
#%352891
#%579575
#%102894
#%617034
#%610638
#!We study the problem of choosing the "best'' subset of ksensors to sample from among a sensor deployment of n > k sensors, in order to predict aggregate functions over all the sensor values. The sensor data being measured are assumed to be spatially correlated, in the sense that the values at two sensors can differ by at most a monotonically increasing, concave function of their distance. The goal is then to select a subset of sensors so as to minimize the prediction error, assuming that the actual values at unsampled sensors are worst-case subject to the constraints imposed by their distances from sampled sensors.Even selecting sensors for the optimal prediction of the mean, maximum or minimum is NP-hard; we present approximation algorithms to select near-optimal subsets of k sensors that minimize the worst-case prediction error. In general, we show that for any aggregate function satisfying certain concavity, symmetry and monotonicity conditions, the sensor selection problem can be modeled as a k-median clustering problem, and solved using efficient approximation algorithms designed for k-median clustering.Our theoretical results are complemented by experiments on tworeal-world sensor data sets; our experiments confirm that ouralgorithms lead to prediction errors that are usually less thanthe (normalized) standard deviation of the test data, using only around 10% of the sensors.

#*Design and Implementation of a High-Performance and Complexity-Effective VLIW DSP for Multimedia Applications
#@Tay-Jyi Lin,Shin-Kai Chen,Yu-Ting Kuo,Chih-Wei Liu,Pi-Chen Hsiao
#t2008

#cJournal of Signal Processing Systems
#index39462
#%284491
#%609869
#%100357
#%310516
#%251835
#!This paper presents the design and implementation of a novel VLIW digital signal processor (DSP) for multimedia applications. The DSP core embodies a distributed ping-pong register file, which saves 76.8% silicon area and improves 46.9% access time of centralized ones found in most VLIW processors by restricting its access patterns. However, it still has comparable performance (estimated in cycles) with state-of-the-art DSP for multimedia applications. A hierarchical instruction encoding scheme is also adopted to reduce the program sizes to 24.1~26.0%. The DSP has been fabricated in the UMC 0.13 m 1P8M Copper Logic Process, and it can operate at 333 MHz while consuming 189 mW power. The core size is 3.2¿×¿3.15 mm2 including 160 KB on-chip SRAM.

#*ILP Based Gate Leakage Optimization Using DKCMOS Library during RTL Synthesis
#@Saraju P. Mohanty
#t2008
#cProceedings of the 9th international symposium on Quality Electronic Design
#index39463
#!In this paper dual-K (DKCMOS) technology is proposed as a method for gate leakage power reduction. An integer linear programming (ILP) based algorithm is proposed for its optimization during architectural synthesis. The algorithm uses device-level gate leakage models for precharacterizing register-transfer level (RTL)datapath component library and minimizes the leakage delay product (LDP). The proposed algorithm is tested for several circuits for 45nm CMOS technology node. The experiments show that average gateleakage reduction are 67.7% and 80.8% for SiO_2-SiON and SiO_2-Si_3N_4, respectively.

#*Development of a 3DOF mobile exoskeleton robot for human upper-limb motion assist
#@Kazuo Kiguchi,Mohammad Habibur Rahman,Makoto Sasaki,Kenbu Teramoto
#t2008
#cRobotics and Autonomous Systems
#index39464
#%157136
#!In order to assist physically disabled, injured, and/or elderly persons, we have been developing exoskeleton robots for assisting upper-limb motion, since upper-limb motion is involved in a lot of activities of everyday life. This paper proposes a mechanism and control method of a mobile exoskeleton robot for 3DOF upper-limb motion assist (shoulder vertical and horizontal flexion/extension, and elbow flexion/extension motion assist). The exoskeleton robot is mainly controlled by the skin surface electromyogram (EMG) signals, since EMG signals of muscles directly reflect how the user intends to move. The force vector at the end-effector is taken into account to generate the natural

and smooth hand trajectory of the user in the proposed control method. An obstacle avoidance algorithm is applied to prevent accidental collision between the user's upper-limb and the robot frame. The experiment was performed to evaluate the effectiveness of the proposed exoskeleton robot.

#*Presenting the value of Human Factors Integration: guidance, arguments and evidence
#@Anne Bruseberg
#t2008
#cCognition, Technology and Work
#index39465
#!Consideration of the human elements of socio-technical systems is critical to ensure safe, effective and efficient system performance. However, when decisions about budget allocations are being made, Human Factors Integration (HFI) is not always considered as an important component activity. Both HFI practitioners and non-HFI practitioners often find it difficult to express the cost benefits of HFI. Moreover, in the military domain, we need to provide a comprehensive case, covering issues within all of the six HFI domains. In this paper, we take a broad view and approach the task of cost-justifying HFI through a combination of prospective and retrospective perspectives. By comparing approaches, evidence, and arguments from all HFI domains, we establish a generic set of arguments for HFI, supported by an initial set of evidence.

#*Systems Analysis, Optimization and Data Mining in Biomedicine
#@
#t2007
#cOptimization Methods Software
#index39466

#*Are Computer Science and Information Technology still masculine fields? High school students' perceptions and career choices
#@Marina Papastergiou
#t2008
#cComputers Education
#index39467
#%82470
#%207025
#%307138
#%304446
#%590818
#%207351
#%568620
#!This study investigated Greek high school students' intentions and motivation towards and against pursuing academic studies in Computer Science (CS), the influence of the family and the scholastic environment on students' career choices, students' perceptions of CS and the Information Technology (IT) profession as well as students' attendance at CS courses at school, computer use in the home and self-efficacy beliefs regarding computers. Gender differences

were examined with a view to identifying factors that may affect boys' and girls' career choices. The participants were 358 students of both sexes who completed an anonymous questionnaire. The data analysis showed that girls are less likely than boys to pursue a CS degree, and when they do so, it is mainly because of extrinsic reasons rather than personal interest in CS. Lack of opportunities for early familiarization with computing in the home and the scholastic environment is the factor that mainly differentiates boys' and girls' motivation against studying CS, having a greater impact on girls. Misconceptions of CS were detected in students of both genders. Girls view CS as a self-referencing, machine- and programming-oriented discipline to a greater extent than boys do, and hold less positive views of the IT profession. Boys view CS as more human- and application-oriented than girls do. They also have greater computer self-efficacy and more sex-stereotypical views of CS and IT as male domains. Appropriate actions to increase girls' interest and participation in CS studies are proposed according to the findings.

#*Computer-aided circuit analysis with respect to switched circuits
#@TomáŠ Lukl,Vít Novotny,Jiří Mišurec
#t2005
#cProceedings of the 9th International Conference on Circuits
#index39468
#%609958
#!This article deals with issues which we can meet when we want to analyze nonlinear dynamic circuits using Matlab environment. Theoretical basements of analysis of general type of circuits and their possible solution as computer algorithms are discussed first. Then methods of computer analysis of switched circuits are described later on.

#*SVM-based interactive document retrieval with active learning
#@Takashi Onoda,Hiroshi Murata,Seiji Yamada
#t2008
#cNew Generation Computing
#index39469
#%21472
#%584715
#%363626
#%93981
#%365499
#%586607
#%250081
#!This paper describes an application of SVM (Support Vector Machines) to interactive document retrieval using active learning. Some works have been done to apply classification learning like SVM to relevance feedback and have obtained successful results. However they did not fully utilize characteristic of example distribution in document retrieval. We propose heuristics to bias document showing for user's judgement according to distribution of examples in document retrieval. This heuristics is executed by selecting examples to show a user in neighbors of positive support vectors, and it improves learning

efficiency. We implemented a SVM-based interactive document retrieval system using our proposed heuristics, and compared it with conventional systems like Rocchio-based system and a SVM-based system without the heuristics. We conducted systematic experiments using large data sets including over 500,000 newspaper articles and confirmed our system outperformed other ones.

#*A Hierarchy of Computably Enumerable Reals
#@Xizhong Zheng
#t2008
#cFundamenta Informaticae
#index39470
#%1163
#%158974
#%317271
#!Computably enumerable (c.e., for short) reals are the limits of computable increasing sequences of rational numbers. In this paper we introduce the notion of h-bounded c.e. reals by restricting numbers of big jumps in the sequences by the function h and shown an Ershov-style hierarchy of h-bounded c.e. reals which holds even in the sense of Turing degrees. To explore the possible hierarchy of c.e. sets, we look at the h-initially bounded computable sets which restricts number of the changes of the initial segments. This, however, does not lead to an Ershov-style hierarchy. Finally we show a computability gap between computable reals and the strongly c.e. reals, that is, a strongly c.e. real cannot be approximated by a computable increasing sequence of rational numbers whose big jump numbers are bounded by a constant unless it is computable.

#*Monitoring the effects of arsenic and chromium accumulation in Chinese brake fern (Pteris vittata)
#@Maruthi B. B. Sridhar,F. X. Han,S. V. Diehl,D. L. Monts,Y. Su
#t2007
#cInternational Journal of Remote Sensing
#index39471
#%40768
#!The objectives of this study were (i) to investigate the feasibility of using spectral reflectance for monitoring As and Cr accumulation in Chinese brake fern (Pteris vitatta), and (ii) to search for spectral indices sensitive to structural changes caused by metal accumulation during the process of phytoremediation. Potted Chinese brake fern plants were exposed to As (100 and 300 ppm) and Cr (300 and 600 ppm) treatments for 22 days. The plants were then harvested and analysed for metal accumulation. Diffuse reflectance spectra (350-2500 nm) of the plant canopies were collected regularly throughout the metal treatment period using a portable spectroradiometer. Leaf reflectance is governed by leaf surface properties, internal structure, and foliar pigments and biochemical components. Leaf samples were collected and analysed for structural changes through microscopic observations. Our microscopic studies on changes of leaf structure provide insight into the physical changes that are remotely detected as changes in reflectance, and may permit extrapolation of these results to other plant species. Cr accumulation resulted in a decrease in

biomass, relative water content (RWC), and changes in the internal structure of the leaf. The structural and spectral results show significant changes in Cr-treated plants while the changes were minimal in As-treated plants compared to untreated plants. Our spectral analysis revealed that a unique ratio index R 1110/R 810 can be used to monitor structural changes in plants due to accumulation of Cr. This index distinguished Cr-treated plants from untreated and As-treated plants. The Normalized Difference Vegetative Index (NDVI) distinguished stressed plants, but NDVI cannot distinguish Cr-stressed plants from As-stressed plants. Our results show that brake fern can accumulate significant amounts of Cr in shoots (2108 mg kg-1 dry weight), but it is not a hyperaccumulator for Cr because much higher Cr accumulation was found in roots (7686 mg kg-1 dry weight). This study suggests that the infrared reflectance spectrum (800-1300 nm) of plant canopy may provide a non-intrusive monitoring method to access the physiological status of plants grown in heavy metal-contaminated soil.

#*Improving search task performance using subtle gaze direction
#@Ann McNamara,Reynold Bailey,Cindy Grimm
#t2008
#cProceedings of the 5th symposium on Applied perception in graphics and visualization
#index39472
#%249578
#%123414
#%109943
#%417231
#!A new experiment is presented which demonstrates the usefulness of an image space modulation technique called Subtle Gaze Direction (SGD) for guiding the user in a simple searching task. SGD uses image space modulations in the luminance channel to guide a viewer's gaze about a scene without interrupting their visual experience. The goal of SGD is to direct a viewer's gaze to certain regions of a scene without introducing noticeable changes in the image. Using a simple searching task we compared performance using no modulation, using subtle modulation and using obvious modulation. Results from the experiments show improved performance when using subtle gaze direction, without affecting the user's perception of the image. Results establish the potential of the method for a wide range of applications including gaming, perceptually based rendering, navigation in virtual environments and medical search tasks.

#*Electronic supply chain management applications by Swedish SMEs
#@H. M. Beheshti,M. Hultman,M. -L. Jung,R. A. Opoku,E. Salehi-Sangari
#t2007
#cEnterprise Information Systems
#index39473
#%37968
#%219793
#!The Internet has become an integral part of business activities of most corporations today. Electronic supply chain management (SCM) can improve the

operational efficiency of the firm by streamlining processes between the company and its suppliers, business partners, and customers. This research explores the extent and the degree of Internet application in Swedish small-and medium-sized enterprises (SMEs). The analyses of the data show that the Swedish SMEs use the Internet in their supply chain activities to a large degree. The study establishes some differences between smaller and larger organizations as well as between manufacturing and service companies.

#*Keynote paper
#@
#t2008
#cProceedings of the tenth conference on Australasian computing education - Volume 78
#index39474

#*Investigation of high-resolution contact printing
#@B. Meliorisz,S. Partel,T. Schnattinger,T. Fühner,A. Erdmann,P. Hudek
#t2008
#cMicroelectronic Engineering
#index39475
#!This paper presents experimental results and simulation studies of resist processes for contact printing. A resolution of 200nm can be achieved using simple binary masks, conventional photoresist, and standard mercury arc lamp illumination. Simulation helps to understand typical resist artifacts in dense structures, and allows the design of optimal masks and process conditions.

#*Virtual environments I: depth perception
#@
#t2008
#cProceedings of the 5th symposium on Applied perception in graphics and visualization
#index39476

#*Estimating the Energy Consumption in Pervasive Java-Based Systems
#@Chiyoung Seo,Sam Malek,Nenad Medvidovic
#t2008
#cProceedings of the 2008 Sixth Annual IEEE International Conference on Pervasive Computing and Communications
#index39477
#!We define and evaluate a framework for estimating the energy consumption of pervasive Java-based software systems. The framework's primary objective is to enable an engineer to make informed decisions when adapting a system's architecture, such that the energy consumption on hardware devices with a finite battery life is reduced, and the lifetime of the system's key software services increases. Our framework explicitly takes a component-based perspective, which renders it well suited for a large class of today's distributed, embedded, and pervasive applications. The framework provides a novel approach that facilitates the accurate estimation of a system's energy consumption both during system

construction-time and during runtime. In a large number of distributed application scenarios, the framework showed very good precision on the whole, giving results that were within 5% of the actually measured power losses incurred by executing the software.

#*Metadata Management in the Taverna Workflow System
#@Khalid Belhajjame,Katy Wolstencroft,Oscar Corcho,Tom Oinn,Franck Tanoh,Alan William,Carole Goble
#t2008
#cProceedings of the 2008 Eighth IEEE International Symposium on Cluster Computing and the Grid
#index39478
#!There seems to be a general consensus on the crucial role metadata can play for enhancing the functionalities of scientific workflows systems, e.g., workflow and service discovery, composition and provenance browsing, among others. However, in most cases their management is underspecified, if not left unaddressed at all. A step in this direction, the main contribution of the work presented in this paper is an overview of metadata and their management in the Taverna workflow system. In Taverna, we consider metadata to be a first class citizen in the system, in the sense that we fully cover their life cycle from their creation, through their use and curation until their eventual removal. We present the main steps of this cycle and present the models used for metadata specification. In doing so, we distinguish two classes of metadata: metadata that describe workflow related entities, such as services, workflows and sub-workflows, and metadata that describe workflow executions, also known as workflow provenance.

#*Algorithms and Methods beyond the IEEE 802.15.4 Standard for a Wireless Home Network Design and Implementation
#@M. A. Lopez-Gomez,A. Florez-Lara,J. M. Jimenez-Plaza,J. C. Tejero-Calado
#t2008
#cProceedings of the 2008 IEEE International Conference on Sensor Networks, Ubiquitous, and Trustworthy Computing (sutc 2008)
#index39479
#!The aim of this paper is to describe techniques and algorithms that have been used to design and implement a commercial wireless home network (WHN). Although IEEE 802.15.4 supposes an efficient solution for the lower layers of the communication stack, several key issues are out of its scope. Topology control (TC) of the network, address management, and multi-hop synchronization are some of these issues, which are covered in this paper. The WHN has been designed taking in mind low complexity, low consumption, and low end-to-end latency. These objectives have been reached thanks to a multi-hop beaconed structure, a distributed address management, and a routing algorithm based on masks.

#*New algebraic design for better P2P Features (abstract only)
#@Osman Guzide,Kenneth May,James Getz,Adam Edgeson
#t2008
#cACM Communications in Computer Algebra

#index39480
#!Lately P2P application routing got interest and finding better routing and increasing performance and security is real challenge these days. Mostly research use overlay routing even using interconnection network design dynamically. Goal is to route a message to a destination whose IP address is not known which eliminates the need for large routing tables. Nevertheless, the overlay network could become wasteful because outgoing traffic may take a route longer than necessary. In this abstract, we propose a new design for P2P features. These new design is to combine physical and logical networks to reduce traffic and improving performance and security. This new design provides node organization for faster searching. Work used simulation program to show these new design better performance than existing design. Algorithm of new routing is defined mathematical algebraic model to show every case. Our next step is to actually improving localizing design with new overlay network design.

#*SystemClick: a domain-specific framework for early exploration using functional performance models
#@Christian Sauer,Matthias Gries,Hans-Peter Löb
#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39481
#%561772
#%321452
#%579093
#!A wireless network (WLAN) provides unique challenges to system design. A WLAN uses a shared and highly unreliable medium, where protocols must rely on precise timing of requests and responses to detect submission errors and priorities among network nodes. In addition, WLAN stations are often embedded and have tight constraints on power, costs, and performance. To design WLAN nodes, precise estimations on performance and resource usage are needed for the complete network system to explore the design space and assess the quality of solutions. Our SystemClick framework combines SystemC with resource models and performance annotations derived from actual implementations based on Click. Model generation is automated, and the performance of a SystemClick model is obtained depending on actual activation patterns of different functional blocks in the model. A 802.11 a/b/g/e case study demonstrates our approach for the analysis of real-time critical systems.

#*DNA algorithms for fractal construction-an application of the SInsDelP system
#@A. Murugan,K. S. Easwarakumar
#t2007
#cInternational Journal of Computer Mathematics
#index39482
#%296599
#%516072
#!The SInsDelP system with single contextual insertion and (u, v)-contextual deletion was introduced by Murugan and Easwarakumar. In this paper we discuss an application of the SInsDelP system for the construction of fractal images. The

fractal images considered are of self-similar types, such as Koch Snowflake, Anti-Koch Snowflake, Fractal Tree and Sierpinski Triangle. This is performed in two stages. A DNA sequence for the fractal image is generated first by a sequence of SInsDelP operations, and then the respective image is produced through the specialized recognition algorithm.

#*Data from the web
#@
#t2008
#cProceedings of the 8th ACM/IEEE-CS joint conference on Digital libraries
#index39483

#*Using multiple linear regression to forecast the number of asthmatics
#@Darmesah Gabda,Noraini Abdullah,Kamsia Budin,C. K. Lim
#t2008
#cProceedings of the 2nd WSEAS International Conference on Computer Engineering and Applications
#index39484
#!The objective of this study was to determine the association between the number of asthmatic patients in Kota Kinabalu, Sabah with the air quality and meteorological factors using multiple linear regression. The main eight independent variables with the fourth order interactions were included in the model. There were 80 possible models considered and the best model was obtained using the eight selection criteria (8SC). The result showed that the best model would represent the cause of the rise in the number of asthmatics modeled by M80. 23.

#*Creating a cognitive metric of programming task difficulty
#@Brian de Alwis,Gail C. Murphy,Shawn Minto
#t2008
#cProceedings of the 2008 international workshop on Cooperative and human aspects of software engineering
#index39485
#%343092
#%413502
#%108325
#%590338
#!Conducting controlled experiments about programming activities often requires the use of multiple tasks of similar difficulty. In previously reported work about a controlled experiment investigating software exploration tools, we tried to select two change tasks of equivalent difficulty to be performed on a medium-sized code base. Despite careful effort in the selection and confirmation from our pilot subjects finding the two tasks to be of equivalent difficulty, the data from the experiment suggest the subjects found one of the tasks more difficult than the other. In this paper, we report on early work to create a metric to estimate the cognitive difficulty for a software change task. Such a metric would help in comparing between studies of different tools, and in designing future studies. Our particular approach uses a graph-theoretic

statistic to measure the complexity of the task solution by the connectedness of the solution elements. The metric predicts the perceived difficulty for the tasks of our experiment, but fails to predict the perceived difficulty for other tasks to a small program. We discuss these differences and suggest future approaches.

#*Cryptanalysis of Wang et al.'s Remote User Authentication Scheme Using Smart Cards
#@Eun-Jun Yoon,Eun-Jung Lee,Kee-Young Yoo
#t2008
#cProceedings of the Fifth International Conference on Information Technology: New Generations
#index39486
#!In 2004, both Ku et al. and Yoon et al. proposed remote user authentication scheme using smart cards, respectively. In 2007, Wang et al., however, showed that both Ku et al.'s scheme and Yoon et al.'s scheme are vulnerable to guessing attacks, forgery attacks and denied serviceattacks, as well as inefficiency in password authentication. Then, Wang et al. proposed an improvement on them to keep the merits of original schemes by using two-variant hashing operations. Nevertheless, this paper shows that Wang et al.'s scheme still does not provide perfect forward secrecy and is susceptible to a guessing attack and Denning-Sacco attack.

#*A New Approach of Fuzzy-Clustered Channel Assignment Method Promoting Hierarchical Cellular Network Performance
#@Kenvi Wang,Tong-Tai Chiang,Lin-Yi Peng,M. Merabti
#t2008
#cProceedings of the 22nd International Conference on Advanced Information Networking and Applications - Workshops
#index39487
#!Fuzzy-based technology is an important topic and widely used in routing computing and channel assignment of wireless network for recent years. But some of related technologies unfortunately existed are always too complicated, costly routing searching procedures and not real applied. A new idea using a fuzzy-clustered route searching & channel assignment approach is proposed in this article to improve this problem. Furthermore, a case study and simple system implementation is demonstrated to verify the technique we propose.

#*An Improved Condensing Algorithm
#@Xiulan Hao,Chenghong Zhang,Hexiang Xu,Xiaopeng Tao,Shuyun Wang,Yunfa Hu
#t2008
#cProceedings of the Seventh IEEE/ACIS International Conference on Computer and Information Science (icis 2008)
#index39488
#!kNN classifier is widely used in text categorization, however, kNN has the large computational and store requirements, and its performance also suffers from uneven distribution of training data. Usually, condensing technique is resorted to reducing the noises of training data and decreasing the cost of time

and space. Traditional condensing technique picks up samples in a random manner when initialization. Though random sampling is one means to reduce outliers, the extremely stochastic may lead to bad performance sometimes, that is, advantages of sampling may be suppressed. To avoid such a misfortune, we propose a variation of traditional condensing technique. Experiment results illustrate this strategy can solve above problems effectively.

#*Guarantee of service (GoS) support over MPLS using active techniques
#@A. M. Dominguez-Dorado,F. J. Rodríguez-Pérez,J. L. González-Sánchez
#t2004
#cProceedings of the 4th WSEAS International Conference on Applied Informatics and Communications
#index39489
#!MPLS (Multiprotocol Label Switching) technology provides powerful mechanisms to integrate network technologies like ATM and IP with Quality of Service. Although this technology is becoming mature, there are still some aspects to be solved, such as offering guaranteed services to privileged sources that can require GoS (Guarantee of Service). To do so, on the one hand a mechanism of local recovering or packets retransmission requiring Guarantee of Service is analysed; on the other hand the implementation of a local LSP recovering system is studied.

#*In Silico Drug Screening Based on a Protein-Compound Affinity Matrix
#@Yoshifumi Fukunishi
#t2008
#cProceedings of the 2008 International Conference on Biocomputation, Bioinformatics, and Biomedical Technologies
#index39490
#!We developed a new method to improve the accuracy of molecular interaction data using a protein-compound affinity matrix calculated by protein-compound docking software. We approximated the protein-compound binding free energy as a linear combination of the raw docking scores of the compound with many different proteins. The coefficients of the linear combination were estimated based on the amino-acid sequence similarities among proteins. This method was applied to in silico screening of the active compounds of five target proteins using multiple target screening, and it increased the hit ratio by several times compared to that given by the raw docking scores. The hit ratio also becomes robust against the difference of target proteins. In addition, we have developed some methods based on a protein-compound affinity matrix. When some active compounds were known, a consensus score, which combines the structure-based and ligand-based screening results, was applied to a target. Finally, we could achieve a high hit ratio for some targets by using a combination of screening methods.

#*Computer forensics workshop for undergraduate students
#@Derek Bem,Ewa Huebner
#t2008
#cProceedings of the tenth conference on Australasian computing education - Volume 78

#index39491
#!This paper describes our experience in the design and implementation of a computer forensics specialisation for the Bachelor of Computer Science degree and its capstone subject Computer Forensics Workshop. Our motivation for introducing this specialisation was to respond to the growing demand for professional services in computer forensics by the government and industry as well as to attract undergraduate students back to computing. Computer forensics is an emerging multidisciplinary field with foundations in computer science and law, and academically it is best positioned as a stream in general computer science degrees. The capstone subject in the specialisation, Computer Forensics Workshop, is practically oriented with a substantial laboratory component. The subject is taught by a team of academics, each contributing their expert knowledge in operating systems, file systems, network security and cryptography. The aim is to prepare the students to enter the job market as a professional computer forensics specialist, either in a law enforcement agency or a business organisation relying on computer information systems.

#*Direct: applying the DIKW hierarchy to large-scale evaluation campaigns
#@Marco Dussin,Nicola Ferro
#t2008
#cProceedings of the 8th ACM/IEEE-CS joint conference on Digital libraries
#index39492
#!We describe the effort of designing and developing a digital library system able to manage the different types of information resources produced during a large-scale evaluation campaign and to support the different stages of it. In this context, we present DIRECT, the system which has been adopted to manage the CLEF evaluation campaigns since 2005.

#*An Efficient Clustering Scheme to Exploit Hierarchical Data in Network Traffic Analysis
#@Abdun Naser Mahmood,Christopher Leckie,Parampalli Udaya
#t2008
#cIEEE Transactions on Knowledge and Data Engineering
#index39493
#!There is significant interest in the data mining and network management communities about the need to improve existing techniques for clustering multivariate network traffic flow records so that we can quickly infer underlying traffic patterns. In this paper we investigate the use of clustering techniques to identify interesting traffic patterns from network traffic data in an efficient manner. We develop a framework to deal with mixed type attributes including numerical, categorical and hierarchical attributes for a one-pass hierarchical clustering algorithm. We demonstrate the improved accuracy and efficiency of our approach in comparison to previous work on clustering network traffic.

#*An effective error-resilient coding for H.264 video
#@Yuk Ying Chung,Leo Li Fan Chen,Zeng Zheng,Xiaoming Chen
#t2006

#cProceedings of the 5th WSEAS International Conference on Circuits, Systems, Electronics, Control & Signal Processing
#index39494
#!The transmission errors in H.264 may propagate in the temporal direction. Errors in intra-coded picture (I-frame) will propagate into the associated P-B frame if they are in the same Group Of Picture (GOP). Therefore it is important to detect errors in the I-frame rather than in the P-B frame. This paper proposes and demonstrates an effective technique of Error-Resilient Coding based on bit-error detection and Directional Intra-Frame Concealment (DIFC) for H.264 video. The bit error detection is derived from multiblock checksum, chain coverage and remainder coding. DIFC takes advantage of flexible block sizes to deal with detailed movement areas and employs object edge detection to improve the accuracy of spatial interpolation. The results showed that the proposed directional intra-frame concealment has a better performance than the weighted pixel interpolation in H.264 software.

#*Suppression of bounded exogenous disturbances: Output feedback
#@B. T. Polyak,M. V. Topunov
#t2008
#cAutomation and Remote Control
#index39495
#%289015
#!The paper was devoted to rejection of bounded exogenous disturbances and considered design of the static output feedback minimizing the invariant ellipsoids of the dynamic system. The problems of control analysis and design come to the equivalent conditions in the form of linear matrix inequalities and to the problem of semidefinite programming. The state estimate obtained using the Luenberger observer was used at that.

#*Three-dimensional SU-8 sub-micrometer structuring by electron beam lithography
#@Daniel M. Koller,Andreas Hohenau,Harald Ditlbacher,Nicole Galler,Anne-Laure Baudrion,Frank Reil,Stefan Schausberger,Franz R. Aussenegg,Alfred Leitner,Joachim R. Krenn
#t2008
#cMicroelectronic Engineering
#index39496
#!We demonstrate electron beam lithography on the negative tone electron resist SU-8 to fabricate self-supporting three-dimensional structures in sub-micrometer range. Applying SU-8 thin films spin cast on glass substrates and forming layers of 1@mm thickness, the structuring is performed in a two step process. First, the SU-8 film is exposed for supporting structures down to the substrate, a second exposure step with accordingly modified parameters leads to elevated structures. Applications as microscale shadow masks for evaporation based deposition processes and microfluidics are discussed.

#*Personal financial planning based on fuzzy multiple objective programming
#@Chieh-Yow ChiangLin,Chang-Chun Lin
#t2008

#cExpert Systems with Applications: An International Journal
#index39497
#%180436
#%180613
#!Personal financial planning involves managing all the money activities during a planner's lifetime. Traditional personal financial planning procedures begin with the planner's financial status, goals, and expectations for the future before future cash flows of different time periods under various scenarios can be determined. If the planning results fail to meet the planner's expectation, the planner adjusts tunable parameters repeatedly until an acceptable financial arrangement can be obtained. Such a ''trial-and-error approach'' or ''what-if analysis'' does not promise to achieve the optimal plan while numerous outcomes burden the planner. Multiple objectives with different goals of different importance levels might be involved in this decision-making problem. Since the objectives tend to conflict with each other, this study proposes to solve the problem based on a decision model that incorporates a fuzzy multiple objective programming method to achieve better solutions than using ''trial-and-error''.

#*Pacemakers and Implantable Cardiac Defibrillators: Software Radio Attacks and Zero-Power Defenses
#@Daniel Halperin,Thomas S. Heydt-Benjamin,Benjamin Ransford,Shane S. Clark,Benessa Defend,Will Morgan,Kevin Fu,Tadayoshi Kohno,William H. Maisel
#t2008
#cProceedings of the 2008 IEEE Symposium on Security and Privacy
#index39498
#!Our study analyzes the security and privacy properties of an implantable cardioverter defibrillator (ICD). Introduced to the U.S. market in 2003, this model of ICD includes pacemaker technologyand is designed to communicate wirelessly with a nearby external programmer in the 175 kHz frequency range. After partially reverse-engineering the ICD's communications protocol with an oscilloscope and a software radio, we implemented several software radio-based attacks that could compromise patient safety and patient privacy. Motivated by our desire to improve patient safety, and mindful of conventional trade-offs between security and power consumption for resource-constrained devices, we introduce three new zero-power defenses based on RF power harvesting. Two of these defenses are human-centric, bringing patients into the loop with respect to the security and privacy of their implantable medical devices (IMDs). Our contributions provide a scientific baseline for understanding the potential security and privacy risks of current and future IMDs, and introduce human-perceptible and zero-power mitigation techniques that address those risks. To the best of our knowledge, this paper is the first in our community to use general-purpose software radios to analyze and attack previously unknown radio communications protocols.

#*Enabling verification and conformance testing for access control model
#@Hongxin Hu,GailJoon Ahn
#t2008
#cProceedings of the 13th ACM symposium on Access control models and

technologies
#index39499
#%12907
#%416870
#%102076
#%622314
#%613196
#!Verification and testing are the important step for software assurance. However, such crucial and yet challenging tasks have not been widely adopted in building access control systems. In this paper we propose a methodology to support automatic analysis and conformance testing for access control systems, integrating those features to Assurance Management Framework (AMF). Our methodology attempts to verify formal specifications of a role-based access control model and corresponding policies with selected security properties. Also, we systematically articulate testing cases from formal specifications and validate conformance to the system design and implementation using those cases. In addition, we demonstrate feasibility and effectiveness of our methodology using SAT and Alloy toolset.

#*Development of a New Software Product from a Classroom Project
#@Jeremy W. Pauli,Ty E. Lawrence,Brennon F. Brown
#t2008
#cProceedings of the Fifth International Conference on Information Technology: New Generations
#index39500
#!It has long been known that the campus is fertile grounds for IT entrepreneurship through the identification and nurturing of possible commercial software systems[1], [2]. The campus is uniquely suited in many ways because failed ventures can still be considered worthwhile due to the knowledge gained and disseminated through the very process of creating a new system. Moving a project from idea to class project to retail ready system is a method for identifying and producing systems that both educate and become viable retail systems. Most examples tend to be small to medium size projects that fit a general need or are unique in implementation in some way. Our project produced a rewarding educational experience for the students and a new piece of software for market.

#*Measuring social networks with digital photograph collections
#@Scott Golder
#t2008
#cProceedings of the nineteenth ACM conference on Hypertext and hypermedia
#index39501
#%295055
#%307552
#!The ease and lack of cost associated with taking digital photographs have allowed people to amass large personal photograph collections. These collections contain valuable information about their owners' social relationships. This paper is a preliminary investigation into how digital photo collections can

provide useful data for the study of social networks. Results from an analysis of 23 subjects' photo collections demonstrate the feasibility of this approach. The relationship between perceived closeness and network position, as well as future questions, are also discussed.

#*Natural Actor-Critic
#@Jan Peters,Stefan Schaal
#t2008
#cNeurocomputing
#index39502
#%95688
#%288848
#%232392
#%368280
#%611946
#%413170
#!In this paper, we suggest a novel reinforcement learning architecture, the Natural Actor-Critic. The actor updates are achieved using stochastic policy gradients employing Amari's natural gradient approach, while the critic obtains both the natural policy gradient and additional parameters of a value function simultaneously by linear regression. We show that actor improvements with natural policy gradients are particularly appealing as these are independent of coordinate frame of the chosen policy representation, and can be estimated more efficiently than regular policy gradients. The critic makes use of a special basis function parameterization motivated by the policy-gradient compatible function approximation. We show that several well-known reinforcement learning methods such as the original Actor-Critic and Bradtke's Linear Quadratic Q-Learning are in fact Natural Actor-Critic algorithms. Empirical evaluations illustrate the effectiveness of our techniques in comparison to previous methods, and also demonstrate their applicability for learning control on an anthropomorphic robot arm.

#*Deep intellisense: a tool for rehydrating evaporated information
#@Reid Holmes,Andrew Begel
#t2008
#cProceedings of the 2008 international working conference on Mining software repositories
#index39503
#%461443
#%298107
#%587136
#%239746
#%217380
#%110628
#!Software engineers working in large teams on large, long-lived code-bases have trouble understanding why the source code looks the way does. Often, they answer their questions by looking at past revisions of the source code, bug reports, code checkins, mailing list messages, and other documentation. This process of

inquiry can be quite inefficient, especially when the answers they seek are located in isolated repositories accessed by multiple independent investigation tools. Prior mining approaches have focused on linking various data repositories together; in this paper we investigate techniques for displaying information extracted from the repositories in a way that helps developers to build a cohesive mental model of the rationale behind the code. After interviewing several developers and testers about how they investigate source code, we created a Visual Studio plugin called Deep Intellisense that summarizes and displays historical information about source code. We designed Deep Intellisense to address many of the hurdles engineers face with their current techniques, and help them spend less time gathering information and more time getting their work done.

#*RIP-MTI: A New Way to Cope with Routing Loops
#@Ch. Steigner,H. Dickel,T. Keupen
#t2008
#cProceedings of the Seventh International Conference on Networking
#index39504
#!We introduce a new downward compatible routing protocol called Routing Information Protocol with Minimal Topology Information (RIP-MTI) which is based on the simple Routing Information Protocol (RIP). We exploit the distance vector updates more thoroughly than common RIP-protocols, and therefore, need not alter the interactive behavior of the Routing Information Protocol. With this approach, we are able to recognize loops and avoid the well known Counting to Infinity problem of distance vector routing. This new protocol can recognize and reject updates which have made their way along loops by evaluating simple metric-based equations.

#*Complete fairness in secure two-party computation
#@Dov S. Gordon,Hazay Carmit,Jonathan Katz,Yehuda Lindell
#t2008
#cProceedings of the 40th annual ACM symposium on Theory of computing
#index39505
#%273046
#%51731
#%265392
#%481335
#%274178
#%453402
#%518307
#%156104
#%163412
#%263924
#%155479
#%263037
#%39505
#%517648
#%294861

#%484277
#!In the setting of secure two-party computation, two mutually distrusting parties wish to compute some function of their inputs while preserving, to the extent possible, various security properties such as privacy, correctness, and more. One desirable property is fairness, which guarantees that if either party receives its output, then the other party does too. Cleve (STOC 1986) showed that complete fairness cannot be achieved in general in the two-party setting; specifically, he showed (essentially) that it is impossible to compute Boolean XOR with complete fairness. Since his work, the accepted folklore has been that nothing non-trivial can be computed with complete fairness, and the question of complete fairness in secure two-party computation has been treated as closed since the late '80s. In this paper, we demonstrate that this widely held folklore belief is false by showing completely-fair secure protocols for various non-trivial two-party functions including Boolean AND/OR as well as Yao's "millionaires' problem". Surprisingly, we show that it is even possible to construct completely-fair protocols for certain functions containing an "embedded XOR", although in this case we also prove a lower bound showing that a super-logarithmic number of rounds are necessary. Our results demonstrate that the question of completely-fair secure computation without an honest majority is far from closed.

#*Different Approaches for Linear and Non-linear ECG Generation
#@Saeedeh Lotfi Mohammad Abad,Nader Jafarnia Dabanloo,Mohammadreza Mohagheghi
#t2008
#cProceedings of the 2008 International Conference on BioMedical Engineering and Informatics - Volume 02
#index39506
#!Developing a mathematical model for the artificial generation of electrocardiogram (ECG) signals is a subject that has been widely investigated. One of the challenges is to generate ECG signals with a wide range of waveforms, power spectra and variations in heart rate variability (HRV)-all of which are important indexes of human heart functions. In this paper we present a comprehensive model for generating such artificial ECG signals. In the first model, the operator can specify the mean and standard deviation of the heart rate, the morphology of the PQRST cycle, and the power spectrum of the RR tachogram. In the second one, we use a new modified Zeeman model for generating the time series for HRV, and a single cycle of ECG is produced by using a simple neural network. The importance of the work is the model’s ability to produce artificial ECG signals that resemble experimental recordings under various physiological conditions.In one of these models, IPFM box was used to generate the R-R intervals. On the other hand, we use A dynamical model based on three coupled ordinary differential equations is introduced which is capable of generating realistic synthetic electrocardiogram (ECG) signals. In this paper we focus on clustering data derived from Autoregressive moving Average (ARMA) models using k-means and k-medoids algorithms with the Euclidean distance between estimated model parameter. These models employed to assess biomedical signal processing techniques which are used to compute clinical statistics from the ECG.

#*Efficient EMD-based similarity search in multimedia databases via flexible dimensionality reduction
#@Marc Wichterich,Ira Assent,Philipp Kranen,Thomas Seidl
#t2008
#cProceedings of the 2008 ACM SIGMOD international conference on Management of data
#index39507
#%104800
#%363941
#%84205
#%123459
#%240375
#!The Earth Mover's Distance (EMD) was developed in computer vision as a flexible similarity model that utilizes similarities in feature space to define a high quality similarity measure in feature representation space. It has been successfully adopted in a multitude of applications with low to medium dimensionality. However, multimedia applications commonly exhibit high-dimensional feature representations for which the computational complexity of the EMD hinders its adoption. An efficient query processing approach that mitigates and overcomes this effect is crucial. We propose novel dimensionality reduction techniques for the EMD in a filter-and-refine architecture for efficient lossless retrieval. Thorough experimental evaluation on real world data sets demonstrates a substantial reduction of the number of expensive high-dimensional EMD computations and thus remarkably faster response times. Our techniques are fully flexible in the number of reduced dimensions, which is a novel feature in approximation techniques for the EMD.

#*On the solvability for parabolic equations with one space variable
#@Martín López Morales
#t2004
#cProceedings of the 5th WSEAS International Conference on Applied Mathematics
#index39508
#!In the present work we consider the higher order linear parabolic equation in a rectangle with initial and boundary conditions. We establish new a priori estimates for the solutions to this problem in general Hölder anisotropic norms, under the assumption that the coefficients and the independent term are continuous functions in the rectangle, they satisfy the general Hölder condition in the rectangle of exponent a(l), with respect to the space variable only and they satisfy the general Hölder condition on the boundary of exponent b(l, with respect to all variables. In this connection, however, we also obtain an estimate for the modulus of continuity with respect to the time of the higher derivatives with respect to x of the corresponding solutions. On the basis of our new a priori estimates for the solution to this problem, we establish the corresponding theorem on the solvability in general Hölder anisotropic spaces. We apply our results in the linear theory to establish the local solvability with respect to the time, in general Hölder anisotropic spaces, for the nonlinear parabolic equation, with the same type of initial and boundary

conditions.

#*Locality, performance and optimization
#@
#t2008
#cProceedings of the 7th international symposium on Memory management
#index39509

#*Finding Friend Groups in Blogosphere
#@Shih-Ta Kuan,Bang-Ye Wu,Wan-Jui Lee
#t2008
#cProceedings of the 22nd International Conference on Advanced Information Networking and Applications - Workshops
#index39510
#!In this work, we propose an algorithm based on transitive extension for finding friend groups in blogosphere to perform social network analysis. In today's blog service environment, the establishments of friend relationships are always unidirectional, and the recognition of both ends is not necessary. Therefore, general methods will find either too small or too few cliques from friend groups. This isbecause the bidirectional link is built incompletely in the social network under such circumstances. To solve this problem, we propose the 1.5-clique extension method to derive better social network structures for finding friend groups, and we use Wretch (www.wretch.cc) as a case for analysis. We further make a comparison among the results of finding groups in the original social network, and its 1-clique extension, 1.5-clique extension, and 2-cliqueextension. The experimental results suggest that our proposed method is effective and promising.

#*Authorship attribution
#@Patrick Juola
#t2006
#cFoundations and Trends in Information Retrieval
#index39511
#%20561
#%218505
#%295026
#%574529
#%526761
#%242692
#%425981
#%86264
#%415389
#%214951
#%537573
#%624409
#%455654
#%586607
#%614741

#!Authorship attribution, the science of inferring characteristics of the author from the characteristics of documents written by that author, is a problem with a long history and a wide range of application. Recent work in "non-traditional" authorship attribution demonstrates the practicality of automatically analyzing documents based on authorial style, but the state of the art is confusing. Analyses are difficult to apply, little is known about type or rate of errors, and few "best practices" are available. In part because of this confusion, the field has perhaps had less uptake and general acceptance than is its due. This review surveys the history and present state of the discipline, presenting some comparative results when available. It shows, first, that the discipline is quite successful, even in difficult cases involving small documents in unfamiliar and less studied languages; it further analyzes the types of analysis and features used and tries to determine characteristics of well-performing systems, finally formulating these in a set of recommendations for best practices.

#*Computing the multiplicity structure from geometric involutive form
#@Xiaoli Wu,Lihong Zhi
#t2008
#cProceedings of the twenty-first international symposium on Symbolic and algebraic computation
#index39512
#%7603
#%83334
#%95431
#%474524
#%271095
#%597270
#%624918
#%123919
#!We present a method based on symbolic-numeric reduction to geometric involutive form to compute the primary component and the differential operators f solution of a polynomial ideal. The singular solution can be exact or approximate. If the singular solution is known with limited accuracy, then we propose a new method to refine it to high accuracy.

#*Semantics through language sharing
#@Jessica Rubart
#t2008
#cProceedings of the hypertext 2008 workshop on Collaboration and collective intelligence
#index39513
#%621961
#%211174
#%117057
#%588944
#%622095
#%525765

#%195551
#%84831
#%616370
#%42837
#%612198
#!This paper discusses how existing approaches in the hypermedia and software engineering fields support web semantics. Web semantics is an important issue in the context of Web Science. Both directions, the Semantic Web and Folksonomies, focus on language sharing. It is argued that to build holistic hypermedia systems these language kinds need to be integrated or mapped. A web semantics space is proposed that supports comparison of approaches with respect to language sharing.

#*Admission Control in a Computational Market
#@Thomas Sandholm,Kevin Lai,Scott Clearwater
#t2008
#cProceedings of the 2008 Eighth IEEE International Symposium on Cluster Computing and the Grid
#index39514
#!We propose, implement and evaluate three admission models for computational Grids. The model stake the expected demand into account and offer a specific performance guarantee. The main issue addressed is how users and providers should make the tradeoff between a best effort (low guarantee) spot market and an admission controlled (high guarantee) reservation market. Using a realistically modeled high performance computing workload and utility models of user preferences, we run experiments highlighting the conditions under which different markets and admission models are efficient. The experimental results show that providers can make large efficiency gains if the admission model is chosen dynamically based on the current load, likewise we show that users have an opportunity to optimize their job performance by carefully picking the right market based on the state of the system, and the characteristics of the application to be run. Finally, we provide simple functional expressions that can guide both users and providers when making decisions about guarantee levels to request or offer.

#*On a conjecture of Thomassen and Toft
#@Matthias Kriesell
#t1999
#cJournal of Graph Theory
#index39515
#!This article is motivated by a conjecture of Thomassen and Toft on the number s2(G) of separating vertex sets of cardinality 2 and the number ν2(G) of vertices of degree 2 in a graph G belonging to the class of all 2-connected graphs without nonseparating induced cycles. Let ||G|| denote the number of edges of the graph G. Thomassen and Toft conjectured in [C. Thomassen B. Toft, J. Combin. Theory B 31 (1981), 199224] the existence of a positive constant c satisfying s2(G) + ν2(G) > c · ||G|| for all G ε . We shall see that this is not true in general. Restricting ourselves to planar graphs, we

obtain s2(G) + ν2(G) > $$1\over5$$ · ||G|| for all planar G ε , where $$1\over5$$ is best-possible. © 1999 John Wiley Sons, Inc. J Graph Theory 32: 118122, 1999

#*A Novel Anomaly Detection Algorithm Based on Real-Valued Negative Selection System
#@Hu Zhengbing,Zhou Ji,Ma Ping
#t2008
#cProceedings of the First International Workshop on Knowledge Discovery and Data Mining
#index39516
#!In this paper, a new method of detector generation and matching mechanism for Negative Selection Algorithm(NSA)is introduced with variable properties, which are called the Nsa-Vs-Detector. The detectors can be variable in different ways using this concept, the paper describes an algorithm when the variable parameter is the size of the detectors in real-valued space. The algorithm is tested with a synthetic datasets, the new method improves the NSA's efficiency and reliability without significant increase in complexity.

#*Expertise identification and visualization from CVS
#@Omar Alonso,Premkumar T. Devanbu,Michael Gertz
#t2008
#cProceedings of the 2008 international working conference on Mining software repositories
#index39517
#%625572
#%239746
#!As software evolves over time, the identification of expertise becomes an important problem. Component ownership and team awareness of such ownership are signals of solid project. Ownership and ownership awareness are also issues in open-source software (OSS) projects. Indeed, the membership in OSS projects is dynamic with team members arriving and leaving. In large open source projects, specialists who know the system very well are considered experts. How can one identify the experts in a project by mining a particular repository like the source code? Have they gotten help from other people? We provide an approach using classification of the source code tree as a path to derive the expertise of the committers. Because committers may get help from other people, we also retrieve their contributors. We also provide a visualization that helps to further explore the repository via committers and categories. We present a prototype implementation that describes our research using the Apache HTTP Web server project as a case study.

#*Enhancing web search by promoting multiple search engine use
#@Ryen W. White,Matthew Richardson,Mikhail Bilenko,Allison P. Heath
#t2008
#cProceedings of the 31st annual international ACM SIGIR conference on Research and development in information retrieval
#index39518

#%589255
#%295718
#%311535
#%99837
#%308764
#%431989
#%613090
#%326547
#!Any given Web search engine may provide higher quality results than others for certain queries. Therefore, it is in users' best interest to utilize multiple search engines. In this paper, we propose and evaluate a framework that maximizes users' search effective-ness by directing them to the engine that yields the best results for the current query. In contrast to prior work on meta-search, we do not advocate for replacement of multiple engines with an aggregate one, but rather facilitate simultaneous use of individual engines. We describe a machine learning approach to supporting switching between search engines and demonstrate its viability at tolerable interruption levels. Our findings have implications for fluid competition between search engines.

#*Enhanced Yoking Proof Protocols for RFID Tags and Tag Groups
#@Jung-Sik Cho,Sang-Soo Yeo,Suchul Hwang,Sang-Yong Rhee,Sung Kwon Kim
#t2008
#cProceedings of the 22nd International Conference on Advanced Information Networking and Applications - Workshops
#index39519
#!The RFID system is a contactless automatic identification system that identifies tags attached on goods through radio frequency communication. This system is expected to supplant barcode systems, the contact reading technique that is most widely used at present. The RFID system can be applied in a variety of areas. Among those, Ari Juels proposed an environment to prove that a pair of tags has been scanned simultaneously. And he presented a "yoking proof" protocol for this. But the yoking-proof protocol is vulnerable to replay attack. Although modified yoking-proof protocols for alleviating this drawback have been proposed, they are not immune to replay attack, either. In this paper, we analyze problems of existing yoking-proof protocols and present a new protocol, which will make replay attack difficult, based on this analysis. We have also extend this protocol so that it can provide yoking proofs for a tag group, including a multiple number of tags.

#*Single-electron tunnelling via quantum dot cavities built on a silicon suspension nanobridge
#@Jun Ogi,Yoshishige Tsuchiya,Shunri Oda,Hiroshi Mizuta
#t2008
#cMicroelectronic Engineering
#index39520
#!This paper presents fabrication and characterization of novel nanoscale Si transistors with a suspended quantum dot cavity formed on a nanobridge channel. A 300-nm-long and 50-nm-wide nanobridge channel and quantum dot cavities were

successfully fabricated on silicon-on-insulator (SOI) substrates and nanocrystalline silicon films by using the electron beam lithography combined with isotropic and anisotropic etching. We observed clear Coulomb oscillation for the fabricated nanobridge transistors at higher temperatures compared with transistors with a non-suspended channel.

#*CrossSketch: freeform surface modeling with details
#@Alexis Andre,Suguru Saito,Masayuki Nakajima
#t2007
#cProceedings of the 4th Eurographics workshop on Sketch-based interfaces and modeling
#index39521
#%22367
#%289965
#%449466
#%305105
#!This paper presents a novel technique to model a three dimensional freeform surface, in its global shape and small details, using a sketching interface, from a single point of view. In the past, most modeling systems that used sketches as input reconstructed the shape from the silhouette, and the user had few control on the inner parts of the result. In our system, we generate a grid of co-planar lines from a small number of strokes that the user drew, then we estimate the normal vector where it is constrained, and we form the surface by propagating this information to the whole grid. As a result, smaller strokes act locally to add detail, while longer strokes modify the whole surface. Our system gives a new approach to the modeling from sketches problem, and is intended to be a part of a more complex modeling system.

#*Certificates of Resource Usage on Mobile Telephones
#@Thomas Jensen
#t2006
#cProceedings of the Second International Symposium on Leveraging Applications of Formal Methods, Verification and Validation
#index39522
#!Resources on Java-enabled mobile telephones are controlled by permissions that grant an applet a certain number of accesses to are source. Such permissions can be given by the operator or can be obtained dynamically during execution by querying the user interactively. In this talk, we describe a formal model of such interactive access control with an emphasis on how to handle permissions with multiplicities. Based on this model, we present a proof system in which it is possible to engineer a formal proof that an applet will not consume resources for which it does not have permissions. Such proofs will then serve as a basis for constructing compact certificates attesting the correct behaviour of a downloaded applet. The ACM Portal is published by the Association for Computing Machinery.

#*Modeling product engineer and manufacturing activity in automobile industry
#@João Ferreira,André Carvalho,João Pimentel,Marco Guedes,Francesco Furini,Nuno Silva
#t2007
#cProceedings of the 2007 Euro American conference on Telematics and information systems
#index39523
#%624709
#!Designing and consequent assembling of a new vehicle is a complex process as it requires close coordination and inputs from a number of disciplines in developing a number of systems and sub-systems in the vehicle that should fit within the confined vehicle space, function and provide the customers an acceptable combination of all relevant vehicle attributes. Understanding how these processes interact and how they are aligned with other while they should support the tasks involved in the conception of a new vehicle at a minimum time and cost is a difficult task. The first step to achieve this goal is the definition of a new UML profile (called VDML, Vehicle Development Modeling Language) based on the extension mechanics of UML (industry standard language) to assist business process description and profit consequent from the improvements achieved by the high level vision. To show the benefits of this new language applied to this specific business we model the engineer and manufacturing activity processes using VDML

#*A probabilistic method to determine the minimum leakage vector for combinational designs in the presence of random PVT variations
#@Kanupriya Gulati,Nikhil Jayakumar,Sunil P. Khatri,D. M. H. Walker
#t2008
#cIntegration, the VLSI Journal
#index39524
#%239157
#%436267
#%246361
#%431603
#%544896
#%325888
#!The control of leakage power consumption is a growing design challenge for current and future CMOS circuits. Among existing techniques, 'parking' a circuit in a minimum leakage state during its standby mode of operation requires minimal circuit modification and results in significant leakage reduction. In this paper we present a heuristic approach (referred to as MLVC) to determine the input vector which minimizes leakage for a combinational design. This approach utilizes approximate signal probabilities of internal nodes to aid in finding the minimum leakage vector. We utilize a probabilistic heuristic to select the next gate to be processed as well as to select the best state of the selected gate. A fast SAT solver is employed to ensure the consistency of the assignments that are made in this process. A variant of MLVC, referred to as MLVC-VAR, is also presented. MLVC-VAR includes the effect of random variations in leakage values due to process, voltage and temperature (PVT) variations. Including the

effect of PVT variations for determining minimum leakage vector is crucial because leakage currents have an exponential dependence on power supply, threshold voltage and temperature. To the best of the authors' knowledge, no other minimum leakage vector determination work has to date included the effect of PVT variations. Experimental results indicate that our MLVC method has very low runtimes, with excellent accuracy compared to existing approaches. Further, the comparison of the mean and standard deviation of the circuit leakage values for MLVC with MLVC-VAR and an existing random vector generating approach proves the need for considering these variations while determining the minimum leakage vector. MLVC-VAR reports, on average, about 9.69% improvement over MLVC with similar runtimes and 5.98% improvement over the random vector generation approach with significantly lower runtimes.

#*Teaching and building humanitarian open source software
#@Ralph Morelli,Trishan de Lanerolle,Janardhan Lyengar
#t2008
#cJournal of Computing Sciences in Colleges
#index39525
#!This hands-on workshop will introduce participants to the world of free and open source software (FOSS) development and how to incorporate FOSS into undergraduate computing curricula. We will focus on existing humanitarian FOSS projects that the presenters are involved with. Participants will learn how FOSS projects are organized and how to set up a small scale project at their own schools. Introduction will be provided to FOSS development tools, including Eclipse, Subversion, Media WIKI, and Trac. Participants will install a development environment on their laptops and build a simple module for an existing humanitarian FOSS project. See http://www.hfoss.org for further details.

#*Distributed Algorithms in Science and Engineering
#@
#t2007
#cInternational Journal of Computer Mathematics
#index39526

#*Embedding nearly-spanning bounded degree trees
#@Noga Alon,Michael Krivelevich,Benny Sudakov
#t2007
#cCombinatorica
#index39527
#!We derive a sufficient condition for a sparse graph G on n vertices to contain a copy of a tree T of maximum degree at most d on (1 − ε)n vertices, in terms of the expansion properties of G. As a result we show that for fixed d ≥ 2 and 0 < ε < 1, there exists a constant c = c(d, ε) such that a random graph G(n, c/n) contains almost surely a copy of every tree T on (1 − ε)n vertices with maximum degree at most d. We also prove that if an (n, D, λ)-graph G (i.e., a D-regular graph on n vertices all of whose eigenvalues, except the first one, are at most λ in

their absolute values) has large enough spectral gap D/λ as a function of d and ε, then G has a copy of every tree T as above.

#*On the complexity of Katamari Damacy
#@Gregory M. Zaverucha
#t2007
#cCrossroads
#index39528
#%360455

#*Setplays: achieving coordination by the appropriate use of arbitrary pre-defined flexible plans and inter-robot communication
#@Luís Mota,Luís Paulo Reis
#t2007
#cProceedings of the 1st international conference on Robot communication and coordination
#index39529
#%292666
#!Multi-agent coordination and strategic planning are two of the major research topics in the context of RoboCup. However, innovations in these areas are often developed and applied to only one domain and a single RoboCup league, without proper generalization. Also, although the importance of the concept of Setplay, to structure the team's behaviour, has been recognized by many researchers, no general framework for the development and execution of generic Setplays has been presented in the context of RoboCup. This paper presents such a framework for high-level setplay definition and execution, applicable to any RoboCup cooperative league and similar domains. The framework is based in a standard, league-independent and flexible language that defines setplays which may be interpreted and executed at run-time through the use of inter-robot communication. The implementation of this framework in the 3D simulation league is also described with concrete examples of Setplay definition, management and execution. The first results achieved show the usefulness of this approach and motivate us to use it as the main coordination of all our teams participating in the simulation, small-size, middle-size and legged leagues of RoboCup.

#*Understanding mesh-based peer-to-peer streaming
#@Nazanin Magharei,Reza Rejaie
#t2006
#cProceedings of the 2006 international workshop on Network and operating systems support for digital audio and video
#index39530
#%310519
#!A common approach to peer-to-peer (P2P) streaming is to form a tree-based overlay coupled with push content delivery. This approach cannot effectively utilize the outgoing bandwidth of participating peers, and therefore it is not self-scaling. In contrast, swarm-like content delivery mechanisms exhibit the self-scaling property but incorporating them into live P2P streaming applications are challenging for two reasons: (i) in-time requirement of content

delivery and (ii) the limited availability of future content. In this paper, we examine the key design issues and tradeoffs in incorporating swarm-like content delivery into mesh-based P2P streaming of live content. We show how overlay properties and the global pattern of content delivery could lead to the bandwidth and content bottlenecks among peers, respectively. Leveraging an organized view of the overlay, we present a global pattern for streaming content over a mesh-based overlay that can effectively utilize the outgoing bandwidth of most participating peers. We conduct ns simulation to explore the impact of overlay properties on the global pattern of content delivery and thus delivered quality to individual peers. In particular, we show that for a given scenario, there is a sweet range for peer degree in the overlay that maximizes delivered quality to individual peers with minimum buffer requirement at each peer.

#*Low-Cost VC Allocator Design for Virtual Channel Wormhole Routers in Networks-on-Chip
#@Min Zhang,Chiu-Sing Choy
#t2008
#cProceedings of the Second ACM/IEEE International Symposium on Networks-on-Chip
#index39531
#%436930
#!Through low-level simulation and analysis, we find that the virtual channel allocator (VA) consumes large area and power while it is not critical in the performances of a NoC. Thus, it is possible to reduce the costs of VA with only a small penalty in network performances. This paper proposes two low-cost VA architectures: look-ahead VA and unfair VA. Compared with a general VA, the look-ahead VA reduces the number of both input VC arbiters and output VC arbiters while the unfair VA decreases the size of the output VC arbiters. Our experiments based on UMC 130 nm SP library show that the two architectures jointly save area cost by 70.95% and power consumption by 76.21% with nearly no adverse effect on network latency and throughput. To the best of our knowledge, it is the first time a VC allocator design is optimized in the context of NoC.

#*I/o-efficient efficient algorithms for computing contours on a terrain
#@Pankaj K. Agarwal,Lars Arge,Thomas Mølhave,Bardia Sadri
#t2008
#cProceedings of the twenty-fourth annual symposium on Computational geometry
#index39532
#%288911
#%166757
#%79094
#%183240
#%377130
#%445711
#%325429
#!A terrain M is the graph of a bivariate function. We assume that M is represented as a triangulated surface with N vertices. A contour (or isoline) of M is a connected component of a level set of M. Generically, each contour is a closed polygonal curve; at "critical" levels these curves may touch each other

or collapse to a point. We present I/O efficient algorithms for the following two problems related to computing contours of M: (i) Given a sequence l1 ls of real numbers, we present an I/O-optimal algorithm that reports all contours of M at heights l1 , … , ls using O(sort(N) + T/B) I/Os, where T is the total number edges in the output contours, B is the "block size," and sort(N) is the number of I/Os needed to sort N elements. The algorithm uses O(N/B) disk blocks. Each contour is generated individually with its composing segments sorted in clockwise or counterclockwise order. Moreover, our algorithm generates information on how the contours are nested. (ii) We can preprocess M, using O(sort(N)) I/Os, into a linear-size data structure so that all contours at a given height can be reported using O(logB N + T/B) I/Os, where T is the output size. Each contour is generated individually with its composing segments sorted in clockwise or counterclockwise order.

#*Location Fingerprint Analyses Toward Efficient Indoor Positioning
#@Nattapong Swangmuang,Prashant Krishnamurthy
#t2008
#cProceedings of the 2008 Sixth Annual IEEE International Conference on Pervasive Computing and Communications
#index39533
#!Analytical models to evaluate and predict "precision"performance of indoor positioning systems based onlocation fingerprinting are lacking. Such models can be used to improve the design of positioning systems, for example by eliminating some fingerprints and reducing the size of the location fingerprint database. In this paper, we develop a new analytical model that employs proximity graphs for predicting performance of indoor positioning systems based on location fingerprinting. The model allows computation of an approximate probability distribution of error distance given a location fingerprint database based on received signal strength and its associated statistics. The performance results from the simulation and the analytical model are found to be congruent. This model alsoallows us to perform analysis of the internal structure of location fingerprints. We employ the analysis of the internal structure to identify and eliminate unnecessary location fingerprints stored in the database, thereby saving on computation while performing location estimation.

#*Microarray Image Converted Database - Genetic Algorithm Application in Bioinformatics
#@C. Y. Jiao,D. G. Li
#t2008
#cProceedings of the 2008 International Conference on BioMedical Engineering and Informatics - Volume 01
#index39534
#!Genetic Algorithm in the bioinformatic can be categorised into many differet groups by the implementations they were instructed. Each approach has its own pros and cons. When making a choice between GA approaches to data mining, it is important that the scientist knows the advantages and disadvantages of each approach. In this project a suitable GA strategy will be identified and refined, based on microarray data mining.The research applies the improved GA approach to

a life microarray database, provided by a biological research institution to analyse and visualise the results so as to assist further development of biological strategies for identifying disease and evaluating drug applications.

#*ORM in Dynamic Languages
#@Chris Richardson
#t2008
#cQueue
#index39535
#%9944
#%15291
#%6715
#%318323
#%99231
#%246938
#!A major component of most enterprise applications is the code that transfers objects in and out of a relational database. The easiest solution is often to use an ORM (object-relational mapping) framework, which allows the developer to declaratively define the mapping between the object model and database schema and express database-access operations in terms of objects. This high-level approach significantly reduces the amount of database-access code that needs to be written and boosts developer productivity.

#*Organizational Performance Measures for Business Process Management: A Performance Measurement Guideline
#@Vesna Bosilj-Vuksic,Ljubica Milanovic,Rok Skrinjar,Mojca Indihar-Stemberger
#t2008
#cProceedings of the Tenth International Conference on Computer Modeling and Simulation
#index39536
#!This paper focuses on organizational performance measurement. It offers an overview of the literature on organizational performance measures, approaches and frameworks. Analysis indicates that organizational performance measurement is well recognized as an important part of the business process management literature. The purpose of this paper is to propose a performance measurement guideline. Defining an appropriate guideline helps to clarify and systemize this field, but also represents a critical step for business practitioners since it could influence the success of organizational performance measurement system development.

#*Improvement of transient stability by variation generator parameters and high speed fault clearing
#@S. Jalilzadeh,S. Jadid
#t2005
#cProceedings of the 9th International Conference on Circuits
#index39537
#!In recent years, power systems have been operated under more stressed conditions and close to their stability limits. Due to recent blackouts, power

system security has become a major concern. Under these circumstances, an important problem that is frequently considered for secure operation is the severity of transient stability. This paper presents a study on transient stability of two IEEE test systems. The influence of bus loads, generation changes, network changes and generator parameters variation on transient stability are investigated in this paper. It is shown that transient stability is improved by various parameter changes such as increase in generation, inertia constant, open circuit transient time constant, decrease in transient reactance and decrease in line reactance.

#*Building a National Telemedicine Network
#@Jader Wallauer,Douglas Macedo,Rafael Andrade,Aldo von Wangenheim
#t2008
#cIT Professional
#index39538
#!Motivated by the need to reduce the cost of patient transport to health centers, the authors designed a prototype national telemedicine network in Brazil.

#*Improved glass-PDMS-glass device technology for accurate measurements of electro-osmotic mobilities
#@Adrien Plecis,Yong Chen
#t2008
#cMicroelectronic Engineering
#index39539
#!We demonstrate an improved glass-PDMS-glass device technology based on reactive ion etch of a thin PDMS layer for microfluidic channel forming and glass to glass bonding. Reactive ion etch process has been optimised to achieve a high etch rate and a minimum surface roughness. Typically, microfluidic channels of 2.5@mm height and 50@mm width are obtained on a wafer scale, providing a patternable glass-liquid interface larger than 95% of the total channel wall surface. To illustrate the capability of this technique, electrokinetic characterization of soda-lime glass (D-263) surfaces are presented.

#*Efficient Key Pre-distribution for Sensor Nodes with Strong Connectivity and Low Storage Space
#@Hung Yu Chien,Rung-Ching Chen,Annie Shen
#t2008
#cProceedings of the 22nd International Conference on Advanced Information Networking and Applications
#index39540
#!One of the challenges to secure Wireless Sensor Networks (WSNs) is to design secure pair-wise key agreement between any pair of resources-limited sensors while keeping strong connectivity. In this paper, we point out the fatal security weaknesses of Cheng-Agrawal's pair-wise key agreement scheme for WSNs, and then propose a new scheme. Compared to the existing schemes, the proposed scheme owns two outstanding merits- assurance of connectivity between any pair

of nodes and security robustness against node capture attack.

#*Comparison of Schemes for Provision of Differentiated Availability-Guaranteed Services Using Dedicated Protection
#@Anders Mykkeltveit,Bjarne E. Helvik
#t2008
#cProceedings of the Seventh International Conference on Networking
#index39541
#!In the coming Next Generation Network, the introduction of new services with different Quality of Service (QoS) requirements combined with cost conscious customers who make cost/utility trade-offs, yields a need for the network operators to be able to offer different levels of guaranteed availability. Protection techniques are used to provide alternative paths to a connection in case of failure of the working path. This paper considers dedicated protection, where the bandwidth of the protection paths is reserved exclusively. The challenge is to find schemes that can provide the guaranteed availability level requested by each connection while at the same time use bandwidth efficiently. This may be achieved by applying availability-aware protection schemes that allocate only the minimum amount of backup resources needed to meet the availability requirement of each connection. In the literature, some schemes for providing differentiated availability-guaranteed services have been proposed. There has, however, been no studies that quantitatively compare different schemes. The main contribution of this paper is to provide the first comparison of schemes for differentiated availability-guaranteed services. In this paper, three schemes which vary in complexity, flexibility and bandwidth-efficiency are compared. The schemes are compared by simulation through case studies, where the common path protection scheme serves as a reference.

#*Construction of highly stable parallel two-step Runge-Kutta methods for delay differential equations
#@Z. Bartoszewski,Z. Jackiewicz
#t2008
#cJournal of Computational and Applied Mathematics
#index39542
#%4369
#%182869
#%208186
#%170926
#%315763
#%163467
#!It is shown that any A-stable two-step Runge-Kutta method of order p@? and stage order q=p@? for ordinary differential equations can be extended to the P-stable method of uniform order p=p@? for delay differential equations.

#*A pattern language for data warehouse schema
#@Hany M. Harb
#t2005
#cProceedings of the 4th WSEAS International Conference on Applied Mathematics

and Computer Science
#index39543
#%236881
#%245078
#%85369
#%434147
#%437507
#!This paper provides an overall architecture to support all levels of data access and analysis against internal and external data in a variety of formats (any data, any where). This star architecture promotes interoperability between applications and databases. It promotes query optimized data warehouse. A star schema pattern language is presented to support data ware house building. The patterns are split into four main sub models: the conceptual, the logical, the physical, and the summary sub model. The model is composed of three layers: the virtual data warehouse layer (VDW), virtual data warehouse engine (VDWE), and the end user layer (EUL). The VDW layer combines all the internal and external databases as a one virtual data warehouse. The intelligent VDWE layer provides intelligent analytical processing to the decision makers. This layer also offers administrative tools for data administration. There is a dynamic metadata repository associated with the engine to support the heterogeneous joins between these different internal and external data stores. There are associated software agents to notify the engine the exception conditions occurrences. The business rules and constraints are enforced by the engine. The end user layer (EUL) encapsulates access code and allows information technology personnel to manage and optimize the model. A case study is presented to demonstrate the paper concepts.

#*A Trust Management Model for P2P File Sharing System
#@Huafeng Wu,Chaojian Shi,Haiguang Chen,Chuanshan Gao
#t2008
#cProceedings of the 2008 International Conference on Multimedia and Ubiquitous Engineering
#index39544
#!Peer-to-Peer (P2P) network systems have an open and dynamic nature for sharing files and real-time data transmission. While P2P systems have already many existing and envisioned applications, the security issue of P2P systems is still worth deeply researching. Some traditional approaches mainly rely on cryptography to ensure data authentication and integrity. These approaches, however, only addressed part of the security issues in P2P systems. In this paper, we propose a trust management model for P2P file-sharing systems. We use the incomplete experience to get the trust rating in P2P systems, and use aggregation mechanism to indirectly combine and obtain other node's trust rating. Simulation results and analysis show that our proposed trust management model can quickly detect the misbehavior peers and limit the impacts of them in a P2P file-sharing system.

#*Extending H-anim and X3D for advanced animation control
#@Yvonne Jung,Johannes Behr

#t2008
#cProceedings of the 13th international symposium on 3D web technology
#index39545
#%116151
#%101707
#%249401
#%242174
#%108979
#!In this paper we describe a layered approach to simplify character animation in X3D. Therefore, we present an interface and control language for specifying and synchronizing animations and similar actions at a higher level. Because this requires to have the accordant features on the lower X3D-based levels, we furthermore propose a set of nodes for realizing these demands. This includes for instance an audio node for text-to-speech that automatically calculates the actual phonemes and weighting factors for the corresponding visemes in order to achieve lip synchronization. To bridge the gap between these layers we also propose nodes for controlling animations, which are capable to convert the scripted schedules, and to mix an arbitrary number of interpolation based animations, whilst still being extensible to new concepts of on-line motion generation.

#*Convergent and divergent solutions of singular partial differential equations with resonance or small denominators
#@Masafumi Yoshino
#t2007
#cPublications of the Research Institute for Mathematical Sciences
#index39546
#!We show the solvability and nonsolvability of a singular nonlinear system of partial differential equations with resonance in a class of functions holomorphic in some neighborhood of the origin. These results are applied to the normal form theory of a singular vector field.

#*Interview
#@
#t2008
#cQueue
#index39547

#*A pilot study to evaluate self initiated computer patient education in children with acute asthma in pediatric emergency department
#@Ashish Joshi,Richard Lichenstein,Keyvan Rafei,Adnan Bakar,Mohit Arora
#t2007
#cTechnology and Health Care
#index39548
#!Objective: The goal of the study was to investigate the feasibility and acceptance of an interactive computer assisted asthma education program in the pediatric emergency department (ED) for children with acute asthma exacerbations. Methods: A pre-post non- randomized study was designed for

children age 3 to 18 years at the University of Maryland Hospital for Children, Baltimore. An interactive computer-assisted educational program, Patient Education and Motivation Tool (PEMT), was designed using learning theories, to teach children about asthma and its management. Sixty nine children were enrolled during an ED visit for acute asthma between May 2006 and November 2006. Socio-demographic and asthma knowledge information was gathered using questionnaires. An attitudinal survey was used to assess the acceptance of the program. Results: Eighty one percent (n=56) of the children found PEMT very easy to use, and seventy five percent (n=52) agreed to use it in near future. There was a significant thirteen percent improvement in knowledge of asthma after the completion of this computer assisted asthma education program (p=0.01). Conclusion: PEMT is highly acceptable and is an effective way to provide asthma education in an ED setting.

#*Adaptive Service Provisioning through Context-Aware SIP Proxy
#@Tang Tang,Zhengkun Mi,Rongqun Peng
#t2008
#cProceedings of the Fourth International Conference on Networking and Services
#index39549
#!A novel idea is proposed to provide context-aware adaptive services by use of widely adopted Session Initiation Protocol (SIP) in NGN. As the key to the idea, a new context-aware SIP proxy is worked out. It will support environment adaptability through policy decision and exchange of context information using SIP and its sibling protocols. In this new proxy, we propose to deliver context according to specific environment characteristics. Network context sensing and control is another contribution in our work. This solution helps us to control QOS and realize network and service adaptation practically. Realization of context-aware adaptation within SIP-based sessions is explained with two application scenarios.

#*Implementation of Wave-Pipelined Interconnects in FPGAs
#@Terrence Mak,Crescenzo D'Alessandro,Pete Sedcole,Peter Y. K. Cheung,Alex Yakovlev,Wayne Luk
#t2008
#cProceedings of the Second ACM/IEEE International Symposium on Networks-on-Chip
#index39550
#%414601
#!Global interconnection and communication at high clock frequencies are becoming more problematic in FPGA. In this paper, we address this problem by presenting an interconnect wave-pipelining strategy, which utilizes the existing programmable interconnects fabrics to provide high-throughput communication in FPGA. Two design approaches for interconnect wave-pipelining, using simple clock phase shifting and asynchronous phase encoding, are presented in this paper. Experimental results from a Xilinx Virtex-5 FPGA device are also presented.

#*Power-Aware Node Deployment in Wireless Sensor Networks
#@Yunhuai Liu,Hoilun Ngan,Lionel M. Ni
#t2007

#cInternational Journal of Distributed Sensor Networks
#index39551
#%28169
#%231811
#%112262
#%306762
#%614623
#!Wireless sensor networks (WSNs) have attracted intense interest due to their extensible capability. In this paper, we attempt to answer a fundamental but practical question: "how should we deploy these nodes?" In most current designs, sensor nodes are randomly or uniformly distributed because of their simplicity. However, the node deployment has a great impact on the performance of WSNs. Instead of maintaining the coverage for some snapshots of a WSN, it is essential that we can provide a continuous coverage in the whole lifecycle of the WSN. We will exhibit the weakness of the uniform distribution by disclosing the fatal sink routing-hole problem. To address this problem, we propose a non-uniform, power-aware distribution scheme. Our analysis and simulation results show that the power-aware deployment scheme can significantly improve the long-term network connectivity and service quality.

#*Improving IEEE 802.11 power saving mechanism
#@Eun-Sun Jung,Nitin H. Vaidya
#t2008
#cWireless Networks
#index39552
#%323220
#%331519
#%287489
#%84152
#!This paper presents an optimization of the power saving mechanism in the Distributed Coordination Function (DCF) in an Independent Basic Service Set (IBSS) of the IEEE 802.11 standard. In the power saving mode specified for DCF, time is divided into so-called beacon intervals. At the start of each beacon interval, each node in the power saving mode periodically wakes up for a duration called the ATIM Window. Nodes are required to be synchronized to ensure that all nodes wake up at the same time. During the ATIM window, the nodes exchange control packets to determine whether they need to stay awake for the rest of the beacon interval. The size of the ATIM window has a significant impact on energy saving and throughput achieved by the nodes. This paper proposes an adaptive mechanism to dynamically choose a suitable ATIM window size. We also allow the nodes to stay awake for only a fraction of the beacon interval following the ATIM window. On the other hand, the IEEE 802.11 DCF mode requires nodes to stay awake either for the entire beacon interval following the ATIM window or not at all. Simulation results showthat the proposed approach outperforms the IEEE 802.11 power saving mechanism in terms of throughput and the amount of energy consumed.

#*A Dynamic Skip List-Based Overlay for On-Demand Media Streaming with VCR

Interactions
#@Dan Wang,Jiangchuan Liu
#t2008
#cIEEE Transactions on Parallel and Distributed Systems
#index39553
#!Media distribution through application-layer overlay networks has received considerable attention recently, owing to its flexibility and readily deployable nature. On-demand streaming with asynchronous requests, and in general, with VCR-like interactions, nevertheless remains a challenging task in overlay networks. In this paper, we introduce the Dynamic Skip List (DSL), a novel randomized and distributed structure that inherently accommodates dynamic and asynchronous clients. We establish the theoretical foundations of the DSL and demonstrate a practical DSL-based streaming overlay. In this overlay, the costs for typical operations, including join, leave, fast-forward, rewind, and random-seek are all sub-linear to the client population. The model also seamlessly integrates a smart data scheduling algorithm using linear network coding, yielding fast and robust downloading from multiple suppliers. Our simulation results show that the DSL-based overlay is highly scalable. It delivers reasonably smooth playback with diverse client interactivities, while keeping the computation and bandwidth overheads low.

#*Optimization Techniques for Semi-Supervised Support Vector Machines
#@Olivier Chapelle,Vikas Sindhwani,Sathiya S. Keerthi
#t2008
#cThe Journal of Machine Learning Research
#index39554
#%347258
#%288846
#%510766
#%162535
#%366514
#%574187
#%244139
#!Due to its wide applicability, the problem of semi-supervised classification is attracting increasing attention in machine learning. Semi-Supervised Support Vector Machines (S3VMs) are based on applying the margin maximization principle to both labeled and unlabeled examples. Unlike SVMs, their formulation leads to a non-convex optimization problem. A suite of algorithms have recently been proposed for solving S3VMs. This paper reviews key ideas in this literature. The performance and behavior of various S3VMs algorithms is studied together, under a common experimental setting.

#*Synergy of Informatics and Biology - Grand Challenge of Bio-nantechnology Based Future Biomedical Engineering
#@
#t2007
#cTechnology and Health Care
#index39555

#*Paul Wilmott Introduces Quantitative Finance, 2 edition
#@Paul Wilmott
#t2007
#c
#index39556
#!Paul Wilmott Introduces Quantitative Finance, Second Edition is an accessible introduction to the classical side of quantitative finance specifically for university students. Adapted from the comprehensive, even epic, works Derivatives and Paul Wilmott on Quantitative Finance, Second Edition, it includes carefully selected chapters to give the student a thorough understanding of futures, options and numerical methods. Software is included to help visualize the most important ideas and to show how techniques are implemented in practice. There are comprehensive end-of-chapter exercises to test students on their understanding.

#*Relevance judgments between TREC and Non-TREC assessors
#@Azzah Al-Maskari,Mark Sanderson,Paul Clough
#t2008
#cProceedings of the 31st annual international ACM SIGIR conference on Research and development in information retrieval
#index39557
#%322746
#!This paper investigates the agreement of relevance assessments between official TREC judgments and those generated from an interactive IR experiment. Results show that 63% of documents judged relevant by our users matched official TREC judgments. Several factors contributed to differences in the agreements: the number of retrieved relevant documents; the number of relevant documents judged; system effectiveness per topic and the ranking of relevant documents.

#*A Digital Identity Management Service Model
#@Yeonjung Kang,Hearyong Park,Kilsoo Chun,Junghwan Song
#t2008
#cProceedings of the Fifth International Conference on Information Technology: New Generations
#index39558
#!The incredible progress of information and communication technology has allowed various information and communication services to emerge in the Web environment. Such a service is initiated when the user provides his/her personal information to the service provider and is then given an identifier and authentication data. With the introduction of different services, the need to efficiently manage ID has been raised. In this paper, a Digital Identity Management Service System that enables the control of the flow of the user's personal information, which is used and stored for the Internet service, is proposed from the user's perspective.

#*Perforce 2006.2 System Administrator's Guide
#@Perforce Software

#t2007
#c
#index39559

#*Linked graphs with restricted lengths
#@Guantao Chen,Yuan Chen,Shuhong Gao,Zhiquan Hu
#t2008
#cJournal of Combinatorial Theory Series B
#index39560
#%81845
#%231530
#%311425
#!A graph G is k-linked if G has at least 2k vertices, and for every sequence x"1,x"2,…,x"k,y"1,y"2,…,y"k of distinct vertices, G contains k vertex-disjoint paths P"1,P"2,…,P"k such that P"i joins x"i and y"i for i=1,2,…,k. Moreover, the above defined k-linked graph G is modulo(m"1,m"2,…,m"k)-linked if, in addition, for any k-tuple (d"1,d"2,…,d"k) of natural numbers, the paths P"1,P"2,…,P"k can be chosen such that P"i has length d"i modulo m"i for i=1,2,…,k. Thomassen showed that, for each k-tuple (m"1,m"2,…,m"k) of odd positive integers, there exists a natural number f(m"1,m"2,…,m"k) such that every f(m"1,m"2,…,m"k)-connected graph is modulo(m"1,m"2,…,m"k)-linked. For m"1=m"2=…=m"k=2, he showed in another article that there exists a natural number g(2,k) such that every g(2,k)-connected graph G is modulo(2,2,…,2)-linked or there is X@?V(G) such that |X|==2. Our results generalize several known results on parity-linked graphs.

#*A weighted even factor algorithm
#@Kenjiro Takazawa
#t2008
#cMathematical Programming: Series A and B
#index39561
#!An even factor in a digraph, introduced by Cunningham and Geelen (Vertex-disjoint dipaths and even dicircuits. manuscript, 2001), is a collection of vertex-disjoint dipaths and even dicycles, which generalizes a path-matching of Cunningham and Geelen (Combinatorica 17, 315–337, 1997). In a restricted class of digraphs, called odd-cycle-symmetric, Pap (Integer Programming and Combinatorial Optimization. Lecture Notes in Computer Science, 3509, pp. 66–80, Springer, Heidelberg, 2005) presented a combinatorial algorithm to find a maximum even factor. For odd-cycle-symmetric weighted digraphs, which are odd-cycle-symmetric digraphs accompanied by a weight vector satisfying a certain property, Király and Makai (Integer Programming and Combinatorial Optimization. Lecture Notes in Computer Science, 3064, pp. 416–430, Springer, Heidelberg, 2004) provided a linear program that describes the maximum weight even factor problem, and proved the dual integrality. In this paper, we present a primal-dual algorithm to find a maximum weight even factor for an odd-cycle-symmetric weighted digraph. This algorithm is based on the weighted matching algorithm of Edmonds and the maximum even factor algorithm of Pap. The running time of the algorithm is O(n 3 m), where n and m are the numbers of the

vertices and arcs, respectively, which is better than that of the existing algorithms for the special cases. The algorithm also gives a constructive proof for the dual integrality.

#*Forging connections between life and class using reading assignments: a case study
#@Leigh Ann Sudol
#t2008
#cProceedings of the 39th SIGCSE technical symposium on Computer science education
#index39562
#%160739
#%171443
#%590818
#!This paper describes an experiment involving incorporating reading assignments into an introductory programming class at the university level. Results indicate that assignments of this type help students make connections between the concepts they are studying, and computer science in general, with their everyday lives.

#*Combination of Local Invariants with an Active Shape Model
#@Jianhua Zhang,S. Y. Chen
#t2008
#cProceedings of the 2008 International Conference on BioMedical Engineering and Informatics - Volume 02
#index39563
#!In this paper, a novel local invariant model based on Scale Invariant Feature Transform (SIFT) features is presented to accurately obtain and locate the local features of an image. After the local features of each image in the training set are extracted by the SIFT, we eliminate the unsteady factors in term of statistical results of all the SIFT features to establish the local invariant model. The experiments to evaluate the performance of the model are carried out, which prove that the method has the quality of high-repeatability and accuracy and achieves the power of accurately locating the similar objects in different scenes despite the rigid or non-rigid deformation on them. For further investigation, we combine the local invariant model with an Active Shape Model for automatically initialization. Results show that the combined model achieves satisfactory performance.

#*Integrating onland lineaments with offshore data using a GIS approach-a case study from the Kutch Basin, India
#@H. D. Dave,D. S. Mitra
#t2007
#cInternational Journal of Remote Sensing
#index39564
#!The offshore Kutch Basin is a southwestern extension of the onland Kutch Basin, which is located on the west-northwest margin of the Indian Shield. The objective of this technical note is to map lineaments over the land portion of

the Kutch Basin, identify major lineament zones, and provide evidence for the extension of these zones into the offshore portion of the Kutch basin. Lineaments in the onland part have been identified on Landsat TM and IRS-1D WiFS data and three dominant lineament trends, ENE-WSW, NW-SE, and NE-SW, have been identified. In this part of the Kutch Basin, analysis of the lineament map in concert with supporting data (gravity, bathymetry, tectonic) has led to the identification of six major lineament zones, and a number of these zones appear to continue offshore, based on inspection of the supporting data. It appears that these lineament zones have divided the offshore basin into a number of tectonic blocks and this apparent pattern map helps to understand the architecture of the offshore basin.

#*Contributed papers
#@
#t2008
#cProceedings of the fifth on Asia-Pacific conference on conceptual modelling - Volume 79
#index39565

#*Examination of image fusion using synthetic variable ratio (SVR) technique
#@M. M. Rahman,E. Csaplovics
#t2007
#cInternational Journal of Remote Sensing
#index39566
#%177485
#!The current study examines different approaches of computing synthetic variable ratio (SVR) technique of image fusion using Landsat ETM+ and IRS-pan image. The study area is located on a tropical landscape of southeastern Bangladesh. The research work explores an optimal SVR fusion method. The technique functions well in image colour and radiometry if all necessary assumptions are followed. Complications arise due to violation of those assumptions which are also being discussed in the article.

#*OnD-CRF
#@Lixiao Wang,Uwe H. Sauer
#t2008
#cBioinformatics
#index39567
#!Motivation: Order and Disorder prediction using Conditional Random Fields (OnD-CRF) is a new method for accurately predicting the transition between structured and mobile or disordered regions in proteins. OnD-CRF applies CRFs relying on features which are generated from the amino acids sequence and from secondary structure prediction. Benchmarking results based on CASP7 targets, and evaluation with respect to several CASP criteria, rank the OnD-CRF model highest among the fully automatic server group. Availability: http://babel.ucmp.umu.se/ond-crf/ Contact: Uwe.Sauer@ucmp.umu.se

#*Multiattribute analysis of the offshore outsourcing location decision using a

decision support system framework
#@P. D. D. Dominic,Ahmad Kamil Mahmood,V. Murugesh,P. Sridevi
#t2008
#cInternational Journal of Business Information Systems
#index39568
#%3571
#%254159
#!Today's global business environment, characterised by unprecedented competitive pressures and sophisticated customers that demand speedy solutions, creates a large set of potential suppliers to evaluate and select from. The business landscape is currently witnessing widespread migration of services and functions from developed nations like the USA to destinations like India, China, the Philippines, Malaysia, Singapore, Hungary, Poland, New Zealand and other countries. Several factors influence the outsourcers to offshore effectively and efficiently. This paper presents a structured framework with subjective and objective factors for guiding the outsourcers in making the decision on the proper outsourcing location. Based on this, a Decision Support System (DSS) framework was developed to provide a way for outsourcers and practitioners to have a more comprehensive approach to the outsourcing location decision. The process illustrates the way the system aids management in the offshore outsourcing decision through knowledge support.

#*Optimization of MLP/BP for character recognition using a modified alopex algorithm
#@Hirohito Shintani,Masatake Akutagawa,Hirofumi Nagashino,Abhijit S. Pandya,Yohsuke Kinouchi
#t2007
#cInternational Journal of Knowledge-based and Intelligent Engineering Systems
#index39569
#%536060
#!It is difficult to determine the recognition mechanism in the neurons of a neural network trained for pattern recognition due to the non-linear nature of neural networks. This paper describes a recognition mechanism of a four-layer back propagation neural network using Alopex algorithm. We have developed a small-scale, four-layered neural network model for simple character recognition, which can recognize the patterns transformed by affined conversion. Alopex algorithm is an iterative and stochastic processing method, which was proposed for optimization of a given cost function. In this case the receptive fields of the neurons in the output layers are obtained using the Alopex algorithm.

#*An empirical study on knowledge integration, technology innovation and experimental practice
#@Hsu-Fang Hung,Hsing-Pei Kao,Yee-Yeen Chu
#t2008
#cExpert Systems with Applications: An International Journal
#index39570
#%607229
#%324811

#!In the global market, inter-firm collaborative product development has become an increasingly significant business strategy for enhanced product competitiveness. Engineering knowledge is a key asset for technology-based enterprises to successfully develop new products and processes. Experimental practice is a crucial process for knowledge integration and technology innovation. This research explores this in inter-firm collaborative product development through experimental practice. We conducted a series of in-depth case studies to investigate the patterns of knowledge integration in the collaborative development of system-on-a-chip (SoC) by semiconductor firms. Our studies focused on the central interactive process for engineering applications and experimental practice to enhance knowledge integration and technology innovation for rapid development. Furthermore, we identified factors critical for experimental practice in effective engineering knowledge integration and innovation.

#*An Improved Particle Swarm Optimization with New Select Mechanism
#@Yi Jiang,Qingling Yue
#t2008
#cProceedings of the First International Workshop on Knowledge Discovery and Data Mining
#index39571
#!The particle swarm optimization is a stochastic, population-based optimization technique. A modified PSO algorithm is proposed in this paper to avoid premature convergence with the new select mechanism. This mechanism is simulating the principle of molecular dynamics, which attempts to active all particles as the most possible along with their population evolving. Two stopping criteria of the algorithm are derived from the principle of energy minimization and the law of entropy increasing. The performance of this algorithm is compared to the standard PSO algorithm and experiments indicate that it has better performance.

#*Personalized E-learning System by Using Intelligent Algorithm
#@Mingmin Gong
#t2008
#cProceedings of the First International Workshop on Knowledge Discovery and Data Mining
#index39572
#!Nowadays, Network and multimedia are the trend of the development of the modern education technology. With the rapid development of the network technique and the prevalence of the Internet, Elearning has become the major trend of the development of international education since 1980's, and the important access for the internationalization and the information of education. To meet the personalized needs of learners in E-learning, a new intelligent algorithm is proposed in the paper by using personality, association rules mining and collaborative filtering technologies. The Intelligent algorithm is composed of two phases: association rules algorithm and collaborative filtering.

#*Special session: 3-D semiconductor integration & packaging
#@

#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39573

#*A general approach to securely querying XML
#@Ernesto Damiani,Majirus Fansi,Alban Gabillon,Stefania Marrara
#t2008
#cComputer Standards Interfaces
#index39574
#%344566
#%311728
#%453387
#%370705
#%612780
#%581863
#%436827
#%571957
#%335223
#!XML access control requires the enforcement of highly expressive access control policies to support schema-, document and object-specific protection requirements. Access control models for XML data can be classified in two major categories: node filtering and query rewriting systems. The first category includes approaches that use access policies to compute secure user views on XML data sets. User queries are then evaluated on those views. In the second category of approaches, authorization rules are used to transform user queries to be evaluated against the original XML data set. The pros and cons for these approaches have been widely discussed in the framework of XML access control standardization activities. The aim of this paper is to describe a model combining the advantages of these approaches and overcoming their limitations, suitable as the basis of a standard technique for XML access control enforcement. The model specification is given using a Finite State Automata, ensuring generality w.r.t. specific implementation techniques.

#*Without a reference clock wide tuning range clock and data recovery circuit
#@Si-Young Choi,Hang-Geun Jeong
#t2008
#cProceedings of the 2nd WSEAS International Conference on Circuits, Systems, Signal and Telecommunications
#index39575
#!This paper describes the design and fabrication of a clock and data recovery circuit (CDR). This clock and data recovery circuit utilizes a linear phase detector (PD) and full-rate frequency detector (FD), a self-biased ring voltage controlled oscillator (VCO). The proposed CDR can also remove virtually all of the process technology and environmental variability by using a self-biasing method. The proposed CDR circuit can achieve a wide acquisition range without using the reference clock. A ring VCO used in this CDR circuit has a wide operating frequency range of 250 MHz to 2.0 GHz. The CDR circuit has been fabricated in a standard 0.18μm CMOS technology. It occupies an active area of 1

x 1mm2 and consumes 120 mW from a single 1.8V supply.

#*Fault estimations for linear systems with polytopic uncertainties
#@Heng Wang,Guang-Hong Yang
#t2008
#cInternational Journal of Systems, Control and Communications
#index39576
#%320582
#!This paper studies the fault estimations problem for linear time-invariant systems with polytopic uncertainties. Both discrete-time and continuous-time cases are considered, and the recently developed Generalized Kalman-Yakubovich-Popov (GKYP) Lemma is exploited to formulate the fault estimation filter design problem in finite frequency domain. The filter is designed to make the error between residual and fault as small as possible despite of the disturbance effects and model uncertainties. Design methods are presented in terms of solutions to a set of Linear Matrix Inequalities (LMIs). Numerical examples are given to illustrate the effectiveness of the proposed methods.

#*Control Network Programming Illustrated: Solving Problems with Inherent Graph-Like Representation
#@Kostadin Kratchanov,Emilia Golemanova,Tzanko Golemanov
#t2008
#cProceedings of the Seventh IEEE/ACIS International Conference on Computer and Information Science (icis 2008)
#index39577
#!Control Network Programming (CNP) is a style of high-level programming created to be especially convenient for solving problems with natural graph-like representation. Showing that this goal has been achieved is the purpose of the current report. CNP solutions to four problems representative of four important problem classes are presented. Most of the problem descriptions are nondeterministic and declarative, without specifying an algorithmic solution. These natural problem descriptions are easily converted into working Control Network programs.

#*Multi-core design tools and architectures
#@
#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39578

#*Hardware Implementation Trade-Offs of Polynomial Approximations and Interpolations
#@Dong-U Lee,Ray Cheung,Wayne Luk,John Villasenor
#t2008
#cIEEE Transactions on Computers
#index39579
#!This paper examines the hardware implementation tradeoffs when evaluating functions via piecewise polynomial approximations and interpolations for

precisions up to 24 bits. In polynomial approximations, polynomials are evaluated using stored coefficients. Polynomial interpolations, however, require the coefficients to be computed on-the-fly using stored function values. Although it is known that interpolations require less memory than approximations at the expense of additional computation, the tradeoffs in memory, area, delay, and power consumption between the two approaches have not been examined in detail. This work quantitatively analyzes these tradeoffs for optimized approximations and interpolations across different functions and target precisions. Hardware architectures for degree-1 and degree-2 approximations and interpolations are described. The results show that the extent of memory savings realized by using interpolation is significantly lower than what is commonly believed. Furthermore, experimental results on a field-programmable gate array (FPGA) show that for high output precision, degree-1 interpolations offer considerable area and power savings over degree-1 approximations, but similar savings are not realized when degree-2 interpolations and approximations are compared. The availability of both interpolation-based and approximation-based designs offers a richer set of design tradeoffs than is available using either interpolation or approximation alone.

#*High performance 2D and 3D FDTD solvers on GPUs
#@John R. Humphrey,Daniel K. Price,James P. Durbano,Eric J. Kelmelis,Richard D. Martin
#t2006
#cProceedings of the 10th WSEAS International Conference on APPLIED MATHEMATICS
#index39580
#!Our group has employed the use of modern graphics processor units (GPUs) for the acceleration of finite-difference based computational electromagnetics (CEM) codes. In particular, we accelerated the well-known Finite-Difference Time-Domain (FDTD) method, which is commonly used for the analysis of electromagnetic phenomena. This algorithm uses difference-based approximations for Maxwell's Equations to simulate the propagation of electromagnetic fields through space and materials. The method is very general and is applicable to a wide array of problems, but runtimes are long enough that acceleration is highly desired. In this paper we present GPU-based accelerated solvers for the FDTD method in both its 2D and 3D embodiments.

#*Using Built-In Interoperability with Self-Adaptive Components for RTS
#@Emilia de Menezes Colonese
#t2008
#cProceedings of the Fifth International Conference on Information Technology: New Generations
#index39581
#!Component-based software engineering offers a way to solve complex systems by dividing it into well-defined modules. Adaptation mechanisms are crucial to enable run-time reconfiguration and to improve system’s performance. The practicality of achieving interoperability remains a challenge for rapidly process operational requirements allowing components to work together with others. It must maintain the behavior and data integrity, while improves the

answer time. A common set of "building codes" is proposed in this paper as a framework adopted for data interoperability among Real-Time System (RTS) components to replace gateways. It implements generic behavioral models for monitoring and controlling system composed of dynamic service servers, service invokers, a common protocol class, a component class, a message class, and a use case class. The target system might be adjusted to the framework, allowing the software components to have high degrees of cost-effective reuse. The framework was validated by building a control station prototype system, which controls UAV missions at run-time, while self-adapting service servers according to external events. The stakeholder requirements are monitored such that the software behavior can be verified at run-time.

#*A Survey for Open Shortest Path First Weight Setting (OSPFWS) Problem
#@Ahmed Abo Ghazala,Ayman El-Sayed,Mervat Mousa
#t2008
#cProceedings of the 2008 International Conference on Information Security and Assurance (isa 2008)
#index39582
#!Open shortest path first (OSPF) is the most commonly used intera-domain routing protocol. It used to select the paths along which traffic is routed within autonomous systems (AS), OSPF calculates routes as follow. Each link is assigned weights by operator. Each node in the autonomous system computes shortest paths and creates destination tables used to route data to next node on the path to its destination. Shortest paths are selected according to path cost. Path cost is determined by sum of its weight links. Then link weights determine the shortest paths, in which turn determine the routing of network traffic flow. OSPF weights setting problem is to find a set of OSPF weights that optimizes network performance. OSPF weights setting problem is an NP-hard problem. In the last couple of years, various algorithms for OSPF weights setting problem have been proposed. In this paper, we present a survey of OSPF weights setting algorithms and compare their performances.

#*Performance Evaluation of Load Control Techniques in SIP Signaling Servers
#@Sergio Montagna,Maurizio Pignolo
#t2008
#cProceedings of the Third International Conference on Systems
#index39583
#!This paper is aimed at studying and evaluating the performance of two algorithms suitable for load control enhancement in "Session Initiation Protocol" servers. A shrewd management of SIP call-control messages is key for the performance of telecom infrastructures, since SIP is rapidly gaining momentum to be the #1 protocol for session signaling in Next-Generation multimedia converged networks. The work will show simulation results related to the performance of a virtual server belonging to a real server SIP farm under both homogeneous and non-homogeneous traffic scenarios.

#*Schläfli numbers and reduction formula
#@Thomas Zehrt

#t2008
#cEuropean Journal of Combinatorics
#index39584
#!We define so-called poset-polynomials of a graded poset and use it to give an explicit and general description of the combinatorial numbers in Schlafli's (combinatorial) reduction formula. For simplicial and simple polytopes these combinatorial numbers can be written as functions of the numbers of faces of the polytope and the tangent numbers. We use the constructed formulas to determine the volume of 4-dimensional Coxeter polytopes.

#*Fabrication of large area nano-rings for MRAM application
#@Yong Luo,Veena Misra
#t2008
#cMicroelectronic Engineering
#index39585
#!We have developed lateral etch techniques to fabricate large area high density nano-scale magnetic ring arrays by deep ultraviolet lithography. Both centered and de-centered rings have been obtained. The width of the rings are controlled by the lateral etch time, and the inner ring diameter was scaled down below the lithography resolution limit. For de-centered rings, the shift between the center of inner and outer circles was easily adjustable. The characteristics of the ring arrays were characterized by SEM, AFM and SQUID.

#*On the multisymplecticity of partitioned Runge-Kutta and splitting methods
#@Brett N. Ryland,Robert I. Mclachlan,Jason Frank
#t2007
#cInternational Journal of Computer Mathematics
#index39586
#%252381
#%566048
#%39586
#%78950
#!Although Runge-Kutta and partitioned Runge-Kutta methods are known to formally satisfy discrete multisymplectic conservation laws when applied to multi-Hamiltonian PDEs, they do not always lead to well-defined numerical methods. We consider the case study of the nonlinear Schrödinger equation in detail, for which the previously known multisymplectic integrators are fully implicit and based on the (second order) box scheme, and construct well-defined, explicit integrators, of various orders, with local discrete multisymplectic conservation laws, based on partitioned Runge-Kutta methods. We also show that two popular explicit splitting methods are multisymplectic.

#*Poser 7 Essential Training
#@Larry Mitchell
#t2007
#c
#index39587
#!Poser 7 is one of the most enjoyable applications for creating realistic

animated 3-D characters. In Poser 7 Essential Training, instructor Larry Mitchell explains how to design, pose, and animate 3-D characters using the program s intuitive interface, tools, and workflow. The training covers everything from essential animation principles to working on the intricate details of individual body parts and complicated facial expressions. Larry also teaches the minute steps required to create characters that can lip-synch to recorded sound files. Advanced topics, such as incorporating HDRI lighting, animating to reference videos, and integrating Poser 7 and Vue 6, add to the full learning experience. Exercise files accompany the tutorials.

#*Contributed papers: algorithms
#@
#t2008
#cProceedings of the fourteenth symposium on Computing: the Australasian theory - Volume 77
#index39588

#*A mobile auction service based on mobile agents: design and analysis
#@Jie Zhang,Henry C. B. Chan
#t2008
#cInternational Journal of Wireless and Mobile Computing
#index39589
#%273137
#%440835
#%245638
#%563610
#%245459
#%114045
#!With the advent of wireless networking and mobile computing technologies, there has been considerable interest in developing various mobile commerce services such as mobile auctions. This paper presents a mobile auction service based on mobile agents. Using a proxy server, users can generate a mobile agent by providing bidding information through a mobile terminal. The agent then moves to the required server to bid according to the user requirements. We have developed a prototype to demonstrate and evaluate the basic functions in a wireless network. Furthermore, we have formulated a mathematical model to analyse the commonly used 'proxy bidding method' for the mobile auction system. Based on the distribution of the maximum bidding price, the model can be used to find the probability of stopping at a certain price and, hence, the average winning price. Simulation and analytical results are presented to demonstrate the behaviour of the system.

#*ICA and ISA using Schweizer-Wolff measure of dependence
#@Sergey Kirshner,Barnabás Póczos
#t2008
#cProceedings of the 25th international conference on Machine learning
#index39590
#%17253

#%311192
#%297917
#%576033
#!We propose a new algorithm for independent component and independent subspace analysis problems. This algorithm uses a contrast based on the Schweizer-Wolff measure of pairwise dependence (Schweizer & Wolff, 1981), a non-parametric measure computed on pairwise ranks of the variables. Our algorithm frequently outperforms state of the art ICA methods in the normal setting, is significantly more robust to outliers in the mixed signals, and performs well even in the presence of noise. Our method can also be used to solve independent subspace analysis (ISA) problems by grouping signals recovered by ICA methods. We provide an extensive empirical evaluation using simulated, sound, and image data.

#*Hypertext 2007 conference review
#@Alvin Chin,James Goulding
#t2008
#cACM SIGWEB Newsletter
#index39591
#!From September 10 to 12, 2007, over 100 attendees convened in Manchester, England, travelling from all over Europe, as well as the far climes of North America, Asia and Australia. Unlike many visitors to Manchester they weren't here to witness the city's much heralded football team, but had gathered instead at the University of Manchester for the 18th International Conference on Hypertext and Hypermedia (Hypertext 2007). Here they would discuss recent innovations in hypertext, whose most famous form exists as the World Wide Web, and assess the challenges and opportunities in the latest groundbreaking research. Traditionally the success of the Hypertext conference series has been attributed to its immense diversity, and this year was no different, with papers being divided into 5 varied tracks: Hypertext and the Person; Hypertext and Society; Practical Hypertext; Hypertext Culture and Communication; and Hypertext Models and Theory. The conference was a vibrant affair that featured 16 full papers and 7 short papers (with a 29% overall acceptance rate), posters, demos, keynotes, panels, Birds-of-a-Feather (BOFs) and social events. However, what characterized this year's conference the most was an underlying sense of reintegration, a rejoining of disparate trends in hypertext to common goals. And as such a lot of unity and camaraderie too.

#*An efficient resource allocation scheme for multimedia applications in MANET
#@G. Varaprasad,R. S. D. Wahidabanu,P. Venkataram
#t2008
#cJournal of Network and Computer Applications
#index39592
#%315937
#!A Mobile Adhoc Network (MANET) is collection of mobile nodes and communicates using wireless network without having any fixed infrastructure. This paper proposes an algorithm used to allocate the resources for multimedia applications using mobile agent technology in MANET. In addition to that, it allocates the resources for hand-off applications and new applications.

#*An integrated evaluation method for module-based undergraduate information retrieval education
#@Lei Zhu,Jane Wong,Bradley Sturz,Yong Shi,Chun Tang
#t2008
#cJournal of Computing Sciences in Colleges
#index39593
#%97579
#!In the Information Age, career and life-long learning increasingly depend on information-retrieval (IR) skills to utilize digital and on-line information effectively. Consequently, IR has become a valuable integral element of many disciplines. To address primary problems in the current college-level IR education, we have proposed a module-based curricular model that facilitates the development of an array of IR course modules that enable flexible adoption and integration. In addition, these modules can be designed to meet the specific needs of various disciplines and programs. This paper presents a preliminary integrated evaluation method which combines subjective and objective evaluation in order to assess the effectiveness of the IR modules.

#*3D Organization of 2D Urban Imagery
#@Peter L. Cho
#t2007
#cProceedings of the 36th Applied Imagery Pattern Recognition Workshop
#index39594
#!Working with New York data as a representative and instructive example, we fuse aerial ladar imagery with satellite pictures and Geographic Information System (GIS) layers to form a comprehensive 3D urban map. Digital photographs are then mathematically inserted into this detailed world space. Reconstruction of the photos' view frusta yields their cameras' locations and pointing directions which may have been a priori unknown. It also enables knowledge to be projected from the urban map ontogeoregistered image planes. For instance, absolute geolocations can be assigned to individual pixels, and GIS annotations can be transferred from 3D to 2D. Moreover, such information propagates among all images whose view frusta intercept the same urban map location. We demonstrate how many data mining and visualization challenges (e.g. identify all photos containing some stationary ground target, observe some structure frommultiple perspectives, quantify match between two pictures, etc) become mathematically tractable once a 3D framework for analyzing 2D images is adopted. Finally, we close by briefly discussing future applications of this work to photo-based querying of urban knowledge databases.

#*Orion 2.0: native support for uncertain data
#@Sarvjeet Singh,Chris Mayfield,Sagar Mittal,Sunil Prabhakar,Susanne Hambrusch,Rahul Shah
#t2008
#cProceedings of the 2008 ACM SIGMOD international conference on Management of data
#index39595

#%338844
#!Orion is a state-of-the-art uncertain database management system with built-in support for probabilistic data as first class data types. In contrast to other uncertain databases, Orion supports both attribute and tuple uncertainty with arbitrary correlations. This enables the database engine to handle both discrete and continuous pdfs in a natural and accurate manner. The underlying model is closed under the basic relational operators and is consistent with Possible Worlds Semantics. We demonstrate how Orion simplifies the design and enhances the capabilities of two example applications: managing sensor data (continuous uncertainty) and inferring missing values (discrete uncertainty).

#*Comparison of performance of virtual coupling schemes for haptic collaboration using real and emulated internet connections
#@Ganesh Sankaranarayanan,Blake Hannaford
#t2007
#cProceedings of the 1st international conference on Robot communication and coordination
#index39596
#%109042
#%286200
#%48817
#%432583
#%109747
#%322549
#%334671
#%222047
#%312756
#!Networked haptic virtual environments (NHVEs) are those in which multiple users collaborate and experience force feedback at the same time. The robustness of such systems needs to be tested under various network conditions that closely mirror the Internet. Previously, we had proposed three virtual coupling schemes to maintain position coherency in a NHVE, which were tested using constant and then time-varying delays using the actual Internet through UDP packet reflectors. In this paper we present the results of comparing performance of the virtual coupling schemes for a time varying delay emulated using the popular network emulator NIST Net, with delay conditions that existed during our real Internet experiment to Italy. UDP was used for haptic data communication because of the high transmission rate requirements for NHVEs. Experiments were conducted for three fixed packet transmission rates of 1000, 500 and 100 Hz, and their performance compared using an independent-samples t-test to the data obtained using the Internet. Locally, the haptic update rate was maintained at 1000 Hz during the experiments. Our results show that the NIST Net was a suitable emulator for testing with lower packet transmission rates. At the transmission rate of 1000 Hz the performance of the virtual coupling schemes were significantly different from that of the actual Internet experiment.

#*Fixed channel assignment algorithm for multi-radio multi-channel MESH networks
#@Hamed M. K. Alazemi,A. Das,R. Vijaykumar,S. Roy

#t2008
#cWireless Communications Mobile Computing
#index39597
#!Recently, multi-radio mesh technology in wireless networks has been under extensive research. This is because of its potential of overcoming the inherent wireless multi-hop throughput, scalability and latency problems caused by the half-duplex nature of the IEEE 802.11. The concept of deploying multiple radios in wireless network access points (APs) has shown a promising way to enhance the channel selection and the route formation while the MESH topology allows more fine-grained interference management and topology control. Within this realm, given a set of end-to-end objectives, there are multiple issues that need to be identified when we consider the optimization problem for fixed multi-channel multi-hop wireless networks with multiple radios. This paper addresses the static channel assignment problem for multichannel multi-radio static wireless mesh networks. We first discuss its similarities and differences with the channel assignment problem in cellular networks (WMN). Next, we present four metrics based on which mesh channel assignments can be obtained. Three of these metrics attempt to maximize simultaneous transmissions in a mesh network, either directly or indirectly. The fourth metric quantifies the ‘diversity’ of a particular assignment and can be used as a secondary criterion to the other three metrics. Related optimization models have also been developed. Copyright © 2007 John Wiley & Sons, Ltd.

#*Certifying low-level programs with hardware interrupts and preemptive threads
#@Xinyu Feng,Zhong Shao,Yuan Dong,Yu Guo
#t2008
#cACM SIGPLAN Notices
#index39598
#%29251
#%475739
#%314792
#%332514
#%334562
#%414399
#%307309
#%277221
#%430607
#%374047
#%424338
#!Hardware interrupts are widely used in the world's critical software systems to support preemptive threads, device drivers, operating system kernels, and hypervisors. Handling interrupts properly is an essential component of low-level system programming. Unfortunately, interrupts are also extremely hard to reason about: they dramatically alter the program control flow and complicate the invariants in low-level concurrent code (e.g., implementation of synchronization primitives). Existing formal verification techniques---including Hoare logic, typed assembly language, concurrent separation logic, and the assume-guarantee method---have consistently ignored the issues of interrupts; this severely

limits the applicability and power of today's program verification systems. In this paper we present a novel Hoare-logic-like framework for certifying low-level system programs involving both hardware interrupts and preemptive threads. We show that enabling and disabling interrupts can be formalized precisely using simple ownership-transfer semantics, and the same technique also extends to the concurrent setting. By carefully reasoning about the interaction among interrupt handlers, context switching, and synchronization libraries, we are able to---for the first time---successfully certify a preemptive thread implementation and a large number of common synchronization primitives. Our work provides a foundation for reasoning about interrupt-based kernel programs and makes an important advance toward building fully certified operating system kernels and hypervisors.

#*Fractal-based hierarchical mip-pyramid texture compression
#@J. Stachera,P. Rokita
#t2006
#cMachine Graphics Vision International Journal
#index39599
#%547878
#%178773
#%151019
#%623613
#%335151
#%106191
#%430923
#!As the level of realism of computer-generated images increases with the number and resolution of textures, we faced the problem of limited hardware resources. Additionally, filtering methods require multiple access and extra memory space for texture representation, thus severely reducing the memory space and bandwidth, the most common example being mip-mapping technique. We propose a hierarchical texture compression algorithm for real-time decompression on the GPU. Our algorithm is characterised by low computational complexity, random access and a hierarchical structure, which allows access to the first three levels of an encoded mip-map pyramid. The hierarchical texture compression algorithm HiTC is based on a block-wise approach, where each block is subject to local fractal transform and further effectively coded by one level of the Laplacian Pyramid.

#*A self-reconfigurable communication network for modular robots
#@Ricardo Franco Mendoza Garcia,Kasper Stoy,David Johan Christensen,Andreas Lyder
#t2007
#cProceedings of the 1st international conference on Robot communication and coordination
#index39600
#!We present a novel hybrid communication system for modular robots, based on inter-module buses that can connect on-demand to form arbitrary network topologies. In addition to describing the implementation of this hybrid

communication system, we analyse transfer rates and reliability, validating the results using a Spice simulation and a proof-of-concept experiment performed on a hardware prototype. Thus, we find the system is fast, since it has a potential to provide a maximum transfer rate of 9.9Mbps divided by the maximum bus length measured in meters, with buses as large as 256 modules. The system is also found to be small in size, power saving and reliable. These features, in combination with its flexibility, make hybrid communication suitable for modular robots.

#*A new algorithm for minimizing convex functions over convex sets
#@P. M. Vaidya
#t1989
#cProceedings of the 30th Annual Symposium on Foundations of Computer Science
#index39601
#!An algorithm for minimizing a convex function over a convex set is given. The notion of a volumetric center of a polytope and a related ellipsoid of maximum volume inscribable in the polytope is central to the algorithm. The algorithm has a much better rate of global convergence than the ellipsoid algorithm. A by-product of the algorithm is an algorithm for solving linear programming problems that performs a total of O(mn/sup 2/L+M(n)nL) arithmetic operations in the worst case, where m is the number of constraints, n the number of variables, and L a certain parameter. This gives an improvement in the time complexity of linear programming for m>n/sup 2/.

#*Weighted Datalog and Levels of Trust
#@Stefamno Bistarelli,Fabio Martinelli,Francesco Santini
#t2008
#cProceedings of the 2008 Third International Conference on Availability, Reliability and Security
#index39602
#!We extend the Datalog language (we call it Datalog^W)in order to deal with weights on ground facts and to consequently compute a feedback result for the goal satisfaction. The weights are chosen from a proper c-semiring. As a second step, in order to show the usefulness of the language, we use DatalogW as the basis to give a uniform semantics to declarative RTW (Trust Management) language family, in order to represent trust levels based on c-semirings. In this way it is possible to manage a score corresponding to a preference or cost associated to the revealed credentials, instead of a plain "yes or no" authorization result. Clearly, such a solution is more informative and allows us to treat uncertainty of facts and rules application, or different preferencesfor the entity roles. Trust can be then derived by choosing the best chain. The approach is rather generic and could be applied to other trust management languages.

#*Towards event source unobservability with minimum network traffic in sensor networks
#@Yi Yang,Min Shao,Sencun Zhu,Bhuvan Urgaonkar,Guohong Cao
#t2008
#cProceedings of the first ACM conference on Wireless network security
#index39603

#%315213
#%319351
#%435058
#%98926
#%91676
#%85888
#%420885
#!Sensors deployed to monitor the surrounding environment report such information as event type, location, and time when a real event of interest is detected. An adversary may identify the real event source through eavesdropping and traffic analysis. Previous work has studied the source location privacy problem under a local adversary model. In this work, we aim to provide a stronger notion: event source unobservability, which promises that a global adversary cannot know whether a real event has ever occurred even if he is capable of collecting and analyzing all the messages in the network at all the time. Clearly, event source unobservability is a desirable and critical security property for event monitoring applications, but unfortunately it is also very difficult and expensive to achieve for resource-constrained sensor network. Our main idea is to introduce carefully chosen dummy traffic to hide the real event sources in combination with mechanisms to drop dummy messages to prevent explosion of network traffic. To achieve the latter, we select some sensors as proxies that proactively filter dummy messages on their way to the base station. Since the problem of optimal proxy placement is NP-hard, we employ local search heuristics. We propose two schemes (i) Proxy-based Filtering Scheme (PFS) and (ii) Tree-based Filtering Scheme (TFS) to accurately locate proxies. Simulation results show that our schemes not only quickly find nearly optimal proxy placement, but also significantly reduce message overhead and improve message delivery ratio. A prototype of our scheme was implemented for TinyOS-based Mica2 motes.

#*Publisher Information
#@
#t2008
#cProceedings of the 2008 Second Asia International Conference on Modelling & Simulation (AMS)
#index39604

#*An empirical evaluation of supervised learning in high dimensions
#@Rich Caruana,Nikos Karampatziakis,Ainur Yessenalina
#t2008
#cProceedings of the 25th international conference on Machine learning
#index39605
#%20371
#%26112
#%253404
#%573835
#%425193
#!In this paper we perform an empirical evaluation of supervised learning on

high-dimensional data. We evaluate performance on three metrics: accuracy, AUC, and squared loss and study the effect of increasing dimensionality on the performance of the learning algorithms. Our findings are consistent with previous studies for problems of relatively low dimension, but suggest that as dimensionality increases the relative performance of the learning algorithms changes. To our surprise, the method that performs consistently well across all dimensions is random forests, followed by neural nets, boosted trees, and SVMs.

#*Approximation of reachable sets by direct solution methods for optimal control problems
#@R. Baier,C. Büskens,I. A. Chahma,M. Gerdts
#t2007
#cOptimization Methods Software
#index39606
#%243168
#%461229
#%540862
#%512946
#%182869
#%82745
#%455910
#!A numerical method for the approximation of reachable sets of linear control systems is discussed. The method is based on the formulation of suitable optimal control problems with varying objective function, whose discretization by Runge-Kutta methods leads to finite-dimensional convex optimization problems. It turns out that the order of approximation for the reachable set depends on the particular choice of the Runge-Kutta method in combination with the selection strategy used for control approximation. For an inappropriate combination, the expected order of convergence cannot be achieved in general. The method is illustrated by two test examples using different Runge-Kutta methods and selection strategies, in which the run times are analysed, the order of convergence is estimated numerically and compared with theoretical results in similar areas.

#*Model study of inspiratory fall of blood pressure in airway obstruction
#@Younhee Choi,Seok-Bum Ko
#t2006
#cProceedings of the 5th WSEAS International Conference on Circuits, Systems, Electronics, Control & Signal Processing
#index39607
#!Inspiratory fall of systolic blood pressure (IFSBP) is used as an index to assess the respiratory influences on non-linear dynamics of heart rate variability. In an in-vivo situation it is particularly difficult to isolate individual effects of heart rate, vascular tone, pleural pressure variation, and ventricular interdependence. A computer model of the cardiopulmonary system was adapted to this problem, relating mechanisms such as baroreflex regulation of heart rate in response to respiratory oscillations. The model provided time-course simulations of hemodynamics by numerically integrating 28 nonlinear,

time-varying differential equations. Two approaches for baroreflex regulation were tested, including a simple 1st-order relationship between R-R interval (RRI) and SBP and the autoregressive moving average (ARMA) model. Experimental data were obtained retrospectively from 22 patients with chronic airway obstruction before and during breathing through an external resistance. Magnitude and phase relations between arterial pressure and pleural pressure were evaluated. The computer model provided good fits to arterial pressure waveforms: correlation coefficients (r) ranging from 0.71 to 0.96 (mean±SD: 0.87±0.06) with a simple 1st-order RRI-SBP model. It was observed that the ARMA model did not further improve the goodness of fit. However, no dominant parameter was found for phase relations.

#*Complementary utilities for UML an UP in information systems
#@J. F. Zelasco,J. Donayo,G. Merayo
#t2007
#cProceedings of the 2007 Euro American conference on Telematics and information systems
#index39608
#%79568
#%538118
#%87096
#%167001
#%447184
#%219156
#!This paper does a proposal, looking into certain delicate aspects of Unified Modelling Language (UML) and Unified Process (UP) usage, when applied to information systems. The usage of some tools and heuristics based on the gathered experience origined on the MERISE method evolution, gives place to comparative benefits while conceiving this type of informatic applications. The heuristic and tools used consists of starting from a higher level of abstraction provided with inverse engineering and re-engineering instrumentation methods. The knowledge of a minimal data schema enables a global vision and ensures, by means of certain verifications, reducing the number of modifications done to the initially built subsystems, assuring thus a better data integrity. Finally, the conceptual and organizational levels of treatment allows to evaluate organization solutions by comparison, yielding naturally into a usage manual and an analysis of the different actions taken by the different modules built with the given object's assemblies. This allows both the classical solution as well as the usage manual based one. We included some simplified examples to show the advantages of the proposed method.

#*A self-organising algorithm for sensor placement in wireless mobile microsensor networks
#@TheinLai Wong,Tatsuhiro Tsuchiya,Tohru Kikuno
#t2008
#cInternational Journal of Wireless and Mobile Computing
#index39609
#%112343

#%284652
#!This paper proposes a self-organising algorithm for enhancing the coverage of wireless mobile microsensor networks after an initial random placement of sensors. When the sensors move simultaneously in the neighbourhood, unnecessary excessive movement will be caused and hence sensors'energy will be consumed. A randomised back-off delay time is introduced to resolve this problem. A sensor node will relocate itself when the time calculated through randomised back-off delay computation is reached. The new location of the sensor is determined by a virtual force-directed algorithm where virtual attractive or repulsive forces exerted by other sensors or obstacles are used to guide the sensor to the desired location. The proposed self-organising algorithm for sensor placement is proved to be effective through simulation.

#*In situ migration of handcrafted ontologies to reason-able forms
#@Mikel Egaña Aranguren,Chris Wroe,Carole Goble,Robert Stevens
#t2008
#cData Knowledge Engineering
#index39610
#%238450
#%108541
#!A methodology for in situ migration of a handcrafted Directed Acyclic Graph (DAG), to a formal and expressive OWL version is presented. Well-known untangling methodologies recommend wholesale re-coding. Unable to do this, we have tackled portions of the DAG, lexically dissecting term names to property-based descriptions in OWL. The different levels of expressivity are presented in a model called the ''feature escalator'', where the user can choose the level needed for the application and the expressivity that delivers requirement. The results of applying the methodology to some areas of the gene ontology (GO) demonstrate the validity of the methodology.

#*Software development tools for multi-core/parallel programming
#@Ramesh Peri
#t2008
#cProceedings of the 6th workshop on Parallel and distributed systems: testing, analysis, and debugging
#index39611
#!The new era of multi-core processors is bringing unprecedented computing power to the mainstream desktop applications. In order to fully exploit this compute power one has to delve into the world of parallel programming which until today has been the exclusive domain of High Performance Computing Community. This talk will focus on the current state of the art in parallel programming tools that is applicable for developers of mainstream parallel applications with emphasis on software development tools like compilers, debuggers, performance analysis tools and correctness checking tools for parallel programs. I will share some of the challenges that developers face today in developing applications for multi-core systems containing a small number of homogeneous cores (2 to 8) and discuss the situation we will face with the advent of systems containing many more heterogeneous cores in next few years.

#*Reformulating Table Constraints using Functional Dependencies--An Application to Explanation Generation
#@Hadrien Cambazard,Barry O'Sullivan
#t2008
#cConstraints
#index39612
#%627279
#%624972
#%360509
#%430387
#%153962
#!We present a novel approach to automatically reformulating constraints defined as tables of allowed assignments to variables. Constraints of this form are common in a variety of settings. Specifically, we propose an approach in which a high arity table constraint is reformulated as a conjunction of lower arity constraints. The reformulation is logically equivalent to the original constraint. We demonstrate that by using functional dependencies from the field of database design such reformulations can be found. We apply the approach to the problem of generating explanations as minimal conflicts. We show that reformulations can be found that yield compact explanations of inconsistency by reducing both the number of variables required to explain inconsistency and the arity of the largest constraint involved in the explanation. We demonstrate our approach on real-world datasets with positive results.

#*Moving from a Web Presence to e-Commerce: The Importance of a Business-Web Strategy for Small-Business Owners
#@Julie Fisher,Annemieke Craig,John Bentley
#t2007
#cElectronic Markets
#index39613
#%319548
#%467165
#%310648
#%333051
#!More than half of small businesses in Australia (57%) use a website to promote their business. Having an effective website is an important step for small business owners moving towards e-commerce. The research suggests that once a business has a clear online strategy through a website they are more likely to move to e-commerce. While many small business owners have a business strategy, it is often the case that this strategy does not include their Web presence. This paper describes the results of interviews with small business owners and assessment of their websites. We identify elements that are important for small business owners developing a business-Web strategy. The research indicates that many owners see their websites as little more than an advertising medium and few are ready for the move to e-commerce. Identifying the level of maturity of a small business owner's business-Web strategy however can help us understand how prepared a small business owner is to move to e-commerce.

#*Short Note: Analytical and geometrical tools for 3D volume of fluid methods in general grids
#@J. López,J. Hernández
#t2008
#cJournal of Computational Physics
#index39614
#%74748
#%318145
#%111131
#!It is well known that volume of fluid (VOF) methods in three-dimensions, especially those based on unsplit advection schemes, involve highly complex geometrical operations. The objective of this work is to propose, for general grids and three-dimensional Cartesian geometry, simple and efficient geometrical tools for volume truncation operations that typically arise in VOF methods and an analytical method for local volume enforcement. The results obtained for different tests and grid types show that the proposed analytical method may be as much as three times faster than Brent's iterative method. Advection tests were carried out using hexahedral grids obtained from deformation of a cubic grid to assess the accuracy of the proposed tools in combination with a recently proposed unsplit PLIC-VOF method.

#*Manufacturing aware design and design aware manufacturing
#@
#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39615

#*BlogWall: a new paradigm of artistic public mobile communication
#@Adrian David Cheok,Owen Noel Newton Fernando,Imiyage Janaka Prasad Wijesena,Abd-ur-Rehman Mustafa,Anne-Katrin Barthoff,Naoko Tosa
#t2007
#cProceedings of the 9th international conference on Human computer interaction with mobile devices and services
#index39616
#!Short message service (SMS) is extremely popular today. Currently it is being mainly used for peer-to-peer communication. BlogWall extends the SMS to a new level of self-expression and public communication by combining art and poetry. The application can simply display SMS, gather data using polls, and create poetry or even Japanese "Haiku" all based on the SMS.

#*Hypertextbooks and a Hypertextbook authoring environment
#@Rockford J. Ross
#t2008
#cProceedings of the 13th annual conference on Innovation and technology in computer science education
#index39617
#%10237

#%315067
#!An ITiCSE 2006 working group explored the prospect of deploying educational visualizations (e.g., algorithm visualizations) in hypertextbooks [10]. In this paper we present our continuing work on a hypertextbook project that demonstrates the viability of many of the issues raised in that workshop. The project has two thrusts: (1) the authoring of hypertextbooks for specific academic subjects, and (2) the creation of an authoring environment for prospective hypertextbook authors. The status of both is discussed in detail. It is anticipated that the success of the project as well as access to the authoring environment will inspire the creation of more active-learning hypertextbooks covering many academic subjects.

#*Geolocation of man-made reservoirs across terrains of varying complexity using GIS
#@David M. Mixon,David A. Kinner,Robert F. Stallard,James P. M. Syvitski
#t2008
#cComputers Geosciences
#index39618
#!The Reservoir Sedimentation Survey Information System (RESIS) is one of the world's most comprehensive databases of reservoir sedimentation rates, comprising nearly 6000 surveys for 1819 reservoirs across the continental United States. Sediment surveys in the database date from 1904 to 1999, though more than 95% of surveys were entered prior to 1980, making RESIS largely a historical database. The use of this database for large-scale studies has been limited by the lack of precise coordinates for the reservoirs. Many of the reservoirs are relatively small structures and do not appear on current USGS topographic maps. Others have been renamed or have only approximate (i.e. township and range) coordinates. This paper presents a method scripted in ESRI's ARC Macro Language (AML) to locate the reservoirs on digital elevation models using information available in RESIS. The script also delineates the contributing watersheds and compiles several hydrologically important parameters for each reservoir. Evaluation of the method indicates that, for watersheds larger than 5km^2, the correct outlet is identified over 80% of the time. The importance of identifying the watershed outlet correctly depends on the application. Our intent is to collect spatial data for watersheds across the continental United States and describe the land use, soils, and topography for each reservoir's watershed. Because of local landscape similarity in these properties, we show that choosing the incorrect watershed does not necessarily mean that the watershed characteristics will be misrepresented. We present a measure termed terrain complexity and examine its relationship to geolocation success rate and its influence on the similarity of nearby watersheds.

#*On document splitting in passage detection
#@Nazli Goharian,Saket S.R. Mengle
#t2008
#cProceedings of the 31st annual international ACM SIGIR conference on Research and development in information retrieval
#index39619

#%81614
#!Passages can be hidden within a text to circumvent their disallowed transfer. Such release of compartmentalized information is of concern to all corporate and governmental organization. We explore the methodology to detect such hidden passages within a document. A document is divided into passages using various document splitting techniques, and a text classifier is used to categorize such passages. We present a novel document splitting technique called dynamic windowing, which significantly improves precision, recall and F1 measure.

#*Proceedings of the 17th Annual Symposium on Foundations of Computer Science
#@
#t1976
#cSFCS
#index39620

#*Message from the Guest Editors
#@Staff
#t2007
#cJournal of Computer Security
#index39621

#*Motion intention recognition in robot assisted applications
#@Daniel Aarno,Danica Kragic
#t2008
#cRobotics and Autonomous Systems
#index39622
#!Acquiring, representing and modelling human skills is one of the key research areas in teleoperation, programming-by-demonstration and human-machine collaborative settings. The problems are challenging mainly because of the lack of a general mathematical model to describe human skills. One of the common approaches is to divide the task that the operator is executing into several subtasks or low-level subsystems in order to provide manageable modelling. In this paper we consider the use of a Layered Hidden Markov Model (LHMM) to model human skills. We evaluate a gesteme classifier that classifies motions into basic action-primitives, or gestemes. The gesteme classifiers are then used in a LHMM to model a teleoperated task. The proposed methodology uses three different HMM models at the gesteme level: one-dimensional HMM, multi-dimensional HMM and multi-dimensional HMM with Fourier transform. The online and off-line classification performance of these three models is evaluated with respect to the number of gestemes, the influence of the number of training samples, the effect of noise and the effect of the number of observation symbols. We also apply the LHMM to data recorded during the execution of a trajectory tracking task in 2D and 3D with a mobile manipulator in order to provide qualitative as well as quantitative results for the proposed approach. The results indicate that the LHMM is suitable for modelling teleoperative trajectory-tracking tasks and that the difference in classification performance between one and multidimensional HMMs for gesteme classification is small. It can also be seen that the LHMM is robust with respect to misclassifications in the underlying

gesteme classifiers.

#*Profile-based configuration of residential networks
#@Juan Jesus Sanchez Sanchez,Jose Alberto Vigo Segura,Natividad Martinez Madrid,Ralf Seepold
#t2007
#cInternational Journal of Internet Protocol Technology
#index39623
#!Until now, smart cards and automation networks have been integrated only for authentication and security purposes. This paper describes a proposal based on the idea of a higher grade of integration between the network and the smart card in such a way that a smart card can be used to configure an entire network. Applications of this approach would support future developments of real intelligent, ambient environments.

#*Clock Skew Evaluation Considering Manufacturing Variability in Mesh-Style Clock Distribution
#@Shinya Abe,Masanori Hashimoto,Takao Onoye
#t2008
#cProceedings of the 9th international symposium on Quality Electronic Design
#index39624
#!Influence of manufacturing variability on circuit performance has been increasing because of finer manufacturing process and lowered supply voltage. In this paper, we focus on mesh-style clock distribution which is believed to be effective for reducing clock skew, and we evaluate clock skew considering manufacturing and design variabilities. Considering MOS transistor variation - random and spatially-correlated variation -and non-uniform flip-flop (FF) placement, we demonstrate that spatially-correlated variation and severe non-uniform FF distribution can be major sources of clock skew. We also examine the dependency of clock skew on design parameters, and reveal thatfiner clock mesh does not necessarily reduce clock skew.

#*Competitive non-migratory scheduling for flow time and energy
#@Tak-Wah Lam,Lap-Kei Lee,Isaac K. K. To,Prudence W. H. Wong
#t2008
#cProceedings of the twentieth annual symposium on Parallelism in algorithms and architectures
#index39625
#%251785
#%440536
#%104765
#%436955
#%414741
#%327599
#%83385
#%448477
#%83609
#%607541

#%415103
#!Energy usage has been an important concern in recent research on online scheduling. In this paper we extend the study of the tradeoff between flow time and energy from the single-processor setting [8, 6] to the multi-processor setting. Our main result is an analysis of a simple non-migratory online algorithm called CRR (classified round robin) on m 2 processors, showing that its flow time plus energy is within O(1) times of the optimal non-migratory offline algorithm, when the maximum allowable speed is slightly relaxed. This result still holds even if the comparison is made against the optimal migratory offline algorithm (the competitive ratio increases by a factor of 2.5). As a special case, our work also contributes to the traditional online flow-time scheduling. Specifically, for minimizing flow time only, CRR can yield a competitive ratio one or even arbitrarily smaller than one, when using sufficiently faster processors. Prior to our work, similar result is only known for online algorithms that needs migration [21, 23], while the best non-migratory result can achieve an O(1) competitive ratio [14]. The above result stems from an interesting observation that there always exists some optimal migratory schedule S that can be converted (in an offline sense) to a non-migratory schedule S' with a moderate increase in flow time plus energy. More importantly, this non-migratory schedule always dispatches jobs in the same way as CRR.

#*Utterance verification using fuzzy methods
#@Dat Tran,Dharmendra Sharma
#t2003
#cProceedings of the 2nd WSEAS International Conference on Electronics, Control and Signal Processing
#index39626
#%514067
#%592049
#%414304
#!In utterance verification, a claim identity is a linguistic unit such as a word or a phrase. An utterance of this claimed identity is verified by computing a similarity score to compare the content of spoken utterance with the word or phrase midel whose identity is claimed. Most of the current normalisation methods compute the score as the ratio of the claimed utterance's and the impostors' likelihood functions. Based on analysing false acceptance and false rejection errors occured by the current methods, we propose normalisation methods based on Fuzzy C-Means, Fuzzy Entropy and Noise Clustering methods to find better scores which can reduce those errors. Experiments performed on the TI46 speech corpora show better results for the proposed methods.

#*Enhanced Chord-Based Routing Protocol Using Neighbors' Neighbors Links
#@Dai Bin,Wang Furong,Jianhua Ma,Liu Jian
#t2008
#cProceedings of the 22nd International Conference on Advanced Information Networking and Applications - Workshops
#index39627

#!A fundamental problem that confronts peer-to-peer applications is the efficient location of the node that stores desired data items. Chord protocol adopts finger tables to achieve (log O N) mean lookup path length for an N node system. To many time-sensitive applications, the requirement of optimal lookup path length is more critical. Our focus in this paper is to study how to shorten the lookup path length through optimizing routing protocol based on Chord. The contribution of this paper is a more efficient Chord-based routing protocol using neighbors' neighbors links for lookup in a dynamic peer-to-peer system with frequent node arrivals and departures. Results from theoretical analysis and simulations show that both logical path length and physical end-to-end path latency of our protocol are shorter than Chord with the assist of neighbors' neighbors links per node.

#*Ethics training and decision-making: do computer science programs need help?
#@Carol Spradling,Leen-Kiat Soh,Charles Ansorge
#t2008
#cProceedings of the 39th SIGCSE technical symposium on Computer science education
#index39628
#%601551
#!A national web-based survey using SurveyMonkey.com was administered to 700 undergraduate computer science programs in the United States as part of a stratified random sample of 797 undergraduate computer science programs. The 251 program responses (36% response rate) regarding social and professional issues (computer ethics) are presented. This article describes the demographics of the respondents, presents results concerning whether programs teach social and professional issues, who teaches, the role of training in these programs, the decision making process as it relates to computer ethics and why some programs are not teaching computer ethics. Additionally, we provide suggestions for computer science programs regarding ethics training and decision-making and we share reasons why schools are not teaching computer ethics.

#*The effect of scaffolding students' context-generating cognitive activity in technology-enhanced case-based learning
#@Stavros N. Demetriadis,Pantelis M. Papadopoulos,Ioannis G. Stamelos,Frank Fischer
#t2008
#cComputers Education
#index39629
#%29801
#%311318
#%295187
#%88314
#!This study investigates the hypothesis that students' learning and problem-solving performance in ill-structured domains can be improved, if elaborative question prompts are used to activate students' context-generating cognitive processes, during case study. Two groups of students used a web-based learning environment to criss-cross and study case-based material in the software project

management domain. The experimental group was additionally prompted to consistently answer a set of questions based on a model of context-generating processes, meant to engage students in deeper processing of information presented in cases. Students were also classified as having either ''complex'' or ''simple'' EB profile (based on their epistemological beliefs record), thereby establishing a 2x2 factorial design. Results indicated that scaffolding treatment had a significant main effect on students' performance, with the experimental group performing better in both domain knowledge acquisition and knowledge transfer post-test items. There is also tentative indication that EB profile and scaffolding treatment interact, with complex-EB learners benefiting most from the scaffolded condition. Overall, the study provides evidence that it is possible to improve individual learning in a technology environment for case-based learning, by implementing appropriate questioning strategies that trigger students to activate their context-generating cognitive processes, while studying the contextually rich material of cases.

#*Orienting Oracle
#@
#t2007
#cQueue
#index39630
#!As vice president of server technologies for Oracle, Amlan Debnath is one of the few people who can synthesize Oracle's software infrastructure plans. In an interview with ACM Queucast host Mike Vizard, Debnath provides some insights to how Oracle's strategy is evolving to simultaneously embrace service-oriented architectures alongside the demands of new and emerging events-driven architectures. The ACM Portal is published by the Association for Computing Machinery. Copyright © 2010 ACM, Inc. Terms of Usage Privacy Policy Code of Ethics Contact Us Useful downloads: Adobe Acrobat QuickTime Windows Media Player Real Player

#*COMPARISON OF TWO TYPES OF EVENT BAYESIAN NETWORKS: A CASE STUDY
#@S. F. Galán,G. Arroyo-Figueroa,F. J. Díez,L. E. Sucar
#t2007
#cApplied Artificial Intelligence
#index39631
#%533008
#%529592
#%455254
#!Temporal Nodes Bayesian Networks (TNBNs) and Networks of Probabilistic Events in Discrete Time (NPEDTs) are two different types of Event Bayesian Networks (EBNs). Both are based on the representation of uncertain events, alternatively to Dynamic Bayesian Networks, which deal with real-world dynamic properties. In a previous work, Arroyo-Figueroa and Sucar applied TNBNs to the diagnosis and prediction of the temporal faults that may occur in the steam generator of a fossil power plant. We present an NPEDT for the same domain, along with a comparative evaluation of the two networks. We examine different methods suggested in the literature for the evaluation of Bayesian networks, analyze

their limitations when applied to this temporal domain, and suggest a new evaluation method appropriate for EBNs. In general, the results show that, in this domain, NPEDTs perform better than TNBNs, possibly due to finer time granularity used in the NPEDT.

#*A lower bound for the crossing number of Cm × Cn
#@Gelasio Salazar
#t2000
#cJournal of Graph Theory
#index39632
#!We prove that the crossing number of Cm × Cn is at least (m - 2)n-3, for all m, n such that n ≥ m. This is the best general lower bound known for the crossing number of Cm × Cn, whose exact value has been long conjectured to be (m - 2)n, for 3 ≤ m ≤ n. © 2000 John Wiley & Sons, Inc. J Graph Theory 35: 222–226, 2000

#*Study on Backoff Algorithm for IEEE 802.15.4 LR-WPAN
#@Bih-Hwang Lee,Huai-Kuei Wu
#t2008
#cProceedings of the 22nd International Conference on Advanced Information Networking and Applications
#index39633
#!IEEE 802.15.4 standard is to implement sensor networks with low power consumption and low cost. The transmission period of IEEE 802.15.4 consists of contention access period (CAP) and contention free period (CFP). CAP applies carrier sense multiple access with collision avoidance (CSMA/CA) for its contention mechanism. In such a network, channel utilization is significantly affected by backoff time and packet collision. This paper proposes a delayed backoff algorithm (DBA) to improve the effective goodput and power consumption, which are obtained by simulation experiments and compared with different schemes. The proposed algorithm performs better than the other schemes according to the obtained results.

#*Try Ruby!: tutorial presentation
#@James McGuffee,Jay Blanco,Franz Wambach
#t2008
#cJournal of Computing Sciences in Colleges
#index39634
#!Ruby is a popular object-oriented scripting programming language originally released in 1995 by Yukihiro "Matz" Matsumoto. This tutorial is a hands-on introduction to the Ruby programming language. The tutorial will include a brief discussion of when and where to use the Ruby programming language in the CS curriculum. Participants in this tutorial should already know how to program in an imperative programming language.

#*Evaluation of ANN Classifiers During Supervised Training with ROC Analysis and Cross Validation

#@Miguel Antonio Sovierzoski,Fernanda Isabel Marques Argoud,Fernando Mendes de Azevedo
#t2008
#cProceedings of the 2008 International Conference on BioMedical Engineering and Informatics - Volume 01
#index39635
#!The evaluation of an Artificial Neural Network is not a part of the training phase and it is not a trivial process. It represents an exhaustive test process with a computational effort greater than the ANN training. Monitoring the error during the training phase can provide an indicator of the convergence of the algorithm. This study presents some analysis tools integrated to the supervised training of the ANN MLP Classifier. The objective is to provide a quantitative evaluation of the learning and generalization of the knowledge during the ANN supervised training. The Cross Validation and the ROC Analysis procedures were used together with the standard back-propagation ANN MLP training algorithm. The procedure is described and the results of the ANN classifier for epilepsy events in EEG data are presented.

#*A Preliminary Investigation of Skype Traffic Classification Using a Minimalist Feature Set
#@Duffy Angevine,Nur Zincir-Heywood
#t2008
#cProceedings of the 2008 Third International Conference on Availability, Reliability and Security
#index39636
#!In this work, AdaBoost and C4.5, are employed for classifying Skype direct (UDP and TCP) communications from traffic log files. Pre-processing is applied to the traffic data to express it as flows, which is later converted into a descriptive feature set. The aforementioned algorithms are then evaluated on this feature set. Results show that a 98% detection rate with6% false positive rate for UDP based Skype and a 94% detection rate with 4% false positive rate for TCP based Skype is possible to achieve.

#*Characterization of negative-type photoresists containing polyhedral oligomeric silsesquioxane methacrylate
#@Ho-May Lin,Kuo-Hung Hseih,Feng-Chih Chang
#t2008
#cMicroelectronic Engineering
#index39637
#!A series of negative-type photoresists made by blending with various contents of polyhedral oligomeric silsesquioxane (POSS) methacrylate were prepared and characterized. These POSS macromers tend to crystallize or aggregate to form their own domains within the photoresist matrix. Sensitivity of the POSS modified photoresist is significantly improved with the increase of the POSS content. Results from photo-DSC analyses indicate that both induction time and peak maximum of heat flux are reduced by blending with POSS macromer. Addition of the proper amount (

#*Priority coding for video-telephony applications based on visual attention
#@Nicolas Tsapatsoulis,Konstantinos Rapantzikos,Yannis Avrithis
#t2006
#cProceedings of the 2nd international conference on Mobile multimedia communications
#index39638
#%333773
#%420326
#%471236
#%289657
#!In this paper we investigate the utilization of visual saliency maps for ROI-based video coding of video-telephony applications. Visually salient areas indicated in the saliency map are considered as ROIs. These areas are automatically detected using an algorithm for visual attention (VA) which builds on the bottom-up approach proposed by Itti et al. A top-down channel emulating the visual search for human faces performed by humans has been added, while orientation, intensity and color conspicuity maps are computed within a unified multi-resolution framework based on wavelet subband analysis. Priority encoding, for experimentation purposes, is utilized in a simple manner: Frame areas outside the priority regions are blurred using a smoothing filter and then passed to the video encoder. This leads to better compression of both Intra-coded (I) frames (more DCT coefficients are zeroed in the DCT-quantization step) and Inter coded (P, B) frames (lower prediction error). In more sophisticated approaches, priority encoding could be incorporated by varying the quality factor of the DCT quantization table. Extended experiments concerning both static images as well as low-quality video show the compression efficiency of the proposed method. The comparisons are made against standard JPEG and MPEG-1 encoding respectively.

#*Techniques for location selection on a mobile device
#@Mika Luimula,Kirsti Sääskilahti,Timo Partala,Ossi Saukko
#t2007
#cProceedings of the 2007 Euro American conference on Telematics and information systems
#index39639
#%22082
#%275159
#%103074
#!In this paper we present techniques for selecting one's current location in mobile location-based systems. We present Locawe (Location-aware System Platform) and four alternative location selection techniques, which are physical selection using RFID technology, automatic selection based on GPS coordinates, selection from a mobile map with a stylus, and a textual selection technique involving a virtual keyboard and a selection list. These techniques have been tested in real mobile applications.

#*Signature-Based Composition of Web Services
#@Aniss Alkamari,Hafedh Mili,Abdel Obaid

#t2008
#cProceedings of the 2008 International MCETECH Conference on e-Technologies
#index39640
#!The web services family of standards promotes the interoperability of heterogeneous distributed systems by separating the definition of a service from, 1) its implementation language, 2) its internal data representation, and 3) the communication protocol used to access it. The UDDI standard addresses aspects related to the publication and querying of enterprise business services, but the kind of representation that is supported, and the corresponding queries have limited functionality. We are interested in the problem of querying a UDDI registry with a functional specification of a service, and getting in return a single service, or a composition of services that address the functional need. Existing approaches to web service composition rely on external semantic knowledge to identify candidate component services. Our approach relies on service signatures (message types). We describe the principles underlying our approach, a family of algorithms for web service composition, our implementation of these algorithms, and the preliminary experimental results.

#*Multiscaling in the distribution of the exchange rates
#@Sergio Bianchi,Augusto Pianese
#t2006
#cProceedings of the 10th WSEAS International Conference on APPLIED MATHEMATICS
#index39641
#!The paper analyzes the scaling laws of the FX markets by applying a recently introduced distribution-based class of estimators of the self-similarity parameter. Instead of evaluating specific moments, the scaling of the whole distribution is studied by pairwise comparisons of time horizons. The analysis shows that.

#*Hardware/Software Codesign Pedagogy for the Industry
#@Min He,Ming-Che Tsai,Xiaolong Wu,Fei Wang,Ramzi Nasr
#t2008
#cProceedings of the Fifth International Conference on Information Technology: New Generations
#index39642
#!With the essentiality of hardware/software codesign in present and future designs, it has become more and more important to educate engineers in this area. In this paper, industry trends and expectations are investigated in the area of hardware/software codesign and system-level design, as well as its current status in education, to derive a better pedagogy for hardware/software codesign.

#*Towards a Generic Model for Forecasting Rain Duration Using GITIC Model
#@Malik Shahzad Kaleem Awan,Mian Muhammad Awais
#t2008
#cProceedings of the 15th Annual IEEE International Conference and Workshop on the Engineering of Computer Based Systems
#index39643

#!The existing weather forecasting models have limitations incorporating complexity and dynamism associated with weather forecasts. In order to overcome such limitations, this paper presents the application of nature-inspired GITIC Model for weather forecasts. The GITIC model, inspired from the Human Gastro-intestinal tract (GIT) defense system, has been employed to formulate a generic, dynamic, and comprehensive model for forecasting rain duration by following an evolutionary computational approach.

#*An efficient FMT algorithm
#@Roman M. Vitenberg,Andrea Tonello
#t2005
#cProceedings of the 4th WSEAS International Conference on Telecommunications and Informatics
#index39644
#!The Filtered Multitone (FMT) Modulation is a new communication technology that uses for data transmission the orthogonal wavelets. This paper describes a new efficient FMT algorithm, which may be used for practical realization of high performance Wireless Systems.

#*System Analysis & Design
#@S. K. Jha
#t2007
#c
#index39645

#*Improving Thai Academic Web Page Classification Using Inverse Class Frequency and Web Link Information
#@Verayuth Lertnattee,Thanaruk Theeramunkong
#t2008
#cProceedings of the 22nd International Conference on Advanced Information Networking and Applications - Workshops
#index39646
#!Automatic text classification for Web collection is a non-trivial task. Since Thai academic Web pages usually present technical articles. They may have many technical terms both in Thai and English. This paper presents two approaches towards the problem of a large number of unique terms in a Web page: 1) term weighting schemes and 2) schemes using Web link information. We propose an approach using inverse class frequency instead of inverse document frequency in centroid-based text categorization. Web link information provides information for users to follow to another part or page. It adds useful unique terms for classification. The experimental results show that inverse class frequency is useful on a set of Thai academic Web documents, which is categorized by sources (sites) of information. It should be applied on both prototype and query vectors. Moreover, Web link information expresses its usefulness when inverse class frequency is also applied.

#*Xen-Based HPC: A Parallel I/O Perspective
#@Weikuan Yu,Jeffrey S. Vetter

#t2008
#cProceedings of the 2008 Eighth IEEE International Symposium on Cluster Computing and the Grid
#index39647
#!Virtualization using Xen-based virtual machine environment has yet to permeate the field of high performance computing (HPC). One major requirement for HPC is the availability of scalable and high performance I/O. Conventional wisdom suggests that virtualization of system services must lead to degraded performance. In this presentation, we take on a parallel I/O perspective to study the viability of Xen-based HPC for data-intensive programs. We have analyzed the overheads and migration costs for parallel I/O programs in a Xen-based virtual machine cluster. Our analysis covers PVFS-based parallel I/O over two different networking protocols: TCP-based Gigabit Ethernet and VMM-bypass InfiniBand. Our experimental results suggest that network processing in Xen-based virtualization can significantly impact the performance of Parallel I/O. By carefully tuning the networking layers, we have demonstrated the following for Xen-based HPC I/O: (1) TCP offloading can help achieve low overhead parallel I/O; (2) parallel reads and writes require different network tuning to achieve good I/O bandwidth; and (3) Xen-based HPC environment can support high performance parallel I/O with both negligible overhead and little migration cost.

#*A report on a survey and study of static analysis users
#@Nathaniel Ayewah,William Pugh
#t2008
#cProceedings of the 2008 workshop on Defects in large software systems
#index39648
#%430355
#%424870
#%344445
#!As static analysis tools mature and attract more users, vendors and researchers have an increased interest in understanding how users interact with them, and how they impact the software development process. The FindBugs project has conducted a number of studies including online surveys, interviews and a preliminary controlled user study to better understand the practices, experiences and needs of its users. Through these studies we have learned that many users are interested in even low priority warnings, and some organizations are building custom solutions to more seamlessly and automatically integrate FindBugs into their software processes. We've also observed that developers can make decisions about the accuracy and severity of warnings fairly quickly and independent reviewers will generally reach the same conclusions about warnings.

#*On a repairable system with an unreliable service station-Bayesian approach
#@Jau-Chuan Ke,Ssu-Lang Lee,Ying-Lin Hsu,Yu-Tzu Chen
#t2008
#cComputers Mathematics with Applications
#index39649
#!System characteristics of a two-unit repairable system are studied from a

Bayesian viewpoint with different types of priors assumed for unknown parameters, in which the service station is unreliable. Times to failure and times to repair of the operating units are assumed to follow exponential distributions. In addition, failure times and repair times of the service station also follow exponential distributions. When times to failure and times to repair of operating units, failure times and repair times of the service station are with uncertain parameters, a Bayesian approach is adopted to evaluate system characteristics. Monte Carlo simulation is used to derive the posterior distribution for the mean time to system failure and the steady-state availability. Some numerical experiments are performed to illustrate the results derived in this paper.

#*Overall Performance Assessment of Energy-Aware Cooperative Techniques Exploiting Multiple Description and Scalable Video Coding Schemes
#@Federico Albiero,Janne Vehkaperä,Marcos Katz,Frank Fitzek
#t2008
#cProceedings of the Communication Networks and Services Research Conference
#index39650
#!In this paper we develop and analyze energy-efficient cooperative techniques for multimedia applications over wireless networks. The composite cellular-short-range network architecture is explored by using multiple description coding and scalable video coding schemes. In order to provide an overall and fair assessment of the schemes, different approaches are evaluated and discussed. The techniques are compared not only in terms of their energy gain with respect to noncooperative (autonomous) operation but also considering the quality of the delivered video signal.

#*Construction of Distributed Terminal Management System in Consideration of Hierarchical Subnet in Intranet
#@Eiji Sugino,Katsuyoshi Onodera,Norihisa Segawa,Jun Sawamoto
#t2008
#cProceedings of the 22nd International Conference on Advanced Information Networking and Applications - Workshops
#index39651
#!We have built a terminal management system that simplifies network management tasks and prevents inappropriate connections of terminals to the network. This system is allocated to every subnet and manages users and terminals there. It has capability to give permission for use of the network when a terminal that has been registered to another subnet is moved to a different subnet temporarily.

#*The present & future of Web3D
#@David Luebke
#t2008
#cProceedings of the 13th international symposium on 3D web technology
#index39652
#!The Web3D concept has moved from a primarily academic enterprise to a commercial reality, and is poised to explode into a full-blown industry. But

what shape will that industry take? The answer depends on the interplay of several converging trends that are fueling this growth. Increasing bandwidth makes remote rendering a reality. An ecosystem of content and "killer apps" has sprung up, catalyzed by massive multiplayer online games and more recently by social networking. Graphics hardware has made amazing strides in power and mobility. GPU computing has unleashed tremendous and ubiquitous computational horsepower in just the right place: at the edge. I will explore these trends, using examples drawn from commercial and academic efforts around the globe. Meanwhile, realities of commercial distribution have generated some growing pains and tough questions that I will discuss. Finally, looking through the lens of my own experience with real-time rendering, virtual tourism, GPU computing, and the GPU industry, I will speculate on the most important research problems facing Web3D researchers.

#*When-and how-can a cellular automaton be rewritten as a lattice gas?
#@Tommaso Toffoli,Silvio Capobianco,Patrizia Mentrasti
#t2008
#cTheoretical Computer Science
#index39653
#%209482
#%455492
#%452549
#%281926
#%86264
#%470549
#%186565
#%377837
#%165753
#%465583
#!Both cellular automata (CA) and lattice-gas automata (LG) provide finite algorithmic presentations for certain classes of infinite dynamical systems studied by symbolic dynamics; it is customary to use the terms 'cellular automaton' and 'lattice gas' for a dynamic system itself as well as for its presentation. The two kinds of presentation share many traits but also display profound differences on issues ranging from decidability to modeling convenience and physical implementability. Following a conjecture by Toffoli and Margolus, it had been proved by Kari that any invertible CA, at least up to two dimensions, can be rewritten as an isomorphic LG. But until now it was not known whether this is possible in general for noninvertible CA-which comprise ''almost all'' CA and represent the bulk of examples in theory and applications. Even circumstantial evidence-whether in favor or against-was lacking. Here, for noninvertible CA, (a) we prove that an LG presentation is out of the question for the vanishingly small class of surjective ones. We then turn our attention to all the rest-noninvertible and nonsurjective-which comprise all the typical ones, including Conway's 'Game of Life'. For these (b) we prove by explicit construction that all the one-dimensional ones are representable as LG, and (c) we present and motivate the conjecture that this result extends to any number of dimensions. The tradeoff between dissipation rate and structural complexity

implied by the above results have compelling implications for the thermodynamics of computation at a microscopic scale.

#*The landscape's apprentice: lessons for place-centred design from grounding documentary
#@Nicola J Bidwell,Peta-Marie Standley,Tommy George,Vicus Steffensen
#t2008
#cProceedings of the 7th ACM conference on Designing interactive systems
#index39654
#%4665
#%107484
#!We propose that grounding documentaries can help designers to respond to non-western, non-urban spatial infrastructures. We describe locally-produced, in vivo video methods developed by indigenous Elders in Australia to persist and transfer their Traditional Knowledge and the specific use-case of a documentary on fire. The culturally-situated nature of the documentary exposes subtleties in a dialectic between models of space. The ontology embedded in the methods, and expressed by the documentary, has a spatiality and a belonging to place that profoundly differs from that typifying HCI's urban focus and many video methods used by designers to understand useage contexts. Grass-roots driven documentaries ground subsequent design by engaging designers in otherwise inaccessible truths about remote places, partly through the designer's sense of their own felt-life. The fire documentary reveals many general insights for design, such as the need to escape a singularly anthropocentric spatio-temporal approach in order to respond to the plurality of user experience.

#*Long cycles passing through a specified path in a graph
#@Kazuhide Hirohata
#t1998
#cJournal of Graph Theory
#index39655
#!For a graph G and an integer k $#8805; 1, let ζk(G) = $min \{\sum ^{k}_{i=1}$ dG(vi): {v1, …, vk} is an independent set of vertices in G}. Enomoto proved the following theorem. Let s $#8805; 1 and let G be a (s + 2)-connected graph. Then G has a cycle of length $#8805; min{|V(G)|, ζ2(G) - s} passing through any path of length s. We generalize this result as follows. Let k $#8805; 3 and s $#8805; 1 and let G be a (k + s - 1)-connected graph. Then G has a cycle of length $#8805; min{|V(G)|, $\frac{2}{k}\sigma_{k}(G)$ - s} passing through any path of length s. © 1998 John Wiley Sons, Inc. J. Graph Theory 29: 177184, 1998

#*Laughing at the CIO: A parable and prescription for IT leadership
#@Alvin Hutchinson
#t2008
#cJournal of the American Society for Information Science and Technology
#index39656

#*Advertising/Publication Info and Editorial Board

#@
#t2008
#cTelematics and Informatics
#index39657

#*Message from the Program Chair and Vice Chairs
#@
#t2008
#cProceedings of the 2008 Sixth Annual IEEE International Conference on Pervasive Computing and Communications
#index39658

#*Condition numbers for linear systems and Kronecker product linear systems with multiple right-hand sides
#@Haiming Zhang,Hua Xiang,Yimin Wei
#t2007
#cInternational Journal of Computer Mathematics
#index39659
#%460919
#%596723
#%148966
#%288304
#%334107
#%220920
#!In this paper we investigate linear systems with multiple right-handed sides in the form of AX=B and (A B)X=C. We derive normwise, mixed and componentwise condition numbers for these linear systems. Examples are given to evaluate the tightness of the first-order perturbation bounds.

#*Asynchronous Neighbor Discovery: Finding Needles of Connectivity in Haystacks of Time
#@Prabal Dutta,David Culler,Scott Shenker
#t2008
#cProceedings of the 7th international conference on Information processing in sensor networks
#index39660
#!We present Disco, an asynchronous neighbor discovery and rendezvous protocol that allows two or more nodes operating their radios at low duty cycles (e.g. 1%) to discover and communicate with each other during opportunistic encounters and without any prior synchronization information. The key challenge is to operate the radio at a low duty cycle but still ensure that discovery is fast, reliable, and predictable over a range of operating conditions. Disco nodes pick a pair of prime numbers such that the sum of their reciprocals is equal to the desired radio duty cycle. Each node increments a local counter with a globally-fixed period. If a node's local counter value is divisible by either of its primes, then the node turns on its radio for one period. This protocol ensures that two nodes will have some overlapping radio on-time within a bounded number of periods, even if nodes independently set their own duty cycle.

#*Unit response matrix coefficients development: ANN approach
#@Saeed Alimohammadi,Abbas Afshar
#t2005
#cProceedings of the 5th WSEAS/IASME International Conference on Systems Theory and Scientific Computation
#index39661
#!The ANN methodology, inspired by neurobiology theories of massive interconnection and parallelism has been successfully employed in variety of optimization problems. In ground water management models, either governing equations are embedded into the management model or unit response matrixes are employed. Unit response matrixes development requires huge amount of data and/or simulation runs. In this paper, ANN is employed to develop unit response matrix coefficients to be later used in the management model. To do it, a ANN model has been trained to predict the outcome of the flow code, which results in unit response matrix coefficients for the aquifer under consideration. To train the ANN model different realizations from pumping well co-ordinates, distance between pumping and observation wells, and hydraulic conductivities of pumping wells were used, it was concluded that pumping well co-ordinates may be successfully employed for developing unit response matrix coefficients to be later used in management models. To test the performance of the proposed approach, the hypothetical aquifer was assumed. The aquifer response to different pumping stresses were compared using a well-defined simulation model and those resulted from unit response matrixes developed by (1) ANN approach and (2) direct data from groundwater simulation runs. It was concluded that ANN may be successfully employed for development of unit response matrix with limited data from field study or ground water simulation runs.

#*Five (or six) questions…for Irene McAra-McWilliam
#@Lisa Neal
#t2008
#ceLearn
#index39662

#*Optimizing the size of the sequence profiles to increase the accuracy of protein sequence alignments generated by profile-profile algorithms
#@Aleksandar Poleksic,Mark Fienup
#t2008
#cBioinformatics
#index39663
#!Motivation: Profile-based protein homology detection algorithms are valuable tools in genome annotation and protein classification. By utilizing information present in the sequences of homologous proteins, profile-based methods are often able to detect extremely weak relationships between protein sequences, as evidenced by the large-scale benchmarking experiments such as CASP and LiveBench. Results: We study the relationship between the sensitivity of a profile-profile method and the size of the sequence profile, which is defined as the average number of different residue types observed at the profile's

positions. We also demonstrate that improvements in the sensitivity of a profile-profile method can be made by incorporating a profile-dependent scoring scheme, such as position-specific background frequencies. The techniques presented in this article are implemented in an alignment algorithm UNI-FOLD. When tested against other well-established methods for fold recognition, UNI-FOLD shows increased sensitivity and specificity in detecting remote relationships between protein sequences. Availability: UNI-FOLD web server can be accessed at http://blackhawk.cs.uni.edu Contact: poleksic@cs.uni.edu

#*CellMontage
#@Wataru Fujibuchi,Larisa Kiseleva,Takeaki Taniguchi,Hajime Harada,Paul Horton
#t2008
#cBioinformatics
#index39664

#*A 2 GHz variable gain low noise amplifier in 0.18- m CMOS
#@Shaikh K. Alam,Joanne Degroat
#t2008
#cAnalog Integrated Circuits and Signal Processing
#index39665
#%602399
#!This paper describes a 2 GHz active variable gain low noise amplifier (VGLNA) in a 0.18-μm CMOS process. The VGLNA provides a 50-Ω input impedance and utilizes a tuned load to provide high selectivity. The VGLNA achieves a maximum small signal gain of 16.8 dB and a minimum gain of 4.6 dB with good input return loss. In the high gain and the low gain modes, the NFs are 0.83 dB and 2.8 dB, respectively. The VGLNA's IIP3 in the high gain mode is 2.13 dBm. The LNA consumes approximately 4 mA of current from a 1.8-V power supply.

#*Modelling and prediction of GPS availability with digital photogrammetry and LiDAR
#@George Taylor,Jing Li,David Kidner,Chris Brunsdon,Mark Ware
#t2007
#cInternational Journal of Geographical Information Science
#index39666
#%245088
#!This paper describes an automated method for predicting the number of satellites visible to a GPS receiver, at any point on the Earth's surface at any time. Intervisibility analysis between a GPS receiver and each potentially visible GPS satellite is performed using a number of different surface models and satellite orbit calculations. The developed software can work with various ephemeris data, and will compute satellite visibility in real time. Real-time satellite availability prediction is very useful for mobile applications such as in-car navigation systems, personal navigations systems and LBS. The implementation of the method is described and the results are reported.

#*SHIELD: a software hardware design methodology for security and reliability of MPSoCs

#@Krutartha Patel,Sri Parameswaran
#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39667
#%417074
#%447905
#%428970
#%624394
#%150295
#!Security of MPSoCs is an emerging area of concern in embedded systems. Security is jeopardized by code injection attacks, which are the most common types of software attacks. Previous attempts to detect code injection in MPSoCs have been burdened with significant performance overheads. In this work, we present a hardware/software methodology "SHIELD" to detect code injection attacks in MPSoCs. SHIELD instruments the software programs running on application processors in the MPSoC and also extracts control flow and basic block execution time information for runtime checking. We employ a dedicated security processor (monitor processor) to supervise the application processors on the MPSoC. Custom hardware is designed and used in the monitor and application processors. The monitor processor uses the custom hardware to rapidly analyze information communicated to it from the application processors at runtime. We have implemented SHIELD on a commercial extensible processor (Xtensa LX2) and tested it on a multiprocessor JPEG encoder program. In addition to code injection attacks, the system is also able to detect 83% of bit flips errors in the control flow instructions. The experiments show that SHIELD produces systems with runtime which is at least 9 times faster than the previous solution. SHIELD incurs a runtime (clock cycles) performance overhead of only 6.6% and an area overhead of 26.9%, when compared to a non-secure system.

#*Differentiating conceptual modelling from data modelling, knowledge modelling and ontology modelling and a notation for ontology modelling
#@Tharam Dillon,Elizabeth Chang,Maja Hadzic,Pornpit Wongthongtham
#t2008
#cProceedings of the fifth on Asia-Pacific conference on conceptual modelling - Volume 79
#index39668
#%249803
#%514357
#!This paper considers conceptual modelling for three purposes namely data modelling, knowledge modelling and ontology modelling. It differentiates between the nature of the conceptual models for these three. It then proposes a representation suitable for ontology modelling.

#*AC/DC: an algorithm for cheating detection by cheating
#@Stefano Ferretti,Marco Roccetti
#t2006
#cProceedings of the 2006 international workshop on Network and operating systems support for digital audio and video

#index39669
#%254793
#%619885
#%437672
#%474629
#%580242
#!Time cheats represent some of the most crucial issues in online gaming. Since they act on timing properties of generated game events, these malicious schemes are particularly difficult to thwart when distributed games are deployed over peer-to-peer architectures. Indeed, the absence of a global clock shared among peers enables cheaters to see into the future by waiting for events generated by other peers before generating its own ones (lookahead cheat). This may give an unfair advantage to the cheater. We consider a version of lookahead cheat generalized in the context of real-time (i.e., not round-based) games. To face this time cheat, we present AC/DC, an Algorithm for Cheating Detection by Cheating. This algorithm enables to detect cheaters based on monitoring of network latencies. The basic idea is that of conducting against each suspected peer a sort of cheating counterattack, by delaying events before notifying them to the (hypothetic) cheater. This permits to detect whether that peer waits for these events before generating its own ones. Our claim is that an approach based on the monitoring of communication patterns among peers allows cheat detection without affecting the performances of the game.

#*Granulometric analyses of basin-wise DEMs: a comparative study
#@L. T. Tay,B. S. Daya Sagar,H. T. Chuah
#t2007
#cInternational Journal of Remote Sensing
#index39670
#%159926
#%452227
#!Digital elevation models (DEMs) are very useful for terrain characterization. We apply a morphological approach to characterize 14 sub-basins decomposed from interferometrically generated DEMs of Cameron Highlands and Petaling regions of Peninsular Malaysia. Physiographically, these two regions possess a distinct geomorphologic set-up as they belong to region with higher and lower altitudes, respectively. Fourteen sub-basins are extracted from the DEMs, and pattern spectra by opening and closing of these sub-basins relative to flat discrete binary patterns (square, octagon and rhombus) are computed. Pattern spectra are used to compute probability size distribution functions of both protrusions and intrusions that are conspicuous in topography, based on which shape-size complexity measures of these sub-basins are estimated by means of average roughness and size. Furthermore, fractal dimensions of channel networks derived from these 14 basins are computed by applying the box-counting method. Comparisons between shape-size complexity measures and fractal dimension are carried out.

#*A modular supervised algorithm for vessel segmentation in red-free retinal images

#@Andrea Anzalone,Federico Bizzarri,Mauro Parodi,Marco Storace
#t2008
#cComputers in Biology and Medicine
#index39671
#%613372
#%153270
#%273210
#%567186
#%252542
#%441014
#!In this paper, a supervised algorithm for vessel segmentation in red-free images of the human retina is proposed. The algorithm is modular and made up of two fundamental blocks. The optimal values of two algorithm parameters are found out by maximizing proper measures of performances (MOPs) able to evaluate from a quantitative point of view the results provided by the proposed algorithm. The choice of the MOP allows one to tailor the solution to the specific image features to be emphasized. The performances of the algorithm are compared with those of other methods described in the literature. The simulation results show a good trade-off between quality and processing speed times. For instance, in terms of the maximum average accuracy (MAA), K value, and specificity (SP), the best performance outcomes are 0.9587, 0.8069 and 0.9477, respectively.

#*The business of emerging display technologies
#@Paula Carson
#t2008
#cProceedings of the 2008 workshop on Immersive projection technologies/Emerging display technologiges
#index39672
#!In the past decade we have experienced a revolution in display technology, in particular immersive display technologies, and a fast deployment of a wide range of commercial products, ranging from high-end one-of-a-kind multi-surface display, to productized displays for a larger customer base. As these technologies keep evolving and becoming more main stream, one would think that we would experience a growth in business opportunities for these technologies and a wider market for these technologies. However, the business of emerging displays technologies seems to be a niche market focused towards research environments and several specific narrow vertical markets. Furthermore, there seems to be a disconnection from the business of hardware technologies and software technologies to utilize these displays. This pane brings together a group of pioneer entrepreneurs in display technologies to share their experiences on developing businesses opportunities, to talk about their challenges, and to discuss needs and trends they see for the field.

#*The Compliance Game
#@
#t2006
#cQueue
#index39673

#!Although complying with myriad regulations affecting information technology these days can feel like a chore, technology professionals now have an opportunity to leverage these efforts and create a proactive approach to IT governance. Tune into this month's Queuecast as Kris Lovejoy, CTO of Consul, discusses with host Mike Vizard why companies must shift their focus on compliance to a new governance approach that will ultimately better serve a company's needs. The ACM Portal is published by the Association for Computing Machinery. Copyright © 2010 ACM, Inc. Terms of Usage Privacy Policy Code of Ethics Contact Us Useful downloads: Adobe Acrobat QuickTime Windows Media Player Real Player

#*Fast numerical method for the Boltzmann equation on non-uniform grids
#@Alexei Heintz,Piotr Kowalczyk,Richards Grzhibovskis
#t2008
#cJournal of Computational Physics
#index39674
#!We introduce a new fast numerical method for computing discontinuous solutions to the Boltzmann equation and illustrate it by numerical examples. A combination of adaptive grids for approximation of the distribution function and an approximate fast Fourier transform on non-uniform grids for computing smooth terms in the Boltzmann collision integral is used.

#*Message from the Organizing Chair
#@
#t2008
#cProceedings of the 2008 International Workshop on Advanced Information Systems for Enterprises
#index39675

#*Harnessing user contributions and dynamic profiling to better satisfy individual information search needs
#@Roman Y. Shtykh,Qun Jin
#t2008
#cInternational Journal of Web and Grid Services
#index39676
#%510474
#%312300
#%109356
#%122149
#%238970
#!In the situation of information overload we are experiencing today, conventional web search systems taking a one-size-fits-all approach are often not capable of effectively satisfy individual information needs. To improve the quality of web information retrieval, we propose a collaborative personalised search approach that makes an attempt to 'understand' and better satisfy the information needs for each and every searching user. We present a web information retrieval framework called Better Search and Sharing (BESS) that captures user-system interactions, profiles them and induces personal interests

that changes over time with an interest-change-driven profiling mechanism that is also extensively used for the co-evaluation of documents found valuable inside a specific search context by users with similar interests.

#*A Comparative Study of RFID Solutions for Security and Privacy: POP vs. Previous Solutions
#@Krishan Sabaragamu Koralalage,Jingde Cheng
#t2008
#cProceedings of the 2008 International Conference on Information Security and Assurance (isa 2008)
#index39677
#!In a true ubiquitous world, RFID tags will be available in everything, everywhere, and at all times. However, since those tags are bounded with constraints, with no foolproof method to manage the changing hands of the same-tagged item, there is no assurance of privacy and security in passive tags. Yet there are several vender specific solutions but none of them comprehensively solve the security risks and privacy threats arise in the domain of product lifecycle. Thus, there is a need to recognize a standard solution at least for a specific domain. Therefore we proposed the POP Method that comprehensively solves the problems arising in the domain of product lifecycle. In this paper, we compare and contrast the available major solutions against the POP method. We first provide evaluation criteria, and then we survey major proposed solutions, including ours. Next, we present the evaluation results addressing the security and privacy together with the functional aspects. Finally, we conclude the paper by realizing the best available solution for the product lifecycle with passive tags.

#*Projected cognition: capturing intent in descriptions of complex interaction
#@William Edmondson,Russell Beale
#t2008
#cProceedings of the 7th ACM conference on Designing interactive systems
#index39678
#%455802
#%300549
#%322849
#%321407
#%590420
#%310147
#!In a study of activity and usage of comparatively complex configurations - where users have multiple screens and/or multiple computers - we have noticed that accounts of what is being observed and reported are tricky to unify within a coherent framework. In this paper we look in detail at one such setting, where a complex office configuration has the machines well spread out in a structure designed by an individual for themselves. The layout also permits pairs of users to work collaboratively and clear cases of co-operative working are observed. In order to describe this successfully, we have extended the distributed cognition approach to capture notions of intent. This Projected Cognition, as we have termed it, allows us to provide a richer description of intent, activity and

context.

#*Improving the usability of web 2.0 applications
#@Chris J. Pilgrim
#t2008
#cProceedings of the nineteenth ACM conference on Hypertext and hypermedia
#index39679
#%536011
#%625053
#%166471
#!Web 2.0 is revolutionizing the way that users access content and interact with each other on the Web. Unfortunately, many developers are inspired by what is technologically possible possibly disregarding good design practice and fundamental theory. Very little research on Web 2.0 usability is reported in the literature. This paper reports progress on an investigation into the usability of Web 2.0 applications through an empirical study of the level of disorientation and cognitive overhead that users might experience. The outcomes of this project aim to provide an empirical basis for the development of design guidelines to improve Web 2.0 usability.

#*AMIDA: a sequence diagram extraction toolkit supporting automatic phase detection
#@Takashi Ishio,Yui Watanabe,Katsuro Inoue
#t2008
#cCompanion of the 30th international conference on Software engineering
#index39680
#%430083
#%329255
#%417935
#%574493
#!Amida is a toolkit to record an execution trace of a Java program and visualize the trace as a sequence diagram. Amida supports our novel approach to efficiently detecting phases; the algorithm precisely divides a long execution trace into a series of smaller diagrams corresponding to features (or tasks to achieve a feature) without deep knowledge on a target system.

#*Proceedings of the 1st international workshop on Software development governance
#@
#t2008
#cInternational Conference on Software Engineering
#index39681
#!It is our great pleasure to welcome you to the inaugural workshop on Software Development Governance -- SDG2008. Participating in this workshop ensures dealing with one of the contemporary issues in software development organizations that is better aligning of the projects to the organization goals thus reducing risk and increase value. This year the workshop concerns with the definition and concepts of software development governance as well as with ways

to implement it. Among others, the goal of the workshop is to establish a research community in this field and identify new directions for future research and development. The workshop program includes two keynote presentations, six research papers, and guided activities that aim at summarizing insights and set the ground for collaborative research in the coming years.

#*Enhanced correlation search technique for clustering cancer gene expression data
#@B. Sathiyabhama,N. P. Gopalan
#t2006
#cProceedings of the 6th WSEAS International Conference on Signal, Speech and Image Processing
#index39682
#%449690
#%577160
#%601805
#%164845
#!The advent of DNA Microarray technologies has revolutionized the experimental studies of gene expressions. In the post-genomics era, clustering analysis has become a valuable tool for in-silico analysis of gene expression profiles. Although a number of clustering methods have been proposed, they are confronted with difficulties in meeting the requirements of high quality, large memory, performance and automation. In this paper, a novel-clustering algorithm namely Heuristic based Enhanced Correlation Search Technique (HECST) has been proposed. The distinct characteristic of HECST is that it integrates the validation techniques into the clustering process so that it produces high quality clusters dynamically. This algorithm is implemented using memory efficient data structure namely sparse matrices to store the gene expression profile. Sparse matrices tremendously reduce the size of the memory, hence provides computational efficiency. The performance of the algorithm is evaluated against number of reasonable benchmarks (e.g Direct application of raw data) for cancer gene expression data sets. The empirical results proved that this new algorithm automatically produces the optimal clusters in a much faster way than the traditional clustering methods like K-means, CAST and E-CAST. Analysis of data produced by HECST tenders potential insight into gene function, molecular biological processes and regulatory mechanisms.

#*A satellite view of internal waves induced by the Indian Ocean tsunami
#@D. A. Santek,A. Winguth
#t2007
#cInternational Journal of Remote Sensing
#index39683
#!At 08:45 local time (02:45 GMT) on 26 December 2004, 1 h and 45 min after the Sumatra Earthquakes of magnitude 9.3, a devastating tsunami struck the east coast of Sri Lanka. Nearly 2 h and 30 min after the wave hit the coast, a weather satellite passed over Sri Lanka's coastal zone providing a rare glimpse of internal waves along the continental slope due to this tsunami. The satellite imagery indicates wave-like features from the tsunami being reflected,

diffracted, and scattered off the steep continental slope and submarine canyons adjacent to Sri Lanka. The energetic wave and its modification to internal waves possibly eroded sediment from the sea floor and transported it to the sea surface. Solitary features generated by internal waves can explain the observed pattern. Future modelling approaches considering these nonlinear interactions would be required for a better understanding of the tsunami behaviour in the coastal zone, where its destructive effects are most prominent.

#*Multi-objective inventory planning using MOPSO and TOPSIS
#@Ching-Shih Tsou
#t2008
#cExpert Systems with Applications: An International Journal
#index39684
#%231036
#%286600
#!One of the main characteristics of today's business tends to vary often. Under such environment, many decisions should be carefully pondered over from relevant aspects which are usually conflicting. Hence, inventory planning problems, which address how much and when to order what customers need at the least relevant cost while maintaining a desirable service level expected by customers, could be recast into a multi-objective optimization problem (MOOP). In a MOOP there are normally infinite numbers of optimal solutions in the Pareto front due to the conflicts among objectives. Unfortunately, most multi-objective inventory models have been solved by aggregation methods through a linear combination of specific weights or only one objective was optimized and the others were turned into constraints. Therefore, the challenges decision makers face are not only modeling the problem in a multi-objective context, but also the effort dedicated to build the Pareto front of MOOPs. This paper first employs the multi-objective particle swarm optimization (MOPSO) algorithm to generate the non-dominated solutions of a reorder point and order size system. A ranking method called technique for order preference by similarity to ideal solution (TOPSIS) is then used to sort the non-dominated solutions by the preference of decision makers. That is, a two-stage multi-criteria decision framework which consists of MOPSO and TOPSIS is presented to find out a compromise solution for decision makers. By varying the weights of various criteria, including minimization of the annual expected total relevant cost, minimization of the annual expected frequency of stock-out occasions, and minimization of the annual expected number of stock-outs, managers can determine the order size and safety stock simultaneously which fits their preference under different situations.

#*On-line Stochastic Matching compensation for non-stationary noise
#@V. Barreaud,I. Illina,D. Fohr
#t2008
#cComputer Speech and Language
#index39685
#%212590
#%422777
#%315105

#!This paper treats the problem of noise compensation in speech recognition when training and testing conditions do not match. We are interested in two types of non-stationary noise that may be present during test, namely slowly varying and abruptly varying noises. The context of our work is the Stochastic Matching framework. The Stochastic Matching compensation method transforms test data using an affine compensation function whose parameters are computed off-line. Stochastic Matching approaches are interesting since they make little assumptions about the nature and the level of the noise but they are best suited for the compensation of stationary noise. In this paper we propose an original contribution to the Stochastic Matching framework. It is based on an on-line frame-synchronous version of Stochastic Matching method to compensate for slowly varying noise. Our contribution extends this compensation algorithm in order to compensate for abruptly varying noise. The basic idea of the proposed methods is to perform the compensation and the recognition steps at the same time. The environment changes are identified using monitoring algorithms. The performance of our proposed methods is evaluated on two speech databases, one recorded in moving cars (VODIS), and another one obtained by corrupting VODIS with abruptly varying noise from NOISEX. The proposed approaches significantly outperform classical compensation methods (Off-line Stochastic Matching, Sequential Mean Cepstrum Removal, Parallel Model Combination, Spectral Subtraction). For instance, we obtain up to 32.6% word error rate reduction over S-MCR on database corrupted by a 10dB abruptly varying white noise.

#*Directions for Peer-to-Peer based mobile pervasive augmented reality gaming
#@Chao Huang,Aaron Harwood,Shanika Karunasekera
#t2007
#cProceedings of the 13th International Conference on Parallel and Distributed Systems - Volume 02
#index39686
#!Pervasive Augmented Reality Gaming and Mobile P2P are both attracting significant focus and much progress has occurred recently. Augmented reality games extend reality with virtual elements to enhance game experience and mobile P2P networks provide autonomous, self-organizing, scalable and robust communication platforms. We review the technological challenges in both mobile P2P computing and AR domains by investigating some existing related works. Then we propose possible directions of the mobile AR collaborative gaming over p2p networks and show its advantages over other AR gaming and discuss the feasibility and future requirements regarding the support for this type of game.

#*A Factorization-Based Approach for Articulated Nonrigid Shape, Motion and Kinematic Chain Recovery From Video
#@Jingyu Yan,Marc Pollefeys
#t2008
#cIEEE Transactions on Pattern Analysis and Machine Intelligence
#index39687
#!Recovering articulated shape and motion, especially human body motion, from video is a challenging problem with a wide range of applications in medical study, sport analysis and animation, etc. Previous work on articulated motion

recovery generally requires prior knowledge of the kinematic chain and usually does not concern the recovery of the articulated shape. The non-rigidity of some articulated part, e.g. human body motion with nonrigid facial motion, is completely ignored. We propose a factorization-based approach to recover the shape, motion and kinematic chain of an articulated object with nonrigid parts altogether directly from video sequences under a unified framework. The proposed approach is based on our modeling of the articulated non-rigid motion as a set of intersecting motion subspaces. A motion subspace is the linear subspace of the trajectories of an object. It can model a rigid or non-rigid motion. The intersection of two motion subspaces of linked parts models the motion of an articulated joint or axis. Our approach consists of algorithms for motion segmentation, kinematic chain building, and shape recovery. It handles outliers and can be automated. We test our approach through synthetic and real experiments and demonstrate how to recover articulated structure with non-rigid parts via a single-view camera without prior knowledge of its kinematic chain.

#*Nondissipative Marbling
#@Jiayi Xu,Xiaoyang Mao,Xiaogang Jin
#t2008
#cIEEE Computer Graphics and Applications
#index39688
#!A real-time marbling system for creating marbling textures interactively uses a modern GPU. The approach models the marbling texture design process as a 2D fluid-dynamics problem and forms textures as a result of the color advection in the 2D flow fields.

#*Autonomous geometric precision error estimation in low-level computer vision tasks
#@Andrés Corrada-Emmanuel,Howard Schultz
#t2008
#cProceedings of the 25th international conference on Machine learning
#index39689
#%34453
#%234712
#!Errors in map-making tasks using computer vision are sparse. We demonstrate this by considering the construction of digital elevation models that employ stereo matching algorithms to triangulate real-world points. This sparsity, coupled with a geometric theory of errors recently developed by the authors, allows for autonomous agents to calculate their own precision independently of ground truth. We connect these developments with recent advances in the mathematics of sparse signal reconstruction or compressed sensing. The theory presented here extends the autonomy of 3-D model reconstructions discovered in the 1990s to their errors.

#*A comparative study on Peer-to-Peer failure rate estimation
#@Lei Ni,Aaron Harwood
#t2007
#cProceedings of the 13th International Conference on Parallel and Distributed

Systems - Volume 02
#index39690
#!The robustness of Peer-to-Peer systems is challenged by its highly dynamic nature. Frequent peer failure and departure events introduce uncertainty for which is considered exceptional in traditional distributed systems. The difficulty of monitoring such large scale networks is further exacerbated because it has to be done in a completely decentralized way for both scalability and reliability concerns. Some methods for estimating peer failure rate have been applied in Peer-to-Peer systems, however their comparative performance has not yet been reported in the literature. We simulate three different failure rate estimation methods and compare their accuracy and response time with respect to sample size, stabilization interval and neighbour set size. We conclude that the Maximum Likelihood Method introduced is better than the Failure Frequency based Methods commonly used in current Peer-to-Peer systems.

#*SENHOD: scarce-resources wireless sensor network for healthcare in oil derricks
#@Pablo Pancardo,Juan C. Dueñas
#t2008
#cProceedings of the 2nd WSEAS International Conference on Computer Engineering and Applications
#index39691
#!We present our experience with designing, developing, and deploying of a Scarce-resource Wireless Sensor Network (SWSN) for monitoring temperature and humidity high above oil derricks (drilling tower) in PEMEX (Parastatal Mexican Petroleum Company) drilling facilities. SENHOD system (scarce-resources wireless SEnsor Network for Healthcare in Oil Derricks) represents an information tool to reduce derrickmens' health risk due to high temperature and humidity exposure during a working day. For our deployment we meet the design requirements, in accordance to the scenario and its necessities. SENHOD has suitable operation characteristics configurable by users, such as: operation modes, physical parameter selection, sensing rate, and awake-sleep nodes.

#*Integrated Access Permission: Secure and Simple Policy Description by Integration of File Access Vector Permission
#@Takuto Yamaguchi,Yuichi Nakamura,Toshihiro Tabata
#t2008
#cProceedings of the 2008 International Conference on Information Security and Assurance (isa 2008)
#index39692
#!In pervasive computing, embedded systems have a possibility to be attacked by crackers, including 0-day attack, as well as enterprise systems. In particular, in a case where a cracker gets a root privilege, damages are significant. To resolve this problem, Security-Enhanced Linux (SELinux) is useful. However, SELinux has a problem that is significant complexity for configuration because of too fine-grained access control. As a method for resolving this problem, SELinux Policy Editor (SEEdit) has been developed; this is a tool that simplifies the SELinux configuration. SEEdit uses the Simplified Policy

Description Language (SPDL) as a policy description language. In the SPDL, we define new access permissions that integrate Access Vector Permissions (AVPs) employed in SELinux to provide access permissions in a security policy. Thus, we propose a set of access permissions named Integrated Access Permissions (IAPs), which enables the achievement of a good balance between reducing the workload of the configurations and guaranteeing security in SELinux. In addition, we evaluate our IAPs and show them almost secure.

#*Cellular automata: critical densities on forest fire dispersion
#@Siriporn Supratid,Ramakoti Sadananda
#t2004
#cProceedings of the 4th WSEAS International Conference on Applied Informatics and Communications
#index39693
#%177213
#%221906
#%222772
#!Cellular automata offer excellent modeling paradigms for the study of global behavior from local interactions. Instead of focusing on a physical model of forest fires, this paper considers possible models of artificial ones with the point of view of global parameters given local interactions rules. A set of possible rules for fire ignition, is assumed for the purpose of local interactions. These examine the empirical results and enquire if there are critical densities for various kinds of initial configurations and rules of interactions. It is found that there exists the association between 99, the parameter developed in this study, and the rules set. This leads to the certain relationship among an initial density of a dynamic state of a forest, a global phenomenon, and a local interactions.

#*Early detection of nutrient and biotic stress in Phaseolus vulgaris
#@L. Chaerle,D. Hagenbeek,X. Vanrobaeys,D. Van Der Straeten
#t2007
#cInternational Journal of Remote Sensing
#index39694
#!Prerequisites for optimal, high crop yield are disease-free growth and an equilibrated supply of nutrients. Early signatures of stress-altered physiology, before appearance of symptoms in the visible spectrum, allow timely treatment. Early detection of stress development was carried out on phaseolus vulgaris bean infected with the agriculturally important grey mould pathogen and under conditions of magnesium deficiency, limiting photosynthesis. During stress development, bean plants were monitored by time-lapse imaging with thermal, video and chlorophyll fluorescence cameras, mounted on a gantry robot system. For early detection of grey mould infection, chlorophyll fluorescence imaging proved to be the most sensitive. This technique detected magnesium deficiency at least three days before visual symptoms appeared. Further development of non-contact technology for plant health monitoring will help to achieve optimal productivity in greenhouse and field cultures. Associated establishment of a stress catalogue based on early symptoms will allow swift diagnosis.

#*DCA Using Suffix Arrays
#@Martin Fiala,Jan Holub
#t2008
#cProceedings of the Data Compression Conference
#index39695
#!The paper deals with an implementation of Data Compression using Antidictionaries. Suffix array is used instead of suffix trie. A dynamic version is implemented as well.

#*The Group-Lasso for generalized linear models: uniqueness of solutions and efficient algorithms
#@Volker Roth,Bernd Fischer
#t2008
#cProceedings of the 25th international conference on Machine learning
#index39696
#%147510
#!The Group-Lasso method for finding important explanatory factors suffers from the potential non-uniqueness of solutions and also from high computational costs. We formulate conditions for the uniqueness of Group-Lasso solutions which lead to an easily implementable test procedure that allows us to identify all potentially active groups. These results are used to derive an efficient algorithm that can deal with input dimensions in the millions and can approximate the solution path efficiently. The derived methods are applied to large-scale learning problems where they exhibit excellent performance and where the testing procedure helps to avoid misinterpretations of the solutions.

#*Incorporating blogs, social bookmarks, and podcasts into unit teaching
#@Nauman Saeed,Yun Yang
#t2008
#cProceedings of the tenth conference on Australasian computing education - Volume 78
#index39697
#!The use of emerging e-learning technologies to build lifelong learning solutions is on the rise in academic settings. However there is a need to further explore these technologies in educational contexts and find novel ways of combining them in unit design. This paper presents our experience of incorporating a combination of blogs, social bookmarks, and podcasts in teaching a Web programming unit. An iterative action research methodology has been adopted to carry out the study. The study outcomes are encouraging in terms of usage and acceptance of incorporated technologies. They fulfil the basic objectives of the study and highlight the key areas of improvement for follow up studies.

#*Brief paper: Markovian jump delayed Hopfield networks with multiplicative noise
#@Adrian-Mihail Stoica,Isaac Yaesh
#t2008

#cAutomatica (Journal of IFAC)
#index39698
#%2121
#!A non-symmetric version of Hopfield networks subject to state-multiplicative noise, pure time delay and Markov jumps is considered. Such networks arise in the context of visuo-motor control loops and may, therefore, be used to mimic their complex behavior. In this paper, we adopt the Lur'e-Postnikov systems approach to analyze the stochastic stability and the L"2 gain of generalized Hopfield networks including these effects.

#*A novel early DBA mechanism with prediction-based fair excessive bandwidth allocation scheme in EPON
#@I-Shyan Hwang,Zen-Der Shyu,Liang-Yu Ke,Chun-Che Chang
#t2008
#cComputer Communications
#index39699
#%15773
#!In this paper, we propose a novel Early dynamic bandwidth allocation (E-DBA) mechanism incorporated with a prediction-based fair excessive bandwidth allocation (PFEBA) scheme in Ethernet passive optical networks (EPONs). The E-DBA mechanism can reduce the idle period in the traditional DBA mechanism. On the other hand, the PFEBA scheme can provide more accurate prediction to ensure the fairness of each ONU and improve the overall system performance. The proposed model makes prediction for different traffic classes according to the variation in traffic for each ONU in the EPON. The PFEBA scheme includes the unstable degree list, predictions made using linear estimation credit and the fair excessive bandwidth allocation scheme. The simulation results show that the proposed E-DBA mechanism with PFEBA scheme can improve the system performance of well-known DBA algorithms in terms of wasted bandwidth, wasted bandwidth improved percentage, downlink data available bandwidth, throughput, average end-to-end delay and average queue length, especially under high traffic load.

#*Predicting user behavior—the creation of the immersion installation
#@Andrew Buchanan
#t2008
#cComputers in Entertainment (CIE)
#index39700
#!This article is a retrospective case study of the creation of an interactive projection installation titled Immersion, produced in 2007 and commissioned for the Experimenta Biennale Media Arts exhibition—Experimenta Playground. The article explains the project conceptually and technically, and outlines the processes of the artists with regards to their attempts to predict the responses and reactions of the pubic to the finished work. Reference is made to some established methodologies for the prediction of user behavior and explains findings from user-testing phases and the influence of these findings on artistic direction for the project. The article also identifies the potential for passive audiences in interactive works and describes some of these in response to the finished installation.

#*Infinite paths in planar graphs III, 1-way infinite paths
#@Xingxing Yu
#t2006
#cJournal of Graph Theory
#index39701
#!An infinite graph is 2-indivisible if the deletion of any finite set of vertices from the graph results in exactly one infinite component. Let G be a 4-connected, 2-indivisible, infinite, plane graph. It is known that G contains a spanning 1-way infinite path. In this paper, we prove a stronger result by showing that, for any vertex x and any edge e on a facial cycle of G, there is a spanning 1-way infinite path in G from x and through e. Results will be used in two forthcoming papers to establish a conjecture of Nash-Williams. © 2005 Wiley Periodicals, Inc. J Graph Theory

#*Introduction of TTCN-3 into the product development process: considerations from an electronic devices developer point of view
#@Martin Botteck,Thomas Deiß
#t2008
#cInternational Journal on Software Tools for Technology Transfer (STTT)
#index39702
#!Following the successful standardisation of TTCN-3, several attempts were made to introduce the language into the product development process to improve the related testing activities. For several years appreciation was moderate. Reasons are to be found in the structure of existing testing procedures and problems of interoperability in early TTCN-3 products. Testing and development environments typical for electronic devices manufacturing are outlined and it is shown where in the process future benefits through further formalisation of test definition and implementations may be found.

#*Impact of JVM superoperators on energy consumption in resource-constrained embedded systems
#@Carmen Badea,Alexandru Nicolau,Alexander V. Veidenbaum
#t2008
#cACM SIGPLAN Notices
#index39703
#%246679
#%88336
#%427966
#%245695
#%290070
#%621587
#%606544
#%583006
#!Energy consumption is one of the most important issues in resource-constrained embedded systems. Many such systems run Java-based applications due to Java's architecture-independent format (bytecode). Standard techniques for executing bytecode programs, e.g. interpretation or just-in-time compilation, have

performance or memory issues that make them unsuitable for resource-constrained embedded systems. A superoperator-extended, lightweight Java Virtual Machine (JVM) can be used in resource-constrained embedded systems to improve performance and reduce memory consumption. This paper shows that such a JVM also significantly reduces energy consumption. This is due primarily to a considerable reduction in the number of memory accesses and thus in energy consumption in the instruction and data TLBs and caches and, in most cases, in DRAM energy consumption. Since the fraction of processor energy dissipated in these units is approximately 60%, the energy savings achieved are significant. The paper evaluates the number of load, store, and computational instructions eliminated by the use of proposed superoperators as compared to a simple interpreter on a set of embedded benchmarks. Using cache and DRAM per access energy we estimate the total processor/DRAM energy saved by using our JVM. Our results show that with 32KB caches the reduction in energy consumption ranges from 40% to 60% of the overall processor, plus DRAM energy. Even higher savings may be achieved with smaller caches and increased access to DRAM as DRAM access energy is fairly high.

#*Applications of the gröbner fan to gene network reconstruction (abstract only)
#@Elena S. Dimitrova,Brandilyn Stigler,Abdul Salam Jarrah,Reinhard Laubenbacher
#t2008
#cACM Communications in Computer Algebra
#index39704
#!Gröbner fans have gained popularity in computational commutative algebra and algebraic geometry with applications ranging from Gröbner basis conversion to the emerging field of tropical mathematics. Recently Gröbner fans have been employed for the selection of minimal models that fit measurement data from gene regulatory networks. The model space is described as the sum of an interpolating polynomial function f and the set of all polynomials that vanish on the data, that is, the ideal of data points. A minimal model can be chosen by computing the reduction of f with respect to a fixed Gröbner basis, which is dependent on the choice of term order. As Gröbner fans partition the set of Gröbner bases into equivalence classes, they can be thought of as parametrizations of the model space. This characterization permits exploration of the model space and discovery of "most likely" models. In this poster we show how Gröbner fans are used to two reconstruct gene regulatory networks: lactose metabolism in the bacterium E. coli and tissue development in the roundworm C. elegans.

#*Algebraic methods for interactive proof systems
#@C. Lund,L. Fortnow,H. Karloff
#t1990
#cProceedings of the 31st Annual Symposium on Foundations of Computer Science
#index39705
#!An algebraic technique for the construction of interactive proof systems is proposed. The technique is used to prove that every language in the polynomial-time hierarchy has an interactive proof system. For the proof, a method is developed for reducing the problem of verifying the value of a low-degree polynomial at two points to verifying the value at one new point. The results

have implications for program checking, verification, and self-correction.

#*EigenRank: a ranking-oriented approach to collaborative filtering
#@Nathan N. Liu,Qiang Yang
#t2008
#cProceedings of the 31st annual international ACM SIGIR conference on Research and development in information retrieval
#index39706
#%99384
#%578998
#%568699
#%308491
#%243716
#%312709
#%257082
#%317569
#!A recommender system must be able to suggest items that are likely to be preferred by the user. In most systems, the degree of preference is represented by a rating score. Given a database of users' past ratings on a set of items, traditional collaborative filtering algorithms are based on predicting the potential ratings that a user would assign to the unrated items so that they can be ranked by the predicted ratings to produce a list of recommended items. In this paper, we propose a collaborative filtering approach that addresses the item ranking problem directly by modeling user preferences derived from the ratings. We measure the similarity between users based on the correlation between their rankings of the items rather than the rating values and propose new collaborative filtering algorithms for ranking items based on the preferences of similar users. Experimental results on real world movie rating data sets show that the proposed approach outperforms traditional collaborative filtering algorithms significantly on the NDCG measure for evaluating ranked results.

#*Differentially fed neural networks as ideal estimators in Bayesian space
#@R. Manjunath,K. S. Gurumurthy
#t2003
#cProceedings of the 2nd WSEAS International Conference on Electronics, Control and Signal Processing
#index39707
#%605546
#%451175
#!The interactions among a family of probability distributions can be studied under Information Geometry. With Bayesian decision theory, these interactions lead to the concept of "ideal estimates". In this paper the concept of differential feedback is added to Information geometry. Here the probability distribution is mapped on to the hyperplanes with ideal estimates on the Eigenplane.

#*Viktor Dmitrievich Kolesnik: In Memoriam

#@
#t2008
#cProblems of Information Transmission
#index39708

#*Financial and policing/security data mining
#@
#t2007
#cProceedings of the sixth Australasian conference on Data mining and analytics - Volume 70
#index39709

#*Analysing formal models of genetic regulatory networks with delays
#@Jamil Ahmad,Olivier Roux,Gilles Bernot,Jean-Paul Comet,Adrien Richard
#t2008
#cInternational Journal of Bioinformatics Research and Applications
#index39710
#%593446
#%267255
#%265578
#%119013
#!In this paper, we propose a refinement of the modelling of biological regulatory networks based on the discrete approach of Rene Thomas. We refine and automatise the use of delays of activation/inhibition in order to specify which variable is more quickly affected by a change of its regulators. The formalism of linear hybrid automata is well suited to allow such refinement. We then use HyTech for two purposes: to find automatically all paths from a specified initial state to another one; to synthesise constraints on the delay parameters in order to follow any specific path.

#*Towards an Architecture for Balancing Privacy and Traceability in Ubiquitous Computing Environments
#@Stefan G. Weber,Andreas Heinemann,Max Mühlhäuser
#t2008
#cProceedings of the 2008 Third International Conference on Availability, Reliability and Security
#index39711
#!Privacy Preservation has been identified as an important factor to the success and acceptance of Ubiquitous Compu-ting systems. Traceability, i.e.~attributing events and actions to those who caused them, seems to be a directly contradicting goal. However, harnessing sensitive data collected by Ubiquitous Computing infrastructures for traceability applications in a privacy-respecting manner may clearly bring further benefits, for different concerned parties. Automated working hours recording and personalized insurances are first examples of such applications.To contribute to this matter, this paper presents an architecture that allows for balancing between privacy and traceability in Ubiquitous Computing environments. We describe its foundations and components and illustrate its benefits. Moreover, we discuss important existing research

approaches on privacy protection and traceability applications in Ubiquitous Computing settings.

#*Sharp Jackson inequalities
#@F. Dai,Z. Ditzian,S. Tikhonov
#t2008
#cJournal of Approximation Theory
#index39712
#%163837
#%102332
#!For trigonometric polynomials on [-@p,@p]=T, the classical Jackson inequality E"n(f)"p=

#*The Fmics View On The Verified Software Repository
#@Alvaro E. Arenas,Juan C. Bicarregui,Tiziana Margaria
#t2006
#cJournal of Integrated Design Process Science
#index39713
#%28222
#%108913
#!An important step in meeting the Verifying Compiler Grand Challenge is the Verified Software Repository. In the FMICS view, the repository should include proven correct software and tools to help establishing the correctness of the software in question. We propose to set up a collaborative demonstrator, based on the jETI technology, to provide tools to the repository and to orchestrate different tools.

#*Combining building blocks for parallel multi-level matrix multiplication
#@S. Hunold,T. Rauber,G. Rünger
#t2008
#cParallel Computing
#index39714
#%106195
#%324555
#%598063
#%105085
#!This paper presents parallel algorithms for matrix-matrix multiplication which are built up from several algorithms in a multi-level structure. The upper level consists of Strassen's algorithm which is performed for a predefined number of recursions. The number of recursions can be adapted to the specific execution platform. The intermediate level is performed by a parallel non-hierarchical algorithm and the lower level uses efficient one-processor implementations of matrix-matrix multiplication like BLAS or ATLAS. Both the number of recursions of Strassen's algorithm and the specific algorithms of the intermediate and lower level can be chosen so that a variety of different multi-level algorithms results. Each level of the multi-level algorithms is associated with a hierarchical partition of the set of available processors into disjoint subsets so that deeper levels of the algorithm employ smaller groups of processors in

parallel. The algorithms are expressed in the multiprocessor task programming model and are coded with the runtime library Tlib. Performance experiments on several parallel platforms show that the multi-level algorithms can lead to significant performance gains.

#*The parallel complexity of the subgraph connectivity problem
#@L. Kirousis
#t1989
#cProceedings of the 30th Annual Symposium on Foundations of Computer Science
#index39715
#!It is shown that the problem of testing whether a graph G contains a vertex-(edge-) connected induced subgraph of cardinality k is P-complete for any fixed k>or=3. Moreover, it is shown that approximating within a factor c>1/2 the maximum d for which there is a d-vertex-(d-edge-) connected induced subgraph of G is not in NC, unless P=NC. In contrast, it is known that the problem of finding the Tutte (triconnected) components of G is in NC. On the positive side, it is shown by proving extremal-graph results, that the maximum d for which there is a d-edge-connected induced subgraph of G can be approximated in NC within any factor c

#*Uncertain & probabilistic data
#@
#t2008
#cProceedings of the twenty-seventh ACM SIGMOD-SIGACT-SIGART symposium on Principles of database systems
#index39716

#*A geographic routing protocol utilizing link lifetime and power control for mobile ad hoc networks
#@Sangsu Jung,Dujeong Lee,Sangyoon Yoon,Jaehwi Shin,Youngwoo Lee,Jeonghoon Mo
#t2008
#cProceeding of the 1st ACM international workshop on Foundations of wireless ad hoc and sensor networking and computing
#index39717
#%20976
#%97092
#%325232
#%293177
#%248496
#%580504
#!It is known that existing geographic routing cannot maintain its capability in sparse networks compared to that in dense networks. Furthermore, mobile environments worsen the performance of greedy forwarding based routing. To become a practical protocol candidate, it is necessary to sustain stable performance irrespective of a network topology and mobility. For this purpose, we propose a novel geographic routing protocol, Power Boosting Geographic Routing with link lifetime estimation (PBGR), which utilizes link lifetime estimation and power control on the top of geographic routing. Specifically, the

link life time estimation can upgrade the performance of greedy forwarding under mobile scenarios and the power boosting enables greedy forwarding to maintain its strength in sparse networks. Simulation results exhibit superior performance of our protocol.

#*Decision versus search problems in super-polynomial time
#@R. Impagliazzo
#t1989
#cProceedings of the 30th Annual Symposium on Foundations of Computer Science
#index39718
#!The following propositions are considered: (1) E=NE (i.e. it is decidable in exponential time whether there is a solution for an exponential-type search problem). (2) Every exponential-type search problem is solvable in exponential time. (3) The first solution to every exponential-type search problem can be found in exponential time. (4) E=E/sup NP/. It is easy to see that (4) implies (3) implies (2) implies (1). It has been conjectured that the first and last of these assumptions are equivalent in every relativized world. It is proved here that there exist relativized words in which the last two implications are not reversible. This is evidence that the search problem is not reducible to decision problems in exponential time. It is also proved that the third and fourth assumptions are equivalent. The combinatorial core of the separation results is a lower bound on the parallel complexity of a generalized version of the X-search problem.

#*A Review of: "CODE: Collaborative Ownership and the Digital Economy, edited by Rishab Aiyer Ghosh. Cambridge, MA: MIT Press, 2005. x + 345 pp. $37.50 (cloth). ISBN 0-262-07260-2."
#@Gabriella Coleman
#t2007
#cThe Information Society
#index39719

#*A MATLAB program for estimation of unsaturated hydraulic soil parameters using an infiltrometer technique
#@Mikkel Mollerup,Søren Hansen,Carsten Petersen,Jeppe H. Kjaersgaard
#t2008
#cComputers Geosciences
#index39720
#!We combined an inverse routine for assessing the hydraulic soil parameters of the Campbell/Mualem model with the power series solution developed by Philip for describing one-dimensional vertical infiltration into a homogenous soil. We based the estimation routine on a proposed measurement procedure especially suitable for early-time infiltrometer experiments where the flow can be considered as one-dimensional. The routine requires input of the initial soil water content and cumulative infiltration in two experiments with different pressures at the upper boundary and/or initial conditions. An independent measurement of the soil water content at saturation may reduce the uncertainty of estimated parameters. Response surfaces of the objective function were

analysed. Scenarios for various soils and conditions, using numerically generated synthetic cumulative infiltration data with normally distributed errors, show promising results for finding the true values of the optimized parameters. We also investigated the effects of measurement frequency for the cumulative infiltration and errors in water content determinations.

#*Buffer overflow asymptotics for multiplexed regulated traffic
#@Y. Ying,F. Guillemin,R. Mazumdar,C. Rosenberg
#t2008
#cPerformance Evaluation
#index39721
#%618330
#%105879
#!By characterizing the worst-case profile, which maximizes the content of a buffer fed with leaky bucket regulated flows in packet telecommunication networks, we derive a tight upper bound in the many-sources regime for the tail distribution of the workload generated by these flows in a FIFO queue with constant service rate. Furthermore, we compare this workload distribution with an M/G/1 queue and get insights on the better-than-Poisson property of regulated flows. We conclude that the superposition of independent regulated flows generates an asymptotically smaller workload than a marked Poisson process whose service times and intensity depend on the parameters of regulated sources.

#*INTEGRATING LIBRARY SERVICES AND RESOURCES AT THE OPEN UNIVERSITY
#@Susan Eales,Non Scantlebury
#t2007
#cThe New Review of Information Networking
#index39722
#!This paper was presented at the cpd25 Conference, London, on 23 April 2007. It gives an overview of the development of the Open University virtual learning environment (OU VLE), using the Moodle open source solution. In particular, this paper provides information and illustration of the Moodle enhancement projects that are being led by the Library, and the new e-portfolio system-MyStuff-into which the Library is having significant input. The paper concludes by indicating how involvement in the development of the new Library website, called Open Library 2.0, and in the OU VLE, has benefited this work and the overall reputation of the Library.

#*Choosing knowledge management strategies by using a combined ANP and DEMATEL approach
#@Wei-Wen Wu
#t2008
#cExpert Systems with Applications: An International Journal
#index39723
#%301627
#%291456
#!Numerous companies are expecting their knowledge management (KM) to be performed effectively in order to leverage and transform the knowledge into

competitive advantages. However, here raises a critical issue of how companies can better evaluate and select a favorable KM strategy prior to a successful KM implementation. The KM strategy selection is a kind of multiple criteria decision-making (MCDM) problem, which requires considering a large number of complex factors as multiple evaluation criteria. A robust MCDM method should consider the interactions among criteria. The analytic network process (ANP) is a relatively new MCDM method which can deal with all kinds of interactions systematically. Moreover, the Decision Making Trial and Evaluation Laboratory (DEMATEL) not only can convert the relations between cause and effect of criteria into a visual structural model, but also can be used as a way to handle the inner dependences within a set of criteria. Hence, this paper proposes an effective solution based on a combined ANP and DEMATEL approach to help companies that need to evaluate and select KM strategies. Additionally, an empirical study is presented to illustrate the application of the proposed method.

#*What can we sort in o(nlog n) time?
#@A. M. Ben-Amram,Z. Galil
#t1993
#cProceedings of the 1993 IEEE 34th Annual Foundations of Computer Science
#index39724
#!We define two conditions on a random access machine (RAM) with arithmetic and Boolean instructions and possible bounds on word and memory sizes. One condition asserts that we either restrict attention to short words or allow non-uniform programs. The second asserts that we either allow a large memory or a double-precision multiplication. Our main theorem shows that the RAM can sort in o(nlog n) time if and only if both of these conditions hold. This theorem breaks down into four upper bounds only one of which has been known before, and two lower bounds neither of which has been known.

#*A generic grid interface for parallel and adaptive scientific computing. Part I: abstract framework
#@P. Bastian,M. Blatt,A. Dedner,C. Engwer,R. Klöfkorn,M. Ohlberger,O. Sander
#t2008
#cComputing
#index39725
#%46646
#!We give a mathematically rigorous definition of a grid for algorithms solving partial differential equations. Unlike previous approaches (Benger 2005, PhD thesis; Berti 2000, PhD thesis), our grids have a hierarchical structure. This makes them suitable for geometric multigrid algorithms and hierarchical local grid refinement. The description is also general enough to include geometrically non-conforming grids. The definitions in this article serve as the basis for an implementation of an abstract grid interface as C++ classes in the framework (Bastian et al. 2008, this issue).

#*Contributed papers: web services

#@
#t2008
#cProceedings of the thirty-first Australasian conference on Computer science - Volume 74
#index39726

#*The fun of using TCP for an MMORPG
#@Carsten Griwodz,Pål Halvorsen
#t2006
#cProceedings of the 2006 international workshop on Network and operating systems support for digital audio and video
#index39727
#%236721
#!Massive multi-player online games have become a popular, fast growing, multi-million industry with a very high user mass supporting hundreds or thousands of concurrent players. In many cases, these games are centralized and every player communicates with the central server through a time-critical unicast event stream. Funcom's Anarchy Online is one of these; it is based on TCP. We find that its kind of traffic has some interesting properties that inspire changes to protocol or architecture. In these game streams, TCP does not back off, using TCP does not have to be slower than using UDP, and almost only repeated timeouts ruin the game experience. Improving the latter in the sender implementation does not impose any remarkable penalty on the network. Alternatively, a proxy architecture for multiplexing could save about 40% resources at the server, allow congestion control to work and also reduce the lag of the game.

#*Multimodality Medical Image Registration Using Hybrid Optimization Algorithm
#@Hanling Zhang,Fan Yang
#t2008
#cProceedings of the 2008 International Conference on BioMedical Engineering and Informatics - Volume 02
#index39728
#!Optimization of a similarity metric is a essential component in multimodality medical image registration. In this paper, a hybrid optimization algorithm is proposed. When dealing with multimodality medical images, the authors search the best matching parameters by applying mutual information as similarity measure and hybrid optimization algorithm as search strategy. The registration results prove that the subvoxel accuracy can be achieved and this method is an efficient registration one which can avoid getting into the local optimum.

#*Biophysical modelling and NDVI time series to project near-term forage supply: spectral analysis aided by wavelet denoising and ARIMA modelling
#@M. N. Alhamad,J. Stuth,M. Vannucci
#t2007
#cInternational Journal of Remote Sensing
#index39729
#%247546
#%232613

#%531457
#!Point-based biophysical simulation of forage production coupled with 1-km AVHRR NDVI data was used to determine the feasibility of projecting forage conditions 84 days into the future to support stocking decision making for livestock production using autoregressive integrated moving average (ARIMA) with Box and Jenkins methodology. The study was conducted at three highly contrasting ecosystems in South Texas over the period 1989-2000. Wavelet transform was introduced as a mathematical tool to denoise the NDVI time series. The simulated forage production, NDVI and denoised NDVI (DeNDVI) were subject to spectral decomposition for the detection of periodicities. Spectral analysis revealed bimodal vegetation growth patterns in Southwestern Texas. A yearly cycle (364 days) of peak vegetation production was detected for the three study sites, another peak forage production was revealed by spectral analysis at 182 days following the first peak in vegetation production. A similar trend was found for the NDVI imageries sensing the study sites. Wavelet denoising of NDVI signal was effective in revealing clear periodicities in one study site where maximum variability of NDVI was noted. The Box and Jenkins ARIMA modelling approach was used as a forecasting method for near-term forage production to assist range managers in proactive operational stocking decisions to mitigate drought risk. Using denoised NDVI provided forage projections with the lowest standard error prediction (SEP) throughout the forecast 84-day periods. However, acceptable SEP was only achieved up to 6 weeks into a projection for the forage-only based forecasts. The ARIMA forecasting methodology appears to offer a new approach to help managers of livestock production through the creation of near real-time early warning systems. Using satellite-derived NDVI data as a covariate improved the forecast quality and reduced the standard error of forecast in three highly contrasting sites. Denoising the NDVI data using wavelet methods further improved the forecast quality in all study sites. The integration of AVHRR NDVI data and biophysical simulation of forage production appears a promising approach for assisting decision makers in a positive manner by assessing forage conditions in response to emerging weather conditions and near real-time projection of available forage for grazing animals.

#*Explicit Volume-Preserving Splitting Methods for Linear and Quadratic Divergence-Free Vector Fields
#@R. I. McLachlan,H. Z. Munthe-Kaas,G. R. W. Quispel,A. Zanna
#t2008
#cFoundations of Computational Mathematics
#index39730
#!We present new explicit volume-preserving methods based on splitting for polynomial divergence-free vector fields. The methods can be divided in two classes: methods that distinguish between the diagonal part and the off-diagonal part and methods that do not. For the methods in the first class it is possible to combine different treatments of the diagonal and off-diagonal parts, giving rise to a number of possible combinations.

#*Composable memory transactions
#@Tim Harris,Simon Marlow,Simon Peyton Jones,Maurice Herlihy

#t2008
#cCommunications of the ACM
#index39731
#%2336
#%250634
#%426293
#%210055

#*Verification
#@
#t2008
#cProceedings of the 2008 international workshop on Software engineering for adaptive and self-managing systems
#index39732

#*Computability Theoretic Properties of the Entropy of Gap Shifts
#@Peter Hertling,Christoph Spandl
#t2008
#cFundamenta Informaticae
#index39733
#%158974
#%317271
#!First, we analyse the computability theoretic relationship between the defining set S of a "gap shift" and the language of the gap shift. Therefore, we look at various computability theoretic conditions that the set S of a gap shift or the language of a gap shift might satisfy: decidability, computable enumerability, and computable enumerability of the complement. Then we look at the topological entropy of a gap shift and analyse the relationship between on the one hand the various kinds of computability theoretic conditions on a gap shift that we just mentioned and on the other hand various kinds of computability theoretic conditions on the entropy resp. on any real number in the unit interval: computability, left-computability, and right-computability.

#*Tagging semantics: investigations with wordnet
#@Michael J. Cole,Jacek Gwizdka
#t2008
#cProceedings of the 8th ACM/IEEE-CS joint conference on Digital libraries
#index39734
#!The content of a tag sequence references both a user's concepts and the user's conceptualization of an information object. The tagging history of 823 users of the Delicious social tagging service is analyzed using WordNet. Three semantic measures of the tagging content are developed: the level of category references, the changes in category level for each noun as the tagging sequence unfolds, and the scope of concept coverage as the compactness of the WordNet subgraph for the noun senses. Observed patterns of concept reference as a function of sequence position hint at dynamic properties of the tag production process by marking a trace of cognitive activity. If tagging is object categorization, these measures provide a view of the personal categorization behavior of non-professionals and

illuminate biases in the production of 'folksonomies' due to tag production processes.

#*Automatic volume management for programmable microfluidics
#@Ahmed M. Amin,Mithuna Thottethodi,T. N. Vijaykumar,Steven Wereley,Stephen C. Jacobson
#t2008
#cProceedings of the 2008 ACM SIGPLAN conference on Programming language design and implementation
#index39735
#%428589
#%466228
#%597332
#%43256
#!Microfluidics has enabled lab-on-a-chip technology to miniaturize and integrate biological and chemical analyses to a single chip comprising channels, valves, mixers, heaters, separators, and sensors. Recent papers have proposed programmable labs-on-a-chip as an alternative to traditional application-specific chips to reduce design effort, time, and cost. While these previous papers provide the basic support for programmability, this paper identifies and addresses a practical issue, namely, fluid volume management. Volume management addresses the problem that the use of a fluid depletes it and unless the given volume of a fluid is distributed carefully among all its uses, execution may run out of the fluid before all its uses are complete. Additionally, fluid volumes should not overflow (i.e., exceed hardware capacity) or underflow (i.e., fall below hardware resolution). We show that the problem can be formulated as a linear programming problem (LP). Because LP's complexity and slow execution times in practice may be a concern, we propose another approach, called DAGSolve, which over-constrains the problem to achieve linear complexity while maintaining good solution quality. We also propose two optimizations, called cascading and static replication, to handle cases involving extreme mix ratios and numerous fluid uses which may defeat both LP and DAGSolve. Using some real-world assays, we show that our techniques produce good solutions while being faster than LP.

#*Fuzzy semi-parametric sample selection model for participation of married women
#@L. Muhamad Safiih,A. A. Basah Kamil,M. T. Abu Osman
#t2007
#cProceedings of the 12th WSEAS International Conference on Applied Mathematics
#index39736
#%227132
#!The sample selection model is studied in the context of semi-parametric methods. The issue of uncertainty and ambiguity are still major problems and the modelling of a semi-parametric sample selection model as well as its parametric is complicated. The best approach of accounting for uncertainty and ambiguity is to take advantage of the tools provided by the theory of fuzzy sets. The semi-parametric of a sample selection model is an econometric model that has found an

interesting application in empirical studies. In this paper, the married women participants in the Malaysia labour force are studied. It comprises the analysis of a) participation equation in the wage sector and b) the wage equation in the wage sector. The data set used for this study is from the Malaysian population and family survey 1994 (MPFS-1994).

#*Effective Symbolic Dynamics
#@Douglas Cenzer,S. Ali Dashti,Jonathan L. F. King
#t2008
#cElectronic Notes in Theoretical Computer Science (ENTCS)
#index39737
#%535862
#%317271
#!We investigate computable subshifts and the connection with effective symbolic dynamics. It is shown that a decidable @P"1^0 class P is a subshift if and only if there is a computable function F mapping 2^N to 2^N such that P is the set of itineraries of elements of 2^N. A @P"1^0 subshift is constructed which has no computable element. We also consider the symbolic dynamics of maps on the unit interval.

#*Hit Miss Networks with Applications to Instance Selection
#@Elena Marchiori
#t2008
#cThe Journal of Machine Learning Research
#index39738
#%4268
#%9379
#%531284
#%346222
#%380361
#%291624
#%376852
#!In supervised learning, a training set consisting of labeled instances is used by a learning algorithm for generating a model (classifier) that is subsequently employed for deciding the class label of new instances (for generalization). Characteristics of the training set, such as presence of noisy instances and size, influence the learning algorithm and affect generalization performance. This paper introduces a new network-based representation of a training set, called hit miss network (HMN), which provides a compact description of the nearest neighbor relation over pairs of instances from each pair of classes. We show that structural properties of HMN's correspond to properties of training points related to the one nearest neighbor (1-NN) decision rule, such as being border or central point. This motivates us to use HMN's for improving the performance of a 1-NN, classifier by removing instances from the training set (instance selection). We introduce three new HMN-based algorithms for instance selection. HMN-C, which removes instances without affecting accuracy of 1-NN on the original training set, HMN-E, based on a more aggressive storage reduction, and HMN-EI, which applies iteratively HMN-E. Their performance is assessed on 22

data sets with different characteristics, such as input dimension, cardinality, class balance, number of classes, noise content, and presence of redundant variables. Results of experiments on these data sets show that accuracy of 1-NN classifier increases significantly when HMN-EI is applied. Comparison with state-of-the-art editing algorithms for instance selection on these data sets indicates best generalization performance of HMN-EI and no significant difference in storage requirements. In general, these results indicate that HMN's provide a powerful graph-based representation of a training set, which can be successfully applied for performing noise and redundance reduction in instance-based learning.

#*The design navigator: charting java programs
#@Epameinondas Gasparis,Amnon H. Eden,Jonathan Nicholson,Rick Kazman
#t2008
#cCompanion of the 30th international conference on Software engineering
#index39739
#%613535
#!The Design Navigator is a semi-automated design mining tool which reverse engineers LePUS3 design charts from Java 1.4 programs at any level of abstraction in reasonable time. We demonstrate the Design Navigator's step-wise charting process of Java Foundation Classes, generating decreasingly abstract charts of java.awt and discovering building-blocks in its design.

#*IP=PSPACE (interactive proof=polynomial space)
#@A. Shamir
#t1990
#cProceedings of the 31st Annual Symposium on Foundations of Computer Science
#index39740
#!It is proved that, when both randomization and interaction are allowed, the proofs that can be verified in polynomial time are exactly those proofs that can be generated with polynomial space. The interactive proofs introduced use only public coins, are accepted with probability one when the prover is honest, require only logarithmic workspace when the verifier is given a two-way access to his or her random tape, and by the use of known techniques can be turned into zero-knowledge proofs under the sole assumption that one-way functions exist.

#*IUI4DR: intelligent user interfaces for developing regions
#@Sheetal K Agarwal,Nitendra Rajput,John Canny,Apala Lahiri Chavan
#t2008
#cProceedings of the 13th international conference on Intelligent user interfaces
#index39741
#!Information Technology has had significant impact on the society and has touched all aspects of our lives. So far, computers and expensive devices have fueled this growth. The challenge now is to take this success of IT to its next level where IT services can be accessed by masses. "Masses" here mean the people who (a) are not yet IT literate and/or (b) do not have the purchase power to use the current IT delivery mechanisms (PC centric model) and/or (c) do not find

current IT solutions and services relevant to their life or business. Interestingly, a huge portion of the world's population falls in this category. To enable the IT access to such masses, this workshop focuses on easy-to-use and affordable, yet powerful, user interfaces that can be used by this population.

#*A UNIFIED APPROACH TO GRAPHEME-TO-PHONEME CONVERSION FOR THE PLATTOS SLOVENIAN TEXT-TO-SPEECH SYSTEM
#@Matej Rojc,Zdravko Kacic
#t2007
#cApplied Artificial Intelligence
#index39742
#%536402
#%591174
#%231021
#%318187
#!This article presents a new unified approach to modeling grapheme-to-phoneme conversion for the PLATTOS Slovenian text-to-speech system. A cascaded structure consisting of several successive processing steps is proposed for the aim of grapheme-to-phoneme conversion. Processing foreign words and rules for the post-processing of phonetic transcriptions are also incorporated in the engine. The grapheme-to-phoneme conversion engine is flexible, efficient, and appropriate for multilingual text-to-speech systems. The grapheme-to-phoneme conversion process is described via finite-state machine formalism. The engine developed for Slovenian language can be integrated into various applications but can be even more efficiently integrated into architectures based on finite-state machine formalisms. Provided the necessary language resources are available, the presented approach can also be used for other languages.

#*On the performance benefits of multihoming route control
#@Aditya Akella,Bruce Maggs,Srinivasan Seshan,Anees Shaikh
#t2008
#cIEEE/ACM Transactions on Networking (TON)
#index39743
#%231716
#%121271
#%607817
#%382250
#%414782
#%614922
#!Multihoming is increasingly being employed by large enterprises and data centers to extract good performance and reliability from their ISP connections. Multihomed end networks today can employ a variety of route control products to optimize their Internet access performance and reliability. However, little is known about the tangible benefits that such products can offer, the mechanisms they employ and their trade-offs. This paper makes two important contributions. First, we present a study of the potential improvements in Internet round-trip times (RTTs) and transfer speeds from employing multihoming route control. Our analysis shows that multihoming to three or more ISPs and cleverly scheduling

traffic across the ISPs can improve Internet RTTs and throughputs by up to 25% and 20%, respectively. However, a careful selection of ISPs is important to realize the performance improvements. Second, focusing on large enterprises, we propose and evaluate a wide-range of route control mechanisms and evaluate their design trade-offs. We implement the proposed schemes on a Linux-based Web proxy and perform a trace-based evaluation of their performance. We show that both passive and active measurement-based techniques are equally effective and could improve the Web response times of enterprise networks by up to 25% on average, compared to using a single ISP. We also outline several "best common practices" for the design of route control products.

#*Proceedings of the 35th Annual Symposium on Foundations of Computer Science
#@
#t1994
#cSFCS
#index39744

#*Cooperative multibeamforming in ad hoc networks
#@Chuxiang Li,Xiaodong Wang
#t2008
#cEURASIP Journal on Advances in Signal Processing
#index39745
#%413926
#!We treat the problem of cooperative multiple beamforming in wireless ad hoc networks. The basic scenario is that a cluster of source nodes cooperatively forms multiple data-carrying beams toward multiple destination nodes. To resolve the hidden node problem, we impose a link constraint on the receive power at each unintended destination node. Then the problem becomes to optimize the transmit powers and beam weights at the source cluster subject to the maximal transmit power constraint, the minimal receive signal-to-interference-plus-noise ratio (SINR) constraints at the destination nodes, and the minimal receive power constraints at the unintended destination nodes. We first propose an iterative transmit power allocation algorithm under fixed beamformers subject to the maximal transmit power constraint, as well as the minimal receive SINR and receive power constraints. We then develop a joint optimization algorithm to iteratively optimize the powers and the beamformers based on the duality analysis. Since channel state information (CSI) is required by the sources to perform the above optimization, we further propose a cooperative scheme to implement a simple CSI estimation and feedback mechanism based on the subspace tracking principle. Simulation results are provided to demonstrate the performance of the proposed algorithms.

#*Algorithm 881: A Set of Flexible GMRES Routines for Real and Complex Arithmetics on High-Performance Computers
#@Valérie Frayssé,Luc Giraud,Serge Gratton
#t2008
#cACM Transactions on Mathematical Software (TOMS)
#index39746

#%251764
#%238392
#%108479
#%574166
#%416126
#%479490
#%222405
#%182604
#%309651
#!In this article we describe our implementations of the FGMRES algorithm for both real and complex, single and double precision arithmetics suitable for serial, shared-memory, and distributed-memory computers. For the sake of portability, simplicity, flexibility, and efficiency, the FGMRES solvers have been implemented in Fortran 77 using the reverse communication mechanism for the matrix-vector product, the preconditioning, and the dot-product computations. For distributed-memory computation, several orthogonalization procedures have been implemented to reduce the cost of the dot-product calculation, which is a well-known bottleneck of efficiency for Krylov methods. Furthermore, either implicit or explicit calculation of the residual at restart is possible depending on the actual cost of the matrix-vector product. Finally, the implemented stopping criterion is based on a normwise backward error.

#*Isn't it time you had an emulab?
#@W. David Laverell,Zongming Fei,James N. Griffioen
#t2008
#cACM SIGCSE Bulletin
#index39747
#%5345
#!Emulabs, network testbeds on which experiments can be carried out through a web interface, are widely recognized as useful research environments. We believe that Emulabs are also excellent platforms for teaching courses in operating systems and networking. Moreover, equipment costs have fallen, and Emulab software has evolved, to the point where any school could conceivably afford their own. This raises the obvious question: "Should institutions build and operate their own Emulab?". To get a handle on this question, we describe our experiences building and operating Edulabs--Emulabs specifically designed for education--at Calvin College and the University of Kentucky. We argue that with the right technical support, owning and operating one's own Emulab is a worthwhile endeavor that has many benefits. We acknowledge, however, that in the absence of good technical support, deploying one's own Emulab can be a difficult enterprise. We also describe how we enhanced Emulab to improve its utility in an educational setting.

#*Message from the HWISE 2008 Co-Chairs
#@
#t2008
#cProceedings of the 22nd International Conference on Advanced Information Networking and Applications - Workshops

#index39748

#*Towards odyssey-VCS 2: improvements over a UML-based version control system
#@Leonardo Murta,Chessman Corrêa,João Gustavo Prudêncio,Cláudia Werner
#t2008
#cProceedings of the 2008 international workshop on Comparison and versioning of software models
#index39749
#%289619
#%573552
#%250904
#%145826
#%536556
#%174751
#%326820
#!Models are becoming first class artifacts in Software Engineering. Due to that, an infrastructure is needed to support model evolution in the same way we have for source-code. One of the key elements of such infrastructure is a version control system properly designed for models. In previous work, we presented Odyssey-VCS, a version control system tailored to fine-grained UML model elements. In this paper, we discuss the main improvements that we are incorporating on the second release of this system, which are: support for UML 2, reflective processing, explicit branching and auto-branching, generic merge algorithm, support for pessimistic concurrency policy, and support for hooks.

#*Classification of Elbow Electormyography Signals based on Directed Transfer Functions
#@Rhonira Latif,Saeid Sanei,Kianoush Nazarpour
#t2008
#cProceedings of the 2008 International Conference on BioMedical Engineering and Informatics - Volume 02
#index39750
#!A new approach for classification of electromyography (EMG) of the flexion and extension signals is introduced here. Multivariate Autoregressive (MVAR) model has been applied to a two-channel set of EMG signals from the biceps and triceps muscles during flexion and extension positions of the elbow. The MVAR coefficients are then used to define the Directed Transfer Function (DTF), which estimates the strength of the direction of the signals flow between the channels. The maximum strength of the DTF was used as the frequency domain features (training data) for EMG classification via support vector machine (SVM) algorithm. As the features obtained from the experiment uniquely describe the flexion and extension, the classifier becomes linear which lead to low level of misclassification. The overall method described here has a potential to detect and classify the type and level of muscular disorder from the way the muscle signals interact with each other.

#*Experiences with open overlays: a middleware approach to network heterogeneity
#@Paul Grace,Danny Hughes,Barry Porter,Gordon S. Blair,Geoff Coulson,Francois

Taiani
#t2008
#cProceedings of the 3rd ACM SIGOPS/EuroSys European Conference on Computer Systems 2008
#index39751
#%418442
#%308364
#%415228
#%568672
#%596406
#%431032
#%429279
#%96397
#!In order to provide an increasing number of functionalities and benefit from sophisticated and application-tailored services from the network, distributed applications are led to integrate an ever-widening range of networking technologies. As these applications become more complex, this requirement for 'network heterogeneity' is becoming a crucial issue in their development. Although progress has been made in the networking community in addressing such needs through the development of network overlays, we claim in this paper that the middleware community has been slow to integrate these advances into middleware architectures, and, hence, to provide the foundational bedrock for heterogeneous distributed applications. In response, we propose our 'open overlays' framework. This framework, which is part of a wider middleware architecture, accommodates 'overlay plug-ins', allows physical nodes to support multiple overlays, supports the stacking of overlays to create composite protocols, and adopts a declarative approach to configurable deployment and dynamic reconfigurability. The framework has been in development for a number of years and supports an extensive range of overlay plug-ins including popular protocols such as Chord and Pastry. We report on our experiences with the open overlays framework, evaluate it in detail, and illustrate its application in a detailed case study of network heterogeneity.

#*Secondary electron detection for distributed axis electron beam systems
#@S. Tanimoto,D. S. Pickard,C. Kenney,R. F. W. Pease
#t2008
#cMicroelectronic Engineering
#index39752
#!A secondary electron detection scheme for the distributed axis, fixed-aperture system is described. It employs a multi-channel detector array with a through-hole for a primary beamlet on each channel, a field terminator installed between the detector array and sample, and a deflector forming a static transverse electric field between the field terminator and sample. These elements enable detection of the secondary electrons stimulated by the primary beamlet. In order to achieve a high detection rate, small separation of the primary beamlets, and small aberrations, the size and the layout of the through-holes of the field terminator are studied. The equation of motion in an ideal field distribution is analytically solved and the dispersion of the secondary electrons caused by the

helical motion in an axial magnetic field and chromatic variation of deflection are calculated. Aberrations are calculated by using numerical simulation. On the basis of these calculations, two types of the field terminator are proposed. One has a single through-hole, which is shared by a primary beamlet and the secondary electrons stimulated by the primary beamlet, per primary beamlet. The other has a through-hole exclusively for a primary beamlet and an extra slot for the secondary electrons, per primary beamlet. Simulations reveal that the former achieves a secondary electron detection rate of 99.7% and aberrations smaller than 4.6nm, but doesn't enable the separation of the primary beamlet to be smaller than 1000@mm. In contrast, the latter achieves a secondary electron detection rate of 95.0%, aberrations smaller than 9.7nm. Furthermore, it also enables the separation of the primary beamlet to be as small as 250@mm, the same as in our detector array at this moment.

#*Efficiency of reducing and oxidizing ash plasmas in preventing metallic barrier diffusion into porous SiOCH
#@N. Posseme,T. Chevolleau,T. David,M. Darnon,J. P. Barnes,O. Louveau,C. Licitra,D. Jalabert,H. Feldis,M. Fayolle,O. Joubert
#t2008
#cMicroelectronic Engineering
#index39753
#!This work focuses on the efficiency of reducing and oxidizing plasma chemistries in preventing metallic barrier diffusion into porous dielectric materials (SiOCH with a k value close to 2.2, porosity content around 40%). The ash processes have been performed on SiOCH coated blanket and patterned wafers in either reactive ion etching (RIE) or downstream (DS) reactors. The Rutherford backscattering spectroscopy technique (RBS) has shown that titanium based compounds diffuse into the blanket porous SiOCH without treatment during a typical TiN barrier deposition process by chemical vapor deposition (CVD). The metallic barrier diffusion is strongly limited on blanket wafers when the porous SiOCH has been previously modified (partially or fully) by ash plasmas (RIE-O"2, RIE-NH"3, DS-H"2/N"2 and DS-O"2/N"2) while the metallic barrier diffusion occurs with no modifying ash plasmas (DS-H"2/He). We have shown that ellipsometric porosimetry (EP) measurements clearly point out that no complete pore sealing is achieved with all the investigated ash plasmas. Energy-filtering transmission electron microscopy experiments (EFTEM) performed on single damascene structures have revealed significant titanium diffusion into the porous dielectric lines for DS-H"2/He and RIE-O"2 and sidewalls modification of the porous SiOCH lines (lower C/O ratio) for all the ash plasmas. The RC product (resistancexcapacitance) have been extracted from the single damascene structures and the evolution of RC product will be discussed in terms of lines modification (titanium diffusion and porous SiOCH modification).

#*FEATURELet's get physical
#@Gretchen Anderson
#t2008
#cinteractions
#index39754

#*Opinion
#@
#t2008
#ceLearn
#index39755

#*Book Review Editor's Note
#@Kathryn Clodfelter
#t2007
#cThe Information Society
#index39756

#*An embedded infrastructure of debug and trace interface for the DSP platform
#@Ming-Chang Hsieh,Chih-Tsun Huang
#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39757
#%580713
#!The paper presents an infrastructure for debug and trace of the embedded digital signal processor (DSP) system, consisting of the in-system trace interface and its methodology to optimize the compression rate of the program and data traces. The platform has been implemented in a multimedia dual-core SOC design with little area overhead. Both the benchmark evaluation and realistic system integration justified the efficiency and effectiveness of our approach.

#*Quantifying the flexibility of a manufacturing system by applying the transfer function
#@K. Alexopoulos,N. Papakostas,D. Mourtzis,P. Gogos,G. Chryssolouris
#t2007
#cInternational Journal of Computer Integrated Manufacturing
#index39758
#!This paper discusses a method of estimating the flexibility of a manufacturing system. The proposed approach is motivated by the dynamic behaviour analogy between a mechanical and a manufacturing system. The main hypothesis is that the flexibility of a manufacturing system can be calculated in the same manner as the damping factor of a mechanical system. In order for the validity of the proposed method to be tested and discussed, a set of experiments has been designed and executed, initially for a simple production system. An industrial production system has also been studied using the same approach. The results prove that this method can be used for the estimation of a manufacturing system's flexibility.

#*The relation browser tool for faceted exploratory search
#@Robert G. Capra,Gary Marchionini
#t2008
#cProceedings of the 8th ACM/IEEE-CS joint conference on Digital libraries
#index39759

#%421480
#!The Relation Browser (RB) is a tool developed by the Interaction Design Lab at the University of North Carolina at Chapel Hill for understanding relationships between items in a collection and for exploring an information space (e.g., a set of documents or webpages). The RB has been through a number of major design revisions. At JCDL 2007, we reported on two studies of information seeking that we conducted using the RB++ version of the Relation Browser software. Based on the results of those studies, we developed a set of design changes and implemented these in a new version called RB07. We will demonstrate the new RB07 interface and describe the rationale for our design changes.

#*Mendelzon test-of-time award
#@
#t2008
#cProceedings of the twenty-seventh ACM SIGMOD-SIGACT-SIGART symposium on Principles of database systems
#index39760

#*Automatic business process analysis and simulation based on DEMO
#@J. Barjis
#t2007
#cEnterprise Information Systems
#index39761
#%304720
#%47304
#%224800
#%620003
#%47932
#!Enterprise process modelling as a core area of the Enterprises Information Systems (EIS) research has long attracted theoreticians of new concepts, designers of artefacts, and practitioners of modelling. As a result a vast number of modelling methods have been generated. However, each method is challenging because they lack certain aspects. First, these methods view processes as a flowchart, undermining the deep (nested) structure of processes. Second, most of these methods are based on informal or semi-formal representation, failing direct model checking and formal analysis without further translations and mapping procedures. Finally, because the majority of these methods originated from a computing perspective, their focal point is control-flow rather than interaction of social actors. In reality, an enterprise is a complex socio-technical system that includes interaction of technical and social components. In this paper, we discuss an innovative method that will address some of these challenges and provide an improved tool for this purpose. We base our method on the field-proven DEMO theory and methodology, where emphasis is made on the interactions between social actors. The proposed method encompasses a set of graphical notations and constructs based on the Petri nets semantics that allows direct model analysis and simulation.

#*Broadcast electrode-addressing for pin-constrained multi-functional digital

microfluidic biochips
#@Tao Xu,Krishnendu Chakrabarty
#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39762
#%428001
#%339415
#%423292
#%297214
#!Recent advances in digital microfluidics have enabled lab-on-a-chip devices for DNA sequencing, immunoassays, clinical chemistry, and protein crystallization. Basic operations such as droplet dispensing, mixing, dilution, localized heating, and incubation can be carried out using a two-dimensional array of electrodes and nanoliter volumes of liquid. The number of independent input pins used to control the electrodes in such microfluidic "biochips" is an important cost-driver, especially for disposable PCB devices that are being developed for clinical and point-of-care diagnostics. However, most prior work on biochip design-automation has assumed independent control of the electrodes using a large number of input pins. Another limitation of prior work is that the mapping of control pins to electrodes is only applicable for a specific bioassay. We present a broadcast-addressing-based design technique for pin-constrained multi-functional biochips. The proposed method provides high throughput for bioassays and it reduces the number of control pins by identifying and connecting control pins with "compatible" actuation sequences. The proposed method is evaluated using a multifunctional chip designed to execute a set of multiplexed bioassays, the polymerase chain reaction, and a protein dilution assay.

#*On the computation of Boolean functions by analog circuits of bounded fan-in
#@G. Turan,F. Vatan
#t1994
#cProceedings of the 35th Annual Symposium on Foundations of Computer Science
#index39763
#!We consider the complexity of computing Boolean functions by analog circuits of bounded fan-in, i.e. by circuits of gates computing real-valued functions, either exactly or as a sign-representation. Sharp upper bounds are obtained for the complexity of the most difficult n-variable function over certain bases (sign-representation by arithmetic circuits and exact computation by piecewise linear circuits). Bounds are given for the computational power gained by adding discontinuous gate functions and nondeterminism. We also prove explicit nonlinear lower bounds for the formula size of analog circuits over bases containing addition, subtraction, multiplication, the sign function and all real constants.

#*Selecting the right MBA schools - An application of self-organizing map networks
#@Melody Y. Kiang,Dorothy M. Fisher
#t2008

#cExpert Systems with Applications: An International Journal
#index39764
#%7032
#%221305
#%459332
#%568007
#!The self-organizing map (SOM) network, an unsupervised neural computing network, is a categorization network developed by Kohonen. The SOM network was designed for solving problems that involve tasks such as clustering, visualization, and abstraction. In this study, we apply the clustering and visualization capabilities of SOM to group and plot the top 79 MBA schools as ranked by US News and World Report (USN&WR) into a two-dimensional map with four segments. The map should assist prospective students in searching for the MBA programs that best meet their personal requirements. Comparative analysis with the outputs from two popular clustering techniques K-means analysis and a two-step Factor analysis/K-means procedure are also included.

#*Refinement of temporal constraints in fuzzy associations
#@Thomas Sudkamp
#t2008
#cInternational Journal of Approximate Reasoning
#index39765
#%355878
#%360581
#%369097
#%294414
#%207703
#%362949
#!The objectives of hypothesis refinement in knowledge discovery are to produce rules that more accurately model the underlying data while maintaining rule interpretability. In this paper we introduce two refinement strategies for association rules with fuzzy temporal constraints. Disjunctive generalization produces more general rules by merging adjacent constraints within a partition of the window of temporal relevance. Temporal specification uses linguistic hedges to reduce the duration of a constraint to better model the distribution of examples. Both types of refinement produce rules expressible using the linguistic terms of the original rules. The acquisition of the information needed to perform the refinements is incorporated into a general algorithm for determining the number of examples and counterexamples of rules with fuzzy temporal constraints.

#*Legal research topics in user-centric services
#@O. Pitkänen,P. Virtanen,J. Kemppinen
#t2008
#cIBM Systems Journal
#index39766
#%416726
#%244902

#!There are several essential legal topics that must be included in the research agenda of service science. In this paper, we discuss these topics, beginning with an analysis of the definition of a service and a categorization of some of the actors in service systems, with their diverse interests. A set of case studies and scenarios is presented to illustrate the kinds of legal challenges that are involved in providing user-centric and customer-oriented services. We conclude by suggesting the most important legal topics that should be studied further in relation to service science.

#*Dual-link failure resiliency through backup link mutual exclusion
#@Srinivasan Ramasubramanian,Amit Chandak
#t2008
#cIEEE/ACM Transactions on Networking (TON)
#index39767
#%8444
#%561536
#!Networks employ link protection to achieve fast recovery from link failures. While the first link failure can be protected using link protection, there are several alternatives for protecting against the second failure. This paper formally classifies the approaches to dual-link failure resiliency. One of the strategies to recover from dual-link failures is to employ link protection for the two failed links independently, which requires that two links may not use each other in their backup paths if they may fail simultaneously. Such a requirement is referred to as backup link mutual exclusion (BLME) constraint and the problem of identifying a backup path for every link that satisfies the above requirement is referred to as the BLME problem. This paper develops the necessary theory to establish the sufficient conditions for existence of a solution to the BLME problem. Solution methodologies for the BLME problem is developed using two approaches by: 1) formulating the backup path selection as an integer linear program; 2) developing a polynomial time heuristic based on minimum cost path routing. The ILP formulation and heuristic are applied to six networks and their performance is compared with approaches that assume precise knowledge of dual-link failure. It is observed that a solution exists for all of the six networks considered. The heuristic approach is shown to obtain feasible solutions that are resilient to most dual-link failures, although the backup path lengths may be significantly higher than optimal. In addition, the paper illustrates the significance of the knowledge of failure location by illustrating that network with higher connectivity may require lesser capacity than one with a lower connectivity to recover from dual-link failures.

#*The cost of supporting references in collaborative augmented reality
#@Jeff Chastine,Ying Zhu
#t2008
#cProceedings of graphics interface 2008
#index39768
#%532495
#%313595
#%110448

#%118476
#%122726
#%118253
#%577035
#%429237
#%575584
#%330685
#!For successful collaboration to occur, a fundamental requirement is the ability for participants to refer to artifacts within the shared environment. This task is often straightforward in traditional collaborative desktop applications, yet the spatial properties found in mixed reality environments greatly impact the complexity of generating and interpreting meaningful reference cues. Although awareness is a very active area of research, little focus has been given to the environmental and contextual factors that influence referencing or the costs associated with supporting it in mixed reality environments. The work presented here consists of a compilation of understanding we have gained through user observation, participant feedback and system development. We begin by summarizing our findings from several user studies in collaborative augmented reality (AR). To organize the complexity associated with referencing in AR, we enumerate contextual and environmental factors that influence referential awareness - integrating discussion about user preferences and the impact they have on the underlying technological requirements. Finally, we discuss how these factors can impact the design space of collaborative systems and describe the cost associated with supporting references in collaborative AR.

#*Heuristics for planning with penalties and rewards formulated in logic and computed through circuits
#@Blai Bonet,Héctor Geffner
#t2008
#cArtificial Intelligence
#index39769
#%486981
#%248879
#%619552
#%211139
#%293288
#%453387
#%611573
#%170055
#%323279
#%234137
#%158583
#%286575
#%157539
#%247435
#!The automatic derivation of heuristic functions for guiding the search for plans is a fundamental technique in planning. The type of heuristics that have

been considered so far, however, deal only with simple planning models where costs are associated with actions but not with states. In this work we address this limitation by formulating a more expressive planning model and a corresponding heuristic where preferences in the form of penalties and rewards are associated with fluents as well. The heuristic, that is a generalization of the well-known delete-relaxation heuristic, is admissible, informative, but intractable. Exploiting a correspondence between heuristics and preferred models, and a property of formulas compiled in d-DNNF, we show however that if a suitable relaxation of the domain, expressed as the strong completion of a logic program with no time indices or horizon is compiled into d-DNNF, the heuristic can be computed for any search state in time that is linear in the size of the compiled representation. This representation defines an evaluation network or circuit that maps states into heuristic values in linear-time. While this circuit may have exponential size in the worst case, as for OBDDs, this is not necessarily so. We report empirical results, discuss the application of the framework in settings where there are no goals but just preferences, and illustrate the versatility of the account by developing a new heuristic that overcomes limitations of delete-based relaxations through the use of valid but implicit plan constraints. In particular, for the Traveling Salesman Problem, the new heuristic captures the exact cost while the delete-relaxation heuristic, which is also exponential in the worst case, captures only the Minimum Spanning Tree lower bound.

#*Videos available online only
#@
#t2007
#cProceedings of the 2007 ACM SIGMOD international conference on Management of data
#index39770

#*Electric field integral equation combined with cylindrical conduction mode basis functions for electrical modeling of three-dimensional interconnects
#@Ki Jin Han,Madhavan Swaminathan,Ege Engin
#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39771
#!For the modeling of interconnect in three-dimensional packagings, this paper proposes a method based on the electric field integral equation (EFIE) with cylindrical conduction mode basis functions (CMBF). The bases are defined to describe arbitrary skin and proximity effects, and partial impedances are obtained from the formulation of the EFIE with CMBF's. Examples of several 3-D interconnects verify that the proposed method is efficient in speed and memory.

#*Neural networks in process life cycle profit modelling
#@Teemu Räsänen,Risto Soukka,Sami Kokki,Yrjö Hiltunen
#t2008
#cExpert Systems with Applications: An International Journal
#index39772

#%620765
#!Changes in operational environment of the process industry such as decreasing selling prices, increased competition between companies and new legislation, set requirements for performance and effectiveness of the industrial production lines and processes. For the basis of this study, a life cycle profit (LCP) model of a pulp process was constructed using different kind of process information including chemical consumptions and production levels of material and energy flows in unit processes. However, all the information needed in the creation of relevant LCP model was not directly provided by information systems of the plant. In this study, neural networks was used to model pulp bleaching process and fill out missing information and furthermore to create estimators for the alkaline chemical consumption. A data-based modelling approach was applied using an example, where factors affecting the sodium hydroxide consumption in the bleaching stage were solved. The results showed that raw process data can be refined into new valuable information using computational methods and moreover to improve the accuracy of life cycle profit models.

#*9B
#@
#t2008
#cProceedings of the twenty-fourth annual symposium on Computational geometry
#index39773

#*Modeling the Dynamics of the Human Pulse Data by MDL-optimal Neural Networks
#@Yingnan Ma,Yi Zhao,Youhua Fan,Hong Hu,Xiujun Zhang
#t2008
#cProceedings of the 2008 International Conference on BioMedical Engineering and Informatics - Volume 02
#index39774
#!In this paper, we describe an information theoretic criterion, the method of minimum description length (MDL), to determine optimal neural networks to predict the human pulse data as well as non-stationary Lorenz data. Such optimal models which minimize the description length of the data both generalize well and accurately capture the dynamics of the original data. It demonstrates the potential utility of our MDL- optimal model in biomedical time series modeling.

#*Fast reroute with pre-established bypass tunnel in MPLS
#@Wei Kuang Lai,Zhen Chang Zheng,Chen-Da Tsai
#t2008
#cComputer Communications
#index39775
#!Internet IP networks utilize multiple-protocol label switching (MPLS), which provides a reliable label switched path (LSP). LSP in MPLS domains needs one label at each Ingress label switching router (LSR) to forward the packet. This study presents a novel method to facilitate restoration of LSP in the MPLS network. The proposed method attempts to establish all possible bypass tunnels based on the available bandwidth between two LSRs around the protected label switched router. The Max-Flow Min-Cut theorem is adopted to find the necessary

links through which all paths between LSR"i and LSR"j must pass. All LSPs affected by a LSR failure or a link failure can specify a bypass tunnel that fits its QoS constraints to reroute if there is one. This study also compares the pre-established bypass tunnel (PBT) algorithm and the PBT algorithm with disjoint bypass tunnels (PBT-D). The simulation results indicate that the proposed method has less packet losses in rerouting and can allow more affected LSPs to reroute traffic than RSVP and efficient Pre-Qualify. Additionally, the PBT performs better than PBT-D in terms of correctly receiving ratio and successfully rerouting ratio although PBT-D has the advantages of establishing less paths and fast search time.

#*IBM POWER6 microarchitecture
#@H. Q. Le,W. J. Starke,J. S. Fields,F. P. O'Connell,D. Q. Nguyen,B. J. Ronchetti,W. M. Sauer,E. M. Schwarz,M. T. Vaden
#t2007
#cIBM Journal of Research and Development
#index39776
#%522404
#%421726
#!This paper describes the implementation of the IBM POWER6 microprocessor, a two-way simultaneous multithreaded (SMT) dual-core chip whose key features include binary compatibility with IBM POWER5 microprocessor-based systems; increased functional capabilities, such as decimal floating-point and vector multimedia extensions; significant reliability, availability, and serviceability enhancements; and robust scalability with up to 64 physical processors. Based on a new industry-leading high-frequency core architecture with enhanced SMT and driven by a high-throughput symmetric multiprocessing (SMP) cache and memory subsystem, the POWER6 chip achieves a significant performance boost compared with its predecessor, the POWER5 chip. Key extensions to the coherence protocol enable POWER6 microprocessor-based systems to achieve better SMP scalability while enabling reductions in system packaging complexity and cost.

#*Computational intelligence and active networks
#@Behzad Moshiri,Mahdi Jalili-Kharaajoo
#t2005
#cProceedings of the 4th WSEAS International Conference on Telecommunications and Informatics
#index39777
#%443469
#%246060
#%617697
#%232114
#%321698
#%224052
#!In this paper, some application of computational intelligence techniques in active networking technology well be presented. Computational intelligent techniques, e.g., neural networks, fuzzy systems, neuro-fuzzy systems, and evolutionary algorithms have been successfully applied for many engineering

problems. The introduction of active networking adds a high degree of flexibility in customizing the network infrastructure and introduces new functionality. Therefore, there is a clear need for investigating both the applicability of computational intelligence techniques in this new networking environment, as well as the provisions of active networking technology that computational intelligence techniques can exploit for improved operation.

#*Revealing Significant Biological Knowledge via Gene Ontologies and Pathways
#@Michalis E. Blazadonakis,Michalis Zervakis
#t2008
#cProceedings of the 2008 International Conference on BioMedical Engineering and Informatics - Volume 01
#index39778
#!Many scientific works in the field of bioinformatics and marker selection deal with the problem of deriving a gene signature with significant statistical properties without paying much attention on the biological aspect of the produced result. In this paper we asses the problem of revealing possible significant knowledge which might be hidden under a given gene signature, using previous biological information provided through gene ontologies and pathways.

#*Compiler-driven register re-assignment for register file power-density and temperature reduction
#@Xiangrong Zhou,Chenjie Yu,Peter Petrov
#t2008
#cProceedings of the 45th annual Design Automation Conference
#index39779
#%574255
#%77419
#!Temperature hot-spots have been known to cause severe reliability problems and to significantly increase leakage power. The register file has been previously shown to exhibit the highest temperature compared to all other hardware components in a modern high-end embedded processor, which makes it particularly susceptible to faults and elevated leakage power. We show that this is mostly due to the highly clustered register file accesses where a set of few registers physically placed close to each other are accessed with very high frequency. In this paper we propose a compiler-based register reassignment methodology, which purpose is to break such groups of registers and to uniformly distribute the accesses to the register file. This is achieved with no performance and no hardware overheads. We show that the underlying problem is NP-hard, and subsequently introduce an efficient algorithmic heuristic.

#*Bringing School Science to Life: Personalization, Contextualization and Reflection of Self-Collected Data
#@Dawn Woodgate,Danaë Stanton Fraser,Mark Paxton,David Crellin,Adrian Woolard,Teresa Dillon
#t2008
#cProceedings of the Fifth IEEE International Conference on Wireless, Mobile, and Ubiquitous Technology in Education

#index39780
#!We investigate the use of mobile and sensor technologies for school science investigations, to bring about a more engaging and hands-on approach to science learning. We report early findings from two trials carried out within the Participate project, where schoolchildren were given a range of off the shelf and newly developed technologies to carry out data collection and analysis tasks. Indications are that, not only are the tasks engaging for the pupils, but aspects such as personalization of data, contextual information, and reflection upon both the data and its collection, are important factors in obtaining and retaining their interest.

#*FEATUREWeb-conscious content experiences
#@Luke Wroblewski
#t2008
#cinteractions
#index39781

#*Elliptic curve cryptography
#@Vivek Kapoor,Vivek Sonny Abraham,Ramesh Singh
#t2008
#cUbiquity
#index39782
#%277305
#%599200
#!This paper describes the Elliptic Curve Cryptography algorithm and its suitability for smart cards.

#*Inference
#@
#t2008
#cProceedings of the 2008 international symposium on Software testing and analysis
#index39783

#*Towards Improving Visual-Facial Emotion Recognition through Use of Complementary Keyboard-Stroke Pattern Information
#@George A. Tsihrintzis,Maria Virvou,Efthymios Alepis,Ioanna-Ourania Stathopoulou
#t2008
#cProceedings of the Fifth International Conference on Information Technology: New Generations
#index39784
#!In this paper, we investigate the possibility of improving the accuracy of visual-facial emotion recognition through use of additional (complementary) keyboard-stroke information. The investigation is based on two empirical studies that we have conducted involving human subjects and human observers. The studies were concerned with the recognition of emotions from a visual-facial modality and keyboard-stroke information, respectively. They were inspired by the

relative shortage of such previous research in empirical work concerning the strengths and weaknesses of each modality so that the extent can be determined to which the keyboard-stroke information complements and improves the emotion recognition accuracy of the visual-facial modality. Specifically, our research focused on the recognition of six basic emotion states, namely happiness, sadness, surprise, anger and disgust as well as the emotionless state which we refer to as neutral. We have found that the visual-facial modality may allow the recognition of certain states, such as neutral and surprise, with sufficient accuracy. However, its accuracy in recognizing anger and happiness can be improved significantly if assisted by keyboard-stroke information.

#*New products
#@Linux Journal Staff
#t2008
#cLinux Journal
#index39785

#*Analytical and Numerical Analysis of Fringing Field at Aperture Open-Ended Waveguides
#@You Kok Yeow,Zulkifly Abbas
#t2008
#cProceedings of the 2008 Second Asia International Conference on Modelling & Simulation (AMS)
#index39786
#!This paper presents an improved formulation of the admittance model for open-ended waveguides by including its fringing field effects. The results were compared to both measured and calculated values using finite element method for free space.

#*Contextual motion field-based distance for video analysis
#@Yadong Mu,Shuicheng Yan,Thomas Huang,Bingfeng Zhou
#t2008
#cThe Visual Computer: International Journal of Computer Graphics
#index39787
#!In this work, we propose a general method for computing distance between video frames or sequences. Unlike conventional appearance-based methods, we first extract motion fields from original videos. To avoid the huge memory requirement demanded by the previous approaches, we utilize the “bag of motion vectors” model, and select Gaussian mixture model as compact representation. Thus, estimating distance between two frames is equivalent to calculating the distance between their corresponding Gaussian mixture models, which is solved via earth mover distance (EMD) in this paper. On the basis of the inter-frame distance, we further develop the distance measures for both full video sequences. Our main contribution is four-fold. Firstly, we operate on a tangent vector field of spatio-temporal 2D surface manifold generated by video motions, rather than the intensity gradient space. Here we argue that the former space is more fundamental. Secondly, the correlations between frames are explicitly exploited using a generative model named dynamic conditional random

fields (DCRF). Under this framework, motion fields are estimated by Markov volumetric regression, which is more robust and may avoid the rank deficiency problem. Thirdly, our definition for video distance is in accord with human intuition and makes a better tradeoff between frame dissimilarity and chronological ordering. Lastly, our definition for frame distance allows for partial distance.

#*Cryptography and canonical number systems in quadratic fields
#@Viktor Fedoseev,Vladimir Chernov
#t2006
#cMachine Graphics Vision International Journal
#index39788
#%246397
#!This paper proposes an encryption method based on representation of messages in the canonical number systems (CNS) in quadratic fields. The essence of the encryption method is conversion of the representation of integers from the conventional number system to their representation in the CNS in a certain quadratic field. A sufficiently wide range of CNS with a given number of digits ensures resistance of the method to "accidental guessing" of the secret keys. Nonlinear nature of the conversion ensures its resistance to frequency analysis.

#*Object/relational mapping 2008: hibernate and the entity data model (edm)
#@Elizabeth J. O'Neil
#t2008
#cProceedings of the 2008 ACM SIGMOD international conference on Management of data
#index39789
#%15291
#!Object/Relational Mapping (ORM) provides a methodology and mechanism for object-oriented systems to hold their long-term data safely in a database, with transactional control over it, yet have it expressed when needed in program objects. Instead of bundles of special code for this, ORM encourages models and use of constraints for the application, which then runs in a context set up by the ORM. Today's web applications are particularly well-suited to this approach, as they are necessarily multithreaded and thus are prone to race conditions unless the interaction with the database is very carefully implemented. The ORM approach was first realized in Hibernate, an open source project for Java systems started in 2002, and this year is joined by Microsoft's Entity Data Model for .NET systems. Both are described here.

#*Changing energy use through design
#@
#t2008
#cinteractions
#index39790

#*Extracting related named entities from blogosphere for event mining
#@Yoshihiko Suhara,Hiroyuki Toda,Akito Sakurai

#t2008
#cProceedings of the 2nd international conference on Ubiquitous information management and communication
#index39791
#%320513
#!We propose a method of extracting named entities that are related to a single input word. Focusing on the syntactic dependency relation in sentences, it is reasonable to extract a case element that syntactically depends on the predicate that the input word depends on. In Japanese, though, a word which has appeared in a previous sentence is often omitted or replaced. Our proposed method, first, extracts "predicate patterns" consisting of case elements with case particles and a predicate. Then it combines predicate patterns that have the same predicate to form possible unabridged dependence relations.

#*An Efficient Method for Sampling and Computing Molecular Surface
#@Junping Xiang,Maolin Hu
#t2008
#cProceedings of the 2008 International Conference on BioMedical Engineering and Informatics - Volume 01
#index39792
#!An atom-centered protocol based method for surface sampling in grid space is proposed. Van der Waals, solvent-accessible and solvent-excluded surface can be generated in a unified framework. A spherical hash function is used to mark whether the points are inside a sphere, and the hash tables are used to record which spheres the surface points locate on. The proposed method can be modified to apply in the parallel computation directly, which is useful for molecular dynamics simulation, docking and surface comparison and so on. Our tests indicate that the proposed method is efficient and the generated surfaces are suitable for quantitative analysis and visualization.

#*7A
#@
#t2008
#cProceedings of the 40th annual ACM symposium on Theory of computing
#index39793

#*Augmenting reflective middleware with an aspect orientation support layer
#@Bholanathsingh Surajbali,Geoff Coulson,Phil Greenwood,Paul Grace
#t2007
#cProceedings of the 6th international workshop on Adaptive and reflective middleware: held at the ACM/IFIP/USENIX International Middleware Conference
#index39794
#%38226
#%607434
#%177331
#%326197
#!Reflective middleware provides an effective way to support adaptation in distributed systems. However, as distributed systems become increasingly

complex, certain drawbacks of the reflective middleware approach are becoming evident. In particular, reflective APIs are found to impose a steep learning curve, and to place too much expressive power in the hands of developers. Recently, researchers in the field of Aspect-Oriented Programming (AOP) have argued that 'dynamic aspects' show promise in alleviating these drawbacks. In this paper, we report on work that attempts to combine the reflective middleware and AOP approaches. We build an AOP support layer on top of an underlying reflective middleware substrate in such a way that it can be dynamically deployed/undeployed where and when required, and imposes no overhead when it is not used. Our AOP approach involves aspects that can be dynamically (un)weaved across a distributed system on the basis of pointcut expressions that are inherently distributed in nature, and it supports the composition of advice that is remote from the advised joinpoint. An overall goal of the work is to effectively combine reflective middleware and AOP in a way that maximises the benefits and minimises the drawbacks of each.

#*Modified big-M method to recognize the infeasibility of linear programming models
#@M. Soleimani-damaneh
#t2008
#cKnowledge-Based Systems
#index39795
#%487627
#!This paper provides an effective modification to the big-M method which leads to reducing the iterations of this method, when it is used to recognize the infeasibility of linear systems.

#*Direct neural network-based self-tuning control for a class of nonlinear systems
#@Heng Yue,Han-Xiong Li,Tianyou Chai
#t2007
#cInternational Journal of Systems Science
#index39796
#%474292
#%481895
#%244234
#!Most self-tuning control algorithms for nonlinear systems become invalid when the controlled systems have nonminimum phase property. In this article, a direct neural network-based self-tuning control strategy is developed to deal with this problem under the certainty equivalence principle. Based on an equivalent linearized model from the local linearization, the controller structure is designed using a modified Clarke index with the guaranteed closed-loop stability and without the traditional requirement of the globally boundedness. For the system with unknown parameters, the controller is self-tuned by an on line RBF neural network identifier. Satisfactory simulations illustrate the effectiveness and adaptability of the proposed strategy even under system parameter variations.

#*Mathematical Logic
#@George Tourlakis
#t2008
#c
#index39797
#!* This book presents mathematical or "symbolic" logic as a reliable tool for deductive reasoning. * It trains the student in both the established "Hilbert" style of writing proofs in mathematics, as well as in the emerging "equational" style that finds fruitful application in computer science curricula, especially in the areas of software engineering and program correctness. * There are extensive sets of examples, remarks, problems, references, and textual discussions that aim to help the reader understand what makes logic a powerful tool in the scheme of mathematical truths.

#*Synthesis for Broadside Testability of Transition Faults
#@Irith Pomeranz,Sudhakar M. Reddy
#t2008
#cProceedings of the 26th IEEE VLSI Test Symposium
#index39798
#!We describe a synthesis-for-testability approach targeting broadside testing of transition faults. We refer to this process as synthesis for broadside testability. Unlike design-for-testability (DFT) procedures that require additional control inputs to implement DFT modes of operation, synthesis for broadside testability uses only the standard scan design and relies on broadside tests to detect target faults. The proposed procedure improves the testability of a circuit by changing next-states of state-transitions from its unreachable states, i.e., states that the circuit cannot enter during functional operation. In this way, it replaces broadside tests of the original circuit with new broadside tests that are more effective in detecting target faults.

#*Dynamic friendship network and breakfast-eating behavior
#@Hsieh-Hua Yang,Hung-Jen Yang
#t2006
#cProceedings of the 10th WSEAS International Conference on APPLIED MATHEMATICS
#index39799
#!A longitudinal data was collected at six time points, Oct. and Dec. in 2005, Jan., Feb., Apr., and June in 2006. The questionnaires contain questions on health behaviors, and friendship data. The Markov model is based on transition tables that describe the transition from network position and breakfast-eating behavior at time points 1 to 2, 2 to 3, 3 to 4, 4 to 5, and 5 to 6. The states are classified into isolate breakfast-eater (ISb), group member breakfast-eater (GPb), isolate breakfast-skipper (ISNb), and group member breakfast-skipper (GPNb). The results indicate that most of the students keep their breakfast eating behavior, the transition probabilities are constant at the later stages, and group members have longer sojourn time. We conclude that friendship network is an evolution process, and will eventually reach an equilibrium status. The influences of friendship network can not ignored and the difference between "micro" and "macro" level of social network transition under Markov model needs

further scrutinized.

#*Publisher's Information
#@
#t2006
#cProceedings of the Second International Symposium on Leveraging Applications of Formal Methods, Verification and Validation
#index39800

#*Managing Cancellations and No-Shows of Reservations with Overbooking to Increase Resource Revenue
#@Anthony Sulistio,Kyong Hoon Kim,Rajkumar Buyya
#t2008
#cProceedings of the 2008 Eighth IEEE International Symposium on Cluster Computing and the Grid
#index39801
#!Advance reservation allows users to request available nodes in the future, whereas economy provides an incentive for resource owners to be part of the Grid, and encourages users to utilize resources optimally and effectively. In this paper, we use overbooking models from Revenue Management to manage cancellations and no-shows of reservations in a Grid system. Without overbooking, the resource owners are faced with a prospect of loss of income and lower system utilization. Thus, the models aim to find an ideal limit that exceeds the maximum capacity, without incurring greater compensation cost. Moreover, we introduce several novel strategies for selecting which bookings to deny, based on compensation cost and user class level, namely Lottery, Denied Cost First (DCF), and Lower Class DCF. The result shows that by overbooking reservations, a resource gains an extra 6-9% in the total net revenue.

#*(t,)-Uniqueness: Anonymity Management for Data Publication
#@Qiong Wei,Yansheng Lu,Qiang Lou
#t2008
#cProceedings of the Seventh IEEE/ACIS International Conference on Computer and Information Science (icis 2008)
#index39802
#!Recent work has shown that the adversary's background knowledge is a very important factor in privacy-preserving data publishing. In this paper, we formalize background knowledge ħ of form "an individual X's sensitive value belongs to class C or range R". Through analyzing the drawbacks of previous approaches in dealing with this form of background knowledge, we develop a novel privacy criterion (,)-uniqueness that sufficiently defends against attacks leveraging the background knowledge ħ. We accompany the criterion with an effective algorithm, which computes a privacy-guarded published table that permits retrieval of accurate aggregate information about the microdata. We illustrate its advantages through theoretical analysis and experimental validation.

#*Catch a wave: Digital water washes over 2008

#@Chris Davison
#t2008
#cComputers in Entertainment (CIE)
#index39803

#*Unit commitment using embedded greedy search particle swarm optimization with mutation operation
#@Sun Liyong,Zhang Yan,Jiang Chuanwen
#t2005
#cProceedings of the 9th International Conference on Circuits
#index39804
#!A hybrid particle swarm optimization (PSO) is presented for solving unit commitment (UC) problems. Using fixed threshold to cope with unit status variables, the proposed algorithm can directly solve UC and avoid coping with economic dispatch (ED) problems. Mutation operation is used to renew slow evolution particles for enhancing the algorithm's performance. The greedy search based on priority list is applied to improve the search speed and the solutions quality. The proposed algorithm is tested in 10 up to 100 unit systems. The results show that the proposed algorithm for UC is feasibility and efficiency.

#*Non-parametric policy gradients: a unified treatment of propositional and relational domains
#@Kristian Kersting,Kurt Driessens
#t2008
#cProceedings of the 25th international conference on Machine learning
#index39805
#%232392
#%574966
#%384320
#%327066
#%569286
#%189395
#%331210
#%231782
#%540167
#!Policy gradient approaches are a powerful instrument for learning how to interact with the environment. Existing approaches have focused on propositional and continuous domains only. Without extensive feature engineering, it is difficult - if not impossible - to apply them within structured domains, in which e.g. there is a varying number of objects and relations among them. In this paper, we describe a non-parametric policy gradient approach - called NPPG - that overcomes this limitation. The key idea is to apply Friedmann's gradient boosting: policies are represented as a weighted sum of regression models grown in an stage-wise optimization. Employing off-the-shelf regression learners, NPPG can deal with propositional, continuous, and relational domains in a unified way. Our experimental results show that it can even improve on established results.

#*Nowhere zero 4-flow in regular matroids
#@Hong-Jian Lai,Xiangwen Li,Hoifung Poon
#t2005
#cJournal of Graph Theory
#index39806
#!Jensen and Toft [8] conjectured that every 2-edge-connected graph without a K5-minor has a nowhere zero 4-flow. Walton and Welsh [19] proved that if a coloopless regular matroid M does not have a minor in {M(K3,3), M*(K5)}, then M admits a nowhere zero 4-flow. In this note, we prove that if a coloopless regular matroid M does not have a minor in {M(K5), M*(K5)}, then M admits a nowhere zero 4-flow. Our result implies the Jensen and Toft conjecture. © 2005 Wiley Periodicals, Inc. J Graph Theory

#*The probabilistic program dependence graph and its application to fault diagnosis
#@George K. Baah,Andy Podgurski,Mary Jean Harrold
#t2008
#cProceedings of the 2008 international symposium on Software testing and analysis
#index39807
#%437052
#%586654
#%104591
#%166278
#%522716
#%613175
#%83376
#%575387
#%335652
#%523081
#%550486
#!This paper presents an innovative model of a program's internal behavior over a set of test inputs, called the probabilistic program dependence graph (PPDG), that facilitates probabilistic analysis and reasoning about uncertain program behavior, particularly that associated with faults. The PPDG is an augmentation of the structural dependences represented by a program dependence graph with estimates of statistical dependences between node states, which are computed from the test set. The PPDG is based on the established framework of probabilistic graphical models, which are widely used in applications such as medical diagnosis. This paper presents algorithms for constructing PPDGs and applying the PPDG to fault diagnosis. This paper also presents preliminary evidence indicating that PPDGs can facilitate fault localization and fault comprehension.

#*Erratum: A note on "Soft Set Theory" [Comput. Math. Appl. 45 (4-5) (2003) 555-562]
#@Cheng-Fu Yang
#t2008

#cComputers Mathematics with Applications
#index39808
#!It is pointed out that the assertion of Maji, Biswas and Roy [P. K. Maji, R. Biswas, A.R. Roy, Soft set theory, Comput. Math. Appl. 45 (2003) 555-562], (F,A)@?@?@F=@F, is incorrect by a counterexample.

#*The maximum edit distance from hereditary graph properties
#@Noga Alon,Uri Stav
#t2008
#cJournal of Combinatorial Theory Series B
#index39809
#%602390
#%326153
#%318009
#%89903
#%212960
#%226391
#!For a graph property P, the edit distance of a graph G from P, denoted E"P(G), is the minimum number of edge modifications (additions or deletions) one needs to apply to G in order to turn it into a graph satisfying P. What is the largest possible edit distance of a graph on n vertices from P? Denote this distance by ed(n,P). A graph property is hereditary if it is closed under removal of vertices. In a previous work, the authors show that for any hereditary property, a random graph G(n,p(P)) essentially achieves the maximal distance from P, proving: ed(n,P)=E"P(G(n,p(P)))+o(n^2) with high probability. The proof implicitly asserts the existence of such p(P), but it does not supply a general tool for determining its value or the edit distance. In this paper, we determine the values of p(P) and ed(n,P) for some subfamilies of hereditary properties including sparse hereditary properties, complement invariant properties, (r,s)-colorability and more. We provide methods for analyzing the maximum edit distance from the graph properties of being induced H-free for some graphs H, and use it to show that in some natural cases G(n,1/2) is not the furthest graph. Throughout the paper, the various tools let us deduce the asymptotic maximum edit distance from some well studied hereditary graph properties, such as being Perfect, Chordal, Interval, Permutation, Claw-Free, Cograph and more. We also determine the edit distance of G(n,1/2) from any hereditary property, and investigate the behavior of E"P(G(n,p)) as a function of p. The proofs combine several tools in Extremal Graph Theory, including strengthened versions of the Szemeredi Regularity Lemma, Ramsey Theory and properties of random graphs.

#*Querying continuous functions in a database system
#@Arvind Thiagarajan,Samuel Madden
#t2008
#cProceedings of the 2008 ACM SIGMOD international conference on Management of data
#index39810
#%289606

#%325370
#%585826
#%383637
#%561450
#%274498
#%294552
#%271863
#!Many scientific, financial, data mining and sensor network applications need to work with continuous, rather than discrete data e.g., temperature as a function of location, or stock prices or vehicle trajectories as a function of time. Querying raw or discrete data is unsatisfactory for these applications -- e.g., in a sensor network, it is necessary to interpolate sensor readings to predict values at locations where sensors are not deployed. In other situations, raw data can be inaccurate owing to measurement errors, and it is useful to fit continuous functions to raw data and query the functions, rather than raw data itself -- e.g., fitting a smooth curve to noisy sensor readings, or a smooth trajectory to GPS data containing gaps or outliers. Existing databases do not support storing or querying continuous functions, short of brute-force discretization of functions into a collection of tuples. We present FunctionDB, a novel database system that treats mathematical functions as first-class citizens that can be queried like traditional relations. The key contribution of FunctionDB is an efficient and accurate algebraic query processor - for the broad class of multi-variable polynomial functions, FunctionDB executes queries directly on the algebraic representation of functions without materializing them into discrete points, using symbolic operations: zero finding, variable substitution, and integration. Even when closed form solutions are intractable, FunctionDB leverages symbolic approximation operations to improve performance. We evaluate FunctionDB on real data sets from a temperature sensor network, and on traffic traces from Boston roads. We show that operating in the functional domain has substantial advantages in terms of accuracy (15-30%) and up to order of magnitude (10x-100x) performance wins over existing approaches that represent models as discrete collections of points.

#*An autonomic provisioning framework for outsourcing data center based on virtual appliances
#@Xiaoying Wang,Zhihui Du,Yinong Chen,Sanli Li,Dongjun Lan,Gang Wang,Ying Chen
#t2008
#cCluster Computing
#index39811
#%20950
#%23437
#%421547
#%419255
#%586865
#%613985
#!As outsourcing data centers emerge to host applications and services from many different organizations, it is critical for data center owners to isolate different applications while dynamically and optimally allocate sharable

resources among them. To address this issue, we propose a virtual-appliance-based autonomic resource provisioning framework for large virtualized data centers. We present the architecture of the data center with enriched autonomic features. We define a non-linear constrained optimization model for dynamic resource provisioning and present a novel analytic solution. Key factors, including virtualization overhead and reconfiguration delay, are incorporated into the model. Experimental results based on a prototype demonstrate that the system-level performance has been greatly improved by taking advantage of fine-grained server consolidation, and the whole system exhibits flexible adaptation in failure scenarios. Experiments with the impact of switching delay also show the efficiency of the framework due to significantly reduced provisioning time.

#*The influence of the ground effect to the corona onset and the breakdown voltage of small rod-rod air gaps
#@Athanasios Maglaras,Leandros Maglaras
#t2006
#cProceedings of the 6th WSEAS International Conference on Systems Theory & Scientific Computation
#index39812
#!In the present paper we investigate the Ground Effect of small rod-rod air gaps, a phenomenon, which is observed due to the fact that in air gap arrangements one of the two electrodes is usually at earth potential (grounded). The field distribution along the axis of the gaps is analyzed with the Finite Element Method. The maximum values of the field strength in a gap are recorded for the two different arrangements, the one with one electrode grounded, or with symmetrical charging of the electrodes. The distribution of the field along the axis of a gap is strongly affected by the gap length, and the geometry of the arrangement. The influence of the Ground Effect to the rod-plate air gaps and the Mirror Effect are also investigated. It is resulted that the Ground Effect influences the corona onset and the breakdown voltage of the air gaps analogically. It is intense in small air gaps, while the influence of the corona current appears in longer air gaps and overlaps the Ground Effect. The principle of action-reaction is valid.

#*Fast support vector machine training and classification on graphics processors
#@Bryan Catanzaro,Narayanan Sundaram,Kurt Keutzer
#t2008
#cProceedings of the 25th international conference on Machine learning
#index39813
#%20453
#%34066
#%584715
#%421692
#%440883
#!Recent developments in programmable, highly parallel Graphics Processing Units (GPUs) have enabled high performance implementations of machine learning algorithms. We describe a solver for Support Vector Machine training running on a GPU, using the Sequential Minimal Optimization algorithm and an adaptive first

and second order working set selection heuristic, which achieves speedups of 9-35x over LIBSVM running on a traditional processor. We also present a GPU-based system for SVM classification which achieves speedups of 81-138x over LIBSVM (5-24x over our own CPU based SVM classifier).

#*Flow over rectangular porous block in a fixed width channel: influence of porosity and aspect ratio
#@S. Z. Shuja,B. S. Yilbas
#t2007
#cInternational Journal of Computational Fluid Dynamics
#index39814
#!Flow over a rectangular porous block placed in a fixed width channel is considered and the influence of block aspect ratio on the heat transfer rate from the block is examined. A non-porous solid block is also accommodated to compare the effect of porosity on the flow field and heat transfer characteristics. Aspect ratio and the porosity of the block are varied in the simulations. A numerical scheme employing a control volume approach is considered when predicting the flow and temperature fields. The Reynolds number is selected to yield the mix convection situation in the flow field. It is found that the aspect ratio significantly influences Nu and Gr numbers, in which case increasing the aspect ratio enhances Nu while lowering Gr. Increasing porosity improves the heat transfer rates from the porous block, provided that at high aspect ratios, this situation ceases due to blockage effect of the body in the channel.

#*An IMS Performance Benchmark Implementation based on the TTCN-3 Language
#@George Din
#t2008
#cInternational Journal on Software Tools for Technology Transfer (STTT)
#index39815
#!Performance benchmarking is a method to assess performance characteristics of various systems across different system architectures under realistic conditions. A benchmark is executed to collect measurements such as fail rate, response times or round-trip delays. Additionally, it can be used to identify scalability or usability problems of the system under heavy load. This paper describes a performance benchmark for the IP Multimedia Subsystem (IMS). IMS is a standardised architecture for providing a unified session control on top of various access network technologies realising flexible multimedia applications. In the context of IMS, where a scalability of up to several millions of subscribers is required, the goal of a benchmarking system is to help understand how a system will perform when the number of calls per second and the number of active users increase. The Testing and Test Control Notation (TTCN-3) has been used to implement the benchmark specification.

#*Silicon microneedle array with biodegradable tips for transdermal drug delivery
#@Bangtao Chen,Jiashen Wei,Francis E. H. Tay,Yee Ting Wong,Ciprian Iliescu
#t2008

#cMicrosystem Technologies
#index39816
#!This paper presents the fabrication process, characterization results and basic functionality of silicon microneedle array with biodegradable tips for transdermal drug delivery. In order to avoid the main problems related to silicon microneedles; the breaking of the top part of the needles inside the skin, a simple solution can be the fabrication of microneedle array with biodegradable tips. A silicon microneedle array was fabricated by deep reactive ion etching (RIE), using the photoresist reflow effect and RIE notching effect. The biodegradable tips were successfully realized using the electrochemical anodization process that selectively generated porous silicon only on the top part of the skin. The porous tips can be degraded within a few weeks if some of them are broken inside the skin during the insertion and release process. The paper presents also the results of in vitro release of calcein with animal skins using a microneedle array with biodegradable tips. Compared to the transdermal drug delivery without microneedle enhancer, the microneedle array had presented significant enhancement of drug release.

#*Verifying Statecharts with State Invariants
#@Emil Sekerinski
#t2008
#cProceedings of the 13th IEEE International Conference on on Engineering of Complex Computer Systems
#index39817
#!Statecharts are an executable visual language for specifying the reactive behavior of systems. We propose to statically verify the design expressed by a statechart by allowing individual states to be annotated with invariants and checking the consistency of the invariants with the transitions. We present an algorithm that uses the locality of state invariants for generating "many small" verification conditions that should be more amenable to automatic checking than an approach based on a single global invariant.

#*Study on the Design of CRM System Based on Business Intelligence
#@Li He,Guan Xin,Gong Yufeng
#t2008
#cProceedings of the First International Workshop on Knowledge Discovery and Data Mining
#index39818
#!This article concerns on analyzing the application of CRM which based on database warehouse, data investigating, data analyzing and processing.It integrates with CRM system requirements, creating a new system model which is based on commercial intelligent technology.This system will improve enterprises customer recourse, optimize enterprise management mode, integrate the functions of management information system, and unify customer management platform. The system has the important significance in actual application.

#*A high performance blind adaptive filtering algorithm
#@Jusak Jusak,Zahir M. Hussain,Richard Harris

#t2003
#cProceedings of the 2nd WSEAS International Conference on Electronics, Control and Signal Processing
#index39819
#%165034
#%538040
#!Recently a dithered signed-error constant modulus algorithm (DSE-CMA) has been proposed for the purpose of low complexity implementation of constant modulus algorithm (CMA), which is widely used for blind adaptive filtering due to its LMS-like desirable robustness properties. Despite the fact that this algorithm has robustness properties closely resembling those of CMA, it is very slow in convergence. In this work, we present a simple modification of DSE-CMA using a variable step size that results in faster convergence while preserves the low computational complexity and robustness properties of the DSE-CMA algorithm.

#*Ambiguous queries: test collections need more sense
#@Mark Sanderson
#t2008
#cProceedings of the 31st annual international ACM SIGIR conference on Research and development in information retrieval
#index39820
#%286186
#%47718
#%537197
#%115882
#%118311
#%225567
#%482576
#%115969
#!Although there are many papers examining ambiguity in Information Retrieval, this paper shows that there is a whole class of ambiguous word that past research has barely explored. It is shown that the class is more ambiguous than other word types and is commonly used in queries. The lack of test collections containing ambiguous queries is highlighted and a method for creating collections from existing resources is described. Tests using the new collection show the impact of query ambiguity on an IR system: it is shown that conventional systems are incapable of dealing effectively with such queries and that current assumptions about how to improve search effectiveness do not hold when searching on this common query type.

#*On content delivery network protocols and applications
#@B. Molina,C. E. Palau,M. Esteve,J. Lloret
#t2004
#cProceedings of the 4th WSEAS International Conference on Applied Informatics and Communications
#index39821
#!Content delivery networks are overlay networks that reduce latency by placing a set of servers close to clients. It is specially effective for wide-area

networks and the Internet, where network traffic may drive a user to wait for an unreasonable period of time. The approach for such a solution at application layers lacks for optimization techniques at network and data-link layer; from another point of view, it allows a rapid deployment of new applications and protocols, as well as enhancements of current tested ones. This article tries to describe and clarify current work and research in the mechanisms used at the upper-layers of the protocol stack of a content delivery network.

#*ZigBee Source Route Technology in Home Application
#@Yao-Ting Wu
#t2008
#cProceedings of the 2008 IEEE International Conference on Sensor Networks, Ubiquitous, and Trustworthy Computing (sutc 2008)
#index39822
#!ZigBee is a new short-range wireless technology. ZigBee devices have parents and children relationship, and those devices can construct a huge mesh network. Most devices in ZigBee network can relay packets, repair route, etc. If a ZigBee device wants to send packets to another device, the source node needs to find a route to the destination. In an application, if data are sent to the concentrator form the sensing nodes and concentrator tends control the sensing nodes, the concentrator can record the path from sensing nodes to its self, and send the data to the sensing node directly according to the recorded path. The relaying nodes using the recoded nodes information relay packets. In this paper, we dealt about usage of the source route technology to find the best route and send packets directly according the recorded nodes information. In a huge mesh network, find a good route is very important. It can reduce the probability of packet collision and data loss. This technology is suitable in the application of user monitors the sensing area in the concentrator, and send control packets to the sensing nodes from concentrator.

#*Guest Editorial: Special issue on information fusion in distributed sensor networks
#@Pratik K. Biswas,Sajid Hussain
#t2008
#cInformation Fusion
#index39823

#*A superlinearly and globally convergent algorithm for power control and resource allocation with general interference functions
#@Holger Boche,Martin Schubert
#t2008
#cIEEE/ACM Transactions on Networking (TON)
#index39824
#%250940
#%321849
#%558146
#%574479
#%215645

#%216194
#%162102
#!In wireless networks, users are typically coupled by interference. Hence, resource allocation can strongly depend on receive strategies, such as beamforming, CDMA receivers, etc. We study the problem of minimizing the total transmission power while maintaining individual quality-of-service (QoS) values for all users. This problem can be solved by the fixed-point iteration proposed by Yates (1995) as well as by a recently proposed matrix-based iteration (Schubert and Boche, 2007). It was observed by numerical simulations that the matrix-based iteration has interesting numerical properties, and achieves the global optimum in only a few steps. However, an analytical investigation of the convergence behavior has been an open problem so far. In this paper, we show that the matrix-based iteration can be reformulated as a Newton-type iteration of a convex function, which is not guaranteed to be continuously differentiable. Such a behavior can be caused by ambiguous representations of the interference functions, depending on the choice of the receive strategy. Nevertheless, superlinear convergence can be shown by exploiting the special structure of the problem. Namely, the function is convex, locally Lipschitz continuous, and an invertible directional derivative exists for all points of interest.

#*Structural Features for Recognizing Degraded Printed Gurmukhi Script
#@Manish Kumar Jindal,Rajendra Kumar Sharma,Gurpreet Singh Lehal
#t2008
#cProceedings of the Fifth International Conference on Information Technology: New Generations
#index39825
#!The performance of an OCR system depends upon printing quality of the input document. Many OCRs have been designed which correctly identify fine printed documents in Indian and other scripts. But, little reported work has been found on the recognition of the degraded documents. The performance of any standard OCR system working for fine printed documents decreases, if it is tested on degraded documents. Feature extraction is an important task for designing an OCR for recognizing degraded documents. In this paper, we have discussed efficient structural features selected for recognizing degraded printed Gurmukhi script characters.

#*Dynamical Yang-Baxter maps with an invariance condition
#@Youichi Shibukawa
#t2007
#cPublications of the Research Institute for Mathematical Sciences
#index39826
#!By means of left quasigroups L = (L, ċ) and ternary systems, we construct dynamical Yang-Baxter maps associated with L, L, and (ċ) satisfying an invariance condition that the binary operation (ċ) of the left quasigroup L defines. Conversely, this construction characterize such dynamical Yang-Baxter maps. The unitary condition of the dynamical Yang-Baxter map is discussed. Moreover, we establish a correspondence between two dynamical Yang-Baxter maps constructed in this paper. This correspondence produces a version of the vertex-

IRF correspondence.

#*Other
#@
#t2008
#cProceeding of the 1st ACM international workshop on Foundations of wireless ad hoc and sensor networking and computing
#index39827

#*A letter from the editors
#@Paul Seymour,Carsten Thomassen,Dan Archdeacon,Genghua Fan,Bojan Mohar
#t2005
#cJournal of Graph Theory
#index39828

#*Automated instrumentation of contracts and scenarios for requirements validation in .net
#@Dave Arnold,Jean-Pierre Corriveau
#t2008
#cProceedings of the 3rd international workshop on Automation of software test
#index39829
#%521312
#%305667
#%201896
#%358291
#!During the development of an object-oriented reactive system, scenarios (such as UML's use cases) may be used for the elicitation of functional and non-functional requirements. The contribution of this paper is the overview of a framework for the specification of a testable requirements model and the automated instrumentation of this model into an implementation in order to validate the model's requirements against this implementation. Our testable model takes the form of contracts and is grounded in the notions of scenarios and responsibilities. More precisely, the validation of the requirements of this model depends on a user binding elements of contracts to actual procedures within a candidate implementation, (that also supplies test data). Once this is done, these requirements are validated against an execution. This validation consists in the invocation of both static and dynamic checks, the matching of scenarios, and the capture and evaluation of metrics for an execution. Metric evaluation allows our framework and testable model to also consider non-functional requirements.

#*NP-completeness of list coloring and precoloring extension on the edges of planar graphs
#@Dániel Marx
#t2005
#cJournal of Graph Theory
#index39830
#!In the edge precoloring extension problem, we are given a graph with some of

the edges having preassigned colors and it has to be decided whether this coloring can be extended to a proper k-edge-coloring of the graph. In list edge coloring every edge has a list of admissible colors, and the question is whether there is a proper edge coloring where every edge receives a color from its list. We show that both problems are NP-complete on (a) planar 3-regular bipartite graphs, (b) bipartite outerplanar graphs, and (c) bipartite series-parallel graphs. This improves previous results of Easton and Parker [6], and Fiala [8]. © 2005 Wiley Periodicals, Inc. J Graph Theory 49: 313–324, 2005

#*Splines and anti-periodic boundary-value problems
#@M. Ahmadinia,G. B. Loghamni
#t2007
#cInternational Journal of Computer Mathematics
#index39831
#!Aftabizadeh, Pavel and Huang showed in 1994 that some second-order differential equations on (0,) with anti-periodic conditions y(0)+y( )=0, y'(0)+y'( )=0 have a unique solution. In the present paper, the authors consider a differential equation g(t, x(t), x'(t), x''(t))=0 on (a, b) (t [a, b] and g continuous) having a solution satisfying the anti-periodic conditions x(i)(a)+x(i)(b)=0 (i=0, 1). They show that for every >0 there exist a positive integer k and a linear combination vk of spline functions such that [image omitted] and vk satisfies the exact anti-periodic boundary conditions.

#*A skeleton based programming paradigm for mobile multi-agents on distributed systems and its realization within the MAGDA Mobile Agents platform
#@R. Aversa,B. Di Martino,N. Mazzocca,S. Venticinque
#t2008
#cMobile Information Systems
#index39832
#%245638
#%598621
#%540513
#%117110
#%381160
#%366346
#%359727
#!Parallel programming effort can be reduced by using high level constructs such as algorithmic skeletons. Within the MAGDA toolset, supporting programming and execution of mobile agent based distributed applications, we provide a skeleton-based parallel programming environment, based on specialization of Algorithmic Skeleton Java interfaces and classes. Their implementation include mobile agent features for execution on heterogeneous systems, such as clusters of WSs and PCs, and support reliability and dynamic workload balancing. The user can thus develop a parallel, mobile agent based application by simply specialising a given set of classes and methods and using a set of added functionalities.

#*A Low-Power Double-Edge-Triggered Address Pointer Circuit for FIFO Memory Design

#@Saravanan Ramamoorthy,Haibo Wang,Sarma Vrudhula
#t2008
#cProceedings of the 9th international symposium on Quality Electronic Design
#index39833
#!This paper presents a novel design of address pointer for FIFO memory circuits. Advantages of the proposed design include: reduced capacitive load on the pointer clock path, the use of a true single-phase clock, and double edge-triggering clock scheme. The circuit has low power consumption, is immune to circuit racing conditions and suitable for high-speed operations. Techniques to implement clock gating in pointer circuit design for further reducing power consumption are also discussed. The proposed circuit is implemented with a 65nm CMOS technology and its performance is compared with previous pointer circuits.

#*Supervised and Reinforcement Evolutionary Learning for Wavelet-based Neuro-fuzzy Networks
#@Cheng-Jian Lin,Yong-Cheng Liu,Chi-Yung Lee
#t2008
#cJournal of Intelligent and Robotic Systems
#index39834
#%595195
#!This study presents a wavelet-based neuro-fuzzy network (WNFN). The proposed WNFN model combines the traditional Takagi---Sugeno---Kang (TSK) fuzzy model and the wavelet neural networks (WNN). This study adopts the non-orthogonal and compactly supported functions as wavelet neural network bases. A novel supervised evolutionary learning, called WNFN-S, is proposed to tune the adjustable parameters of the WNFN model. The proposed WNFN-S learning scheme is based on dynamic symbiotic evolution (DSE). The proposed DSE uses the sequential-search-based dynamic evolutionary (SSDE) method. In some real-world applications, exact training data may be expensive or even impossible to obtain. To solve this problem, the reinforcement evolutionary learning, called WNFN-R, is proposed. Computer simulations have been conducted to illustrate the performance and applicability of the proposed WNFN-S and WNFN-R learning algorithms.

#*Modular Specification of GUI Layout Using Constraints
#@Christof Lutteroth,Gerald Weber
#t2008
#cProceedings of the 19th Australian Conference on Software Engineering
#index39835
#!The Auckland Layout Model (ALM) is a novel technique for specifying layout. It generalizes grid-based layouts as they are widely used for print layout as well as for GUI layout. Qualitatively, in ALM the focus switches from the cells of the grid to the tabstops between cells. Quantitatively, the model permits the specification of constraints based on linear algebra, and an optimal layout is calculated using linear programming. ALM provides several advantages for developers: first, it supports several different levels of abstraction through higher-level layout constructs that are automatically translated into the lower-level primitives of linear programming. The formalism of linear programming

defines a clean separation of ALM's interface and its implementation. Second, the compositional nature of ALM allows developers to group parts of a specification that belong naturally together, resulting in a modular GUI specification. Our experience has shown that it is much harder to achieve a similar separation of concerns when using common GUI layout techniques.

#*Grasping Related Words of Unknown Word for Automatic Extension of Lexical Dictionary
#@Myunggwon Hwang,Sunkyoung Baek,Junho Choi,Jongan Park,Pankoo Kim
#t2008
#cProceedings of the First International Workshop on Knowledge Discovery and Data Mining
#index39836
#!An aim of this research is to grasp related words of unknown word. Currently, several lexical dictionaries have been developed for semantic retrieval such as WordNet and FrameNet. However, more new words are created in every day because of new trends, new paradigm, new technology, etc. And, it is impossible to contain all of these new words. The existing methods, which grasp the meaning of unknown word, have a limitation that is not exact. To solve this limitation, we have studied the way how to make relations between known words and unknown word. As a result, we found a noble method using co-occurrence, WordNet and Bayesian probability. The method could find what words are related with unknown word and how much weight other words relate with unknown word.

#*Implicit geometric constraint detection in freehand sketches using relative shape histogram
#@J. Pu,K. Ramani
#t2007
#cProceedings of the 4th Eurographics workshop on Sketch-based interfaces and modeling
#index39837
#%171465
#%163238
#%170752
#%233738
#%441416
#!In order to take advantage of the sketch-based interaction, many methods have been proposed to beautify freehand sketches. Most of these efforts are dedicated to sketch segmentation and recognition, while some important information implied in the sketches, such as geometric constraints, are largely ignored. Thus, the final beautified results by these methods do not fully reflect the true intentions from users. In this paper, a statistical approach called Relative Shape Histogram (RSH) is introduced to detect the implied geometric constraint in sketches. The basic idea arises from such a discovery that the same geometric constraints between two geometric primitives have similar relative shape histograms. By computing the similarity between RSHs, the implicit geometric constraints between two segmented primitives are inferred. To evaluate the performance of the proposed algorithm, a user-based experiment is conducted and

the results are presented in this paper.

#*Pro PHP: Patterns, Frameworks, Testing and More (Pro)
#@Kevin McArthur
#t2008
#c
#index39838
#!Taking care to focus solely on those topics that will have the most impact on experienced PHP developers, Pro PHP is written for readers seeking to take their understanding of both PHP and sound software development practices to the next level. Advanced objectoriented features, documentation, debugging, software patterns, and the Standard PHP Library are just a few of the topics covered in extensive detail. Author and noted PHP expert Kevin McArthur also examines emerging practices and trends such as the MVC architecture as applied to PHP, with special emphasis placed upon the increasingly popular Zend Framework. With Ajax and web services crucial to the success of todays web applications, the book concludes with several chapters covering JSON, the SOAP extension, and advanced web services topics. If youre seeking to go beyond the basics, Pro PHP is the book for you.

#*In-bed Patients Behaviour Monitoring System
#@P. Bustamante,N. Guarretxena,G. Solas,U. Bilbao
#t2008
#cProceedings of the 2008 International Conference on Biocomputation, Bioinformatics, and Biomedical Technologies
#index39839
#!Falls on elderly people represent a significant health problem where having a permanent care personnel attention is the unique effective method to avoid them. As more is investigated on causes originating falls, more is known about pre fall conducts. This project studies in-bed patient behaviour with the purpose of detecting a fall before it happens, sending an alarm to the complete system. The work presented in this article is still being developed within the framework of INTEK projects founded by the Basque Government, in cooperation with Atica Innovation Company.

#*On the completeness of object-creating query languages
#@J. Van den Bussche
#t1992
#cProceedings of the 33rd Annual Symposium on Foundations of Computer Science
#index39840
#!Recently, various database query languages have been considered that have the ability to create new domain elements. These languages, however, are not complete in the sense of Abiteboul and Kanellakis (1989). They provide a precise characterization for the class of queries that can be expressed in these languages. They call this class the constructive queries and motivate this term by establishing a close correspondence between object creation and the construction of hereditarily finite sets.

#*Bridging the IT Adoption Gap for Small Physician Practices: An Action Research Study on Electronic Health Records
#@Elizabeth Davidson,Dan Heslinga
#t2007
#cInformation Systems Management
#index39841
#%95345
#%332012
#!This article reports on an action research project to investigate the barriers to adoption and assimilation of electronic health records (EHRs) in small physician practices. The project draws on theories of technology-use mediation and communities of practice to develop interventions to promote adoption and integration of EHRs into chronic care management processes in these practice settings. The field results suggest that developing community-based knowledge and resources to assist physician organizations one-on-one may be essential for their effective utilization of EHRs.

#*The Move to Make Social Data Portable
#@Karen Hayman
#t2008
#cComputer
#index39842
#!As the battle between the big social-network players heats up, users are demanding some level of data portability between the different sites so that they can move or transfer their information without re-entering it every time.

#*Performance evaluation of programming paradigms and languages using multithreading on digital image processing
#@Dulcinéia O. Da Penha,João B. T. Corrêa,Luiz E. S. Ramos,Christiane V. Pousa,Carlos A. P. S. Martins
#t2005
#cProceedings of the 4th WSEAS International Conference on Applied Mathematics and Computer Science
#index39843
#%445838
#%250939
#%232646
#%516501
#!We present a comparative performance evaluation of different programming paradigms and languages using multithreaded programming. We compare the procedural and object-oriented (OO) paradigms, as well as the C++ and Java languages, regarding both performance and programmability. The comparison is made upon sequential and parallel image convolution implementations based on those paradigms and languages. The parallel implementations used the shared-variable programming model and multithreading. They exploited not only pure parallelism, but also parallelism combined with concurrency. The performance evaluation was based on the response time of those implementations. The evaluation of system performance showed that pure parallelism yielded better

performance results than parallelism combined with concurrency. Regarding the C++ implementations, the procedural paradigm led to better results than the OO paradigm. One of the most significant results in our work is the fact that Java yielded shorter response times than OO C++ for most of the multithreaded implementations.

#*Social aspects of a continuous inspection platform for software source code
#@Christian R. Prause,Markus Eisenhauer
#t2008
#cProceedings of the 2008 international workshop on Cooperative and human aspects of software engineering
#index39844
#%609811
#%75526
#%239746
#%227211
#%93217
#%607295
#!Determining responsibility for a piece of source code is difficult when software is being developed collaboratively with weak code ownership. Nonetheless, a major factor for preventing "cowboy coding" and careless development of code is liability. We propose a tool for statistically acquiring per developer per document accountabilities and enable learning and self-monitoring processes within a development team while maintaining anonymity to a certain degree to not endanger team spirit. In this paper we want to examine possible social effects on the development team that employment of our tool has.

#*Adaptive beamspace focusing for direction of arrival estimation of wideband signals
#@Amr El-Keyi,T. Kirubarajan
#t2008
#cSignal Processing
#index39845
#%210011
#!In this paper, we present an adaptive beamspace focusing technique for the direction of arrival (DOA) estimation of wideband signals. The proposed focusing scheme can perform coherent signal subspace transformation in the beamspace domain without preliminary DOA estimation or iteration. It can maintain low focusing error over a predefined sector-of-interest in the field-of-view (FOV) of the array while adaptively suppressing out-of-sector sources. The beamspace gain outside the sector-of-interest is controlled via additional constraints that provide robustness against moving or suddenly appearing out-of-sector sources. We formulate the adaptive beamspace design problem as a second-order cone program (SOCP) that can be solved efficiently using interior point methods. Numerical simulations are presented showing the superior performance of our approach compared to classical non-adaptive beamspace focusing techniques.

#*A novel x-axis tuning fork gyroscope with “8 vertical springs-

proofmass” structure on (111) silicon
#@Fei Duan,Jiwei Jiao,Yucai Wang,Ying Zhang,Binwei Mi,Jinpeng Li,Yuelin Wang
#t2008
#cMicrosystem Technologies
#index39846
#!A novel x-axis tuning fork gyroscope with “8 vertical springs-proofmass” structure is presented. Wafer-thick proofmasses are made out of (111) silicon with bulk micromachining processes to achieve lower thermo-mechanical noise. Each proofmass is supported by 8 vertical springs, which are symmetrically distributed around the proofmass. The dimensions of 8 vertical springs are precisely confined by thermal oxide protected sidewalls and the extreme slowly etched (111)-planes in KOH etching. A mode mismatch of less than 30 Hz is achieved before tuning. Initial test shows a sensitivity of 0.15 mV/(deg/s) and a rate resolution around 0.1 deg/s under atmosphere pressure.

#*Google Talk
#@
#t2007
#cQueue
#index39847
#!Although Google remains relatively mum about its ambitions in the area of speech recognition, Mike Cohen, head of the company's efforts in this area and a co-founder of Nuance Communications, says that speech recognition will increasingly play a bigger role in all Web-based applications going forward. But for developers to be successful in this space, they will need to get in touch with their inner persons more than ever if they hope to create applications that ordinary people will actually use. The ACM Portal is published by the Association for Computing Machinery. Copyright © 2010 ACM, Inc. Terms of Usage Privacy Policy Code of Ethics Contact Us Useful downloads: Adobe Acrobat QuickTime Windows Media Player Real Player

#*On absolute summability factors of infinite series
#@Ekrem Savaş
#t2008
#cComputers Mathematics with Applications
#index39848
#!In this paper a general theorem on |A,@d|"k-summability methods has been proved. This theorem includes, as a special case, a known result in [E. Savas, Factors for |A|"k Summability of infinite series, Comput. Math. Appl. 53 (2007) 1045-1049].

#*Preconditioners for the conjugate gradient algorithm using Gram-Schmidt and least squares methods
#@Julien Straubhaar
#t2007
#cInternational Journal of Computer Mathematics
#index39849

#%587646
#%226196
#%94685
#!This paper is devoted to the study of some preconditioners for the conjugate gradient algorithm used to solve large sparse linear and symmetric positive definite systems. The construction of a preconditioner based on the Gram-Schmidt orthogonalization process and the least squares method is presented. Some results on the condition number of the preconditioned system are provided. Finally, numerical comparisons are given for different preconditioners.

#*Channel selection algorithms in virtual MIMO sensor networks
#@Jing Liang,Qilian Liang
#t2008
#cProceeding of the 1st ACM international workshop on Heterogeneous sensor and actor networks
#index39850
#!In this paper, we present two practical algorithms to select a subset of channels in virtual MIMO wireless sensor networks (WSN). One is the Singular-Value Decomposition-QR with Threshold (SVD-QR-T) approach that selects the best subset of transmitters while keeping all receivers active. The threshold is adaptive by means of Fuzzy C-Mean (FCM). The other is the Maximum Spanning Tree Searching (MASTS) algorithm on a basis of graph theory in respect of cross-layer design, which potentially provides a path connecting all sensors that benefits routing and QoS of networks. The MASTS algorithm keeps all sensors active but selects Mt + Mr -1 subchannels, where Mt and Mr are the number of transmitters and receivers, respectively. These two approaches are compared against the case without channel selection in terms of capacity, bit error rate (BER), and multiplexing gain in the presence of water-filling as well as the circumstance of without water-filling under the same total transmission power constraint. Despite less multiplexing gain, when water-filling is applied, MASTS achieves higher capacity and lower BER than that of virtual MIMO without channel selection at moderate to high SNR while SVD-QR-T FCM provides the lowest BER at high SNR; in case of no water-filling and equal transmission power allocation, MASTS still offers the highest capacity at moderate to high SNR but SVD-QR-T FCM achieves the lowest BER. Both algorithms provide satisfying performances with reduced cost and resources compared to the case without channel selection.

#*Chip form modelling and chip-forming animation in oblique cutting
#@W. K. Chiu,K. M. Yu,K. H. Man
#t2007
#cInternational Journal of Computer Integrated Manufacturing
#index39851
#!The reliability of machining operation is an essential requirement in a modern production system. Chip control is one major aspect with regard to turning operation and becomes significant in industrial automation. At present, toolpath simulation is available in most computer aided manufacturing (CAM) systems. However, only the rendering scene of the stock material shape changing during cutting and the resultant part are shown. The chips formed in the machining

process are not modelled or displayed in the simulation. To assess the chip control properly, many models and simulation methods were developed for predicting the chip forms produced in the cutting operation. If the chip forms can be predicted using some of the mathematical models, the design and planning of the machining operation can be greatly assisted, especially in the shop-floor level. Apart from chip form prediction, modelling of the machining process and chip formation are also issues that must be considered. To do this, a chip modelling and simulation system is proposed. Based on the machining parameters settings, the corresponding chip model can be calculated and simulated for more realistic analysis. The present paper first outlines the chip form mathematical model being used. The criteria to ensure that the theoretical model can be used to calculate the practical chip models effectively are described. Then the modelling of the chips and the simulation of the chip forming with computer graphic animation are explained. Several sets of turning parameters are used as examples to demonstrate how the corresponding chip models are calculated from the proposed system.

#*User Maturity Based Trust Management for Grid Computing
#@Gabriel Queiroz Lana,Carlos Becker Westphall
#t2008
#cProceedings of the Seventh International Conference on Networking
#index39852
#!Trust management has been considered an important factor in Grid computing security. Grids require a secure way to establish trust in their participants without requiring continuous intervention by the system administrators. This paper describes trust management in Grid computing systems and its use in evaluation environments to update the trust levels. This approach can be incorporated in Grid security systems to assist in issuing authorisations, in resource and service management, and in decision-making processes.

#*Value monoids of zero-dimensional valuations of rank 1
#@Edward Mosteig
#t2008
#cJournal of Symbolic Computation
#index39853
#!Classically, Grobner bases are computed by first prescribing a fixed monomial order. Moss Sweedler suggested an alternative in the mid-1980s and developed a framework for performing such computations by using valuation rings in place of monomial orders. We build on these ideas by providing a class of valuations on K(x,y) that are suitable for this framework. We then perform such computations for ideals in the polynomial ring K[x,y]. Interestingly, for these valuations, some ideals have finite Grobner bases with respect to a valuation that are not Grobner bases with respect to any monomial order, whereas other ideals only have Grobner bases that are infinite.

#*IS-CHI 2007: Audio & speech
#@
#t2007

#cProceedings of the 4th international conference on mobile technology, applications, and systems and the 1st international symposium on Computer human interaction in mobile technology
#index39854

#*Analysis of SIP-Based IMS Session Establishment Signaling for WiMax-3G Networks
#@Arslan Munir
#t2008
#cProceedings of the Fourth International Conference on Networking and Services
#index39855
#!The IP multimedia subsystem (IMS) is standardized by the 3rd generation partnership project (3GPP) and 3GPP2 as a new core network domain to support Internet Protocol (IP) based multimedia services over 3G networks. Session Initiation Protocol (SIP) which is an application layer signaling protocol is also standardized by 3GPP and 3GPP2 for session establishment, management, and transformation. In this paper, we study the SIP-based signaling delay for IMS session establishment in 3rd generation (3G) network and worldwide interoperability for microwave access (WiMax) network for different channel rates. In our delay analysis, we take into account transmission, processing and queueing delays at network nodes. The delay analysis of SIP based signaling for IMS provides an insight into the efficiency of SIP signaling for IMS.

#*Rigid Body Cable for Virtual Environments
#@Martin Servin,Claude Lacoursière
#t2008
#cIEEE Transactions on Visualization and Computer Graphics
#index39856
#!The present paper addresses real-time simulation of cables for virtual environments. A faithful physical model based on constrained rigid bodies is introduced and discretized. The performance and stability of the numerical method are analyzed in details and found to meet the requriements of interactive heavy hoisting simulations. The physical model is well behaved in the limit of infinite stiffness as well as in the elastic regime , and the tuning parameters correspond directly to conventional material constants. The integration scheme mixes the well known Störmer-Verlet method for the dynamics equations with the linearly implicit Euler method for the constraint equations and enables physical constraint relaxation and stabilization terms. The technique is shown to have superior numerical stability properties in comparison with either chain link systems, or spring and damper models. Experimental results are presented to show that the method results in stable, real-time simulations. Stability persists for moderately large fixed integration step of $\Delta t = 1/60$ s, with hoisting loads of up to 10^5 times heavier than the elements of the cable. Further numerical experiments validating the physical model are also presented.

#*Resource admission control in access networks
#@Sven Ooghe,Adrianus Van Ewijk,Ramesh Nagarajan
#t2008

#cBell Labs Technical Journal
#index39857
#!With the growing demand for high-bandwidth video services such as Internet Protocol television (IPTV), the packet network must be adapted in order to support these services with the required quality. Evolutions of broadband access technologies such as very high speed digital subscriber line 2 (VDSL2) and Gigabit passive optical networks (GPONs) create this possibility. Nevertheless, the bandwidth on the access link (the first mile) and the access node uplink (the second mile) remain a limited resource. This paper discusses how resource admission control (RAC) can be used in access networks to protect against exceptional overloads and maintain quality for active services. It describes the behavior of a local RAC function in the access node in a case where broadcast IPTV (BTV) and video on demand (VoD) share bandwidth on the first mile and shows that this solution is scalable from a message load point of view. © 2008 Alcatel-Lucent.

#*Experiences in Designing an Energy-Aware Middleware for Pervasive Computing
#@Gregor Schiele,Marcus Handte,Christian Becker
#t2008
#cProceedings of the 2008 Sixth Annual IEEE International Conference on Pervasive Computing and Communications
#index39858
#!Energy efficiency in pervasive computing is crucial for devices operated by battery. To provide energy efficiency we created an energy efficient middleware, called SANDMAN. It selects energy-efficient protocol stacks dynamically and switches idle devices in an energy-efficient sleep mode. In this paper we present an overview of the challenges we met when realizing this approach, possible solutions and lessons learned.

#*Re-pair Achieves High-Order Entropy
#@Gonzalo Navarro,Luís Russo
#t2008
#cProceedings of the Data Compression Conference
#index39859
#!Re-Pair is a dictionary-based compression method invented in 1999 by Larssonand Moffat. Although its practical performance has been established through experiments, the method has resisted all attempts of formal analysis. In thispaper we show that Re-Pair compresses a sequence T[1,n] over an alphabet ofsize σ and k-th order entropy H_k, to at most 2nH_k+o(n\log\sigma)bits, for any k=o(log_sigma n).

#*Influence of gender, program of study and PC experience on unethical computer using behaviors of Turkish undergraduate students
#@Yavuz Akbulut,Ömer Uysal,Hatice Ferhan Odabasi,Abdullah Kuzu
#t2008
#cComputers Education
#index39860
#%251947

#%572922
#%619899
#!This study administered the unethical computer using behavior scale (UECUBS) developed by [Namlu, A.G., & Odabasi, F. (2007). Unethical computer using behavior scale: A study of reliability and validity on Turkish university students. Computers and Education, 48, 205-215.] to investigate whether gender, program of study and PC experience have an impact on ethical judgments of undergraduate students regarding information and communication technologies (ICTs). The sample consisted of 559 undergraduates from the Education Faculty of the most populated state university in Turkey. The results of 5 (program of study)x2 (gender)x2 (PC experience) between-groups analysis of variance (ANOVA) indicated no significant differences among different programs of study and between high and low experienced PC users. The analysis showed significant differences between males and females. A significant interaction between the program of study and gender was found, which indicated that the difference between males and females did not follow a similar pattern across different programs of study. More specifically, females' ethical judgments were consistent across different fields while males' judgments varied according to the field of study.

#*High-fidelity geometric modeling for biomedical applications
#@Zeyun Yu,Michael J. Holst,J. Andrew McCammon
#t2008
#cFinite Elements in Analysis and Design
#index39861
#%33902
#%322810
#%183240
#%234773
#%308388
#%603715
#%297709
#%449979
#%305644
#%251063
#!We describe a combination of algorithms for high-fidelity geometric modeling and mesh generation. Although our methods and implementations are application-neutral, our primary target application is multiscale biomedical models that range in scales across the molecular, cellular, and organ levels. Our software toolchain implementing these algorithms is general in the sense that it can take as input a molecule in PDB/PQR forms, a 3D scalar volume, or a user-defined triangular surface mesh that may have very low quality. The main goal of our work presented is to generate high quality and smooth surface triangulations from the aforementioned inputs, and to reduce the mesh sizes by mesh coarsening. Tetrahedral meshes are also generated for finite element analysis in biomedical applications. Experiments on a number of bio-structures are demonstrated, showing that our approach possesses several desirable properties: feature-preservation, local adaptivity, high quality, and smoothness (for surface

meshes). The availability of this software toolchain will give researchers in computational biomedicine and other modeling areas access to higher-fidelity geometric models.

#*An Efficient Method for Fast Delay and SI Calculation Using Current Source Models
#@Xin Wang,Ali Kasnavi,Harold Levy
#t2008
#cProceedings of the 9th international symposium on Quality Electronic Design
#index39862
#!Current source models are the methods of choice for gate-level delay and SI calculation in Deep Sub Micron regime. To fully utilize the information provided by the current source models, numerical integration is often applied to solve stage-based transient simulation that calculates delay, slew, or noise bumps. However, this is computationally expensive. In this paper, we present a fast and robust algorithm for delay and signal integrity (SI) calculation using current source models. By applying diagonalization and Sherman-Morrison formula together with a one-step Newton-Raphson method, the transient simulation cost of a stage with a single driver can be reduced from O(kmn3) to O(kn) with a small runtime overhead, where k is the number of time step, m is the average number of Newton-Raphson steps, and n is the size of matrices of the Reduced Order Model(ROM) of the parasitic network. The proposed method works perfectly with the popular implicit integration methods such as the Trapezoidal and Backward Euler method.

#*Zero-Knowledge in the Applied Pi-calculus and Automated Verification of the Direct Anonymous Attestation Protocol
#@Michael Backes,Matteo Maffei,Dominique Unruh
#t2008
#cProceedings of the 2008 IEEE Symposium on Security and Privacy
#index39863
#!We devise an abstraction of zero-knowledge protocols that is accessible to a fully mechanized analysis. The abstraction is formalized within the applied pi-calculus using a novel equational theory that abstractly characterizes the cryptographic semantics of zero-knowledge proofs. We present an encoding from the equational theory into a convergent rewriting system that is suitable for the automated protocol verifier ProVerif. The encoding is sound and fully automated. We successfully used ProVerif to obtain the first mechanized analysis of (a simplified variant of) the Direct Anonymous Attestation (DAA) protocol. This required us to devise novel abstractions of sophisticated cryptographic security definitions based on interactive games. The analysis reported a novel attack on DAA that was overlooked in its existing cryptographic security proof. We propose a revised variant of DAA that we successfully prove secure using ProVerif.

#*GA, MR, FFNN, PNN and GMM based models for automatic text summarization
#@Mohamed Abdel Fattah,Fuji Ren
#t2009
#cComputer Speech and Language

#index39864
#%325084
#%325406
#%449678
#%236062
#%322380
#%236741
#%325030
#%592049
#%95080
#%363406
#!This work proposes an approach to address the problem of improving content selection in automatic text summarization by using some statistical tools. This approach is a trainable summarizer, which takes into account several features, including sentence position, positive keyword, negative keyword, sentence centrality, sentence resemblance to the title, sentence inclusion of name entity, sentence inclusion of numerical data, sentence relative length, Bushy path of the sentence and aggregated similarity for each sentence to generate summaries. First, we investigate the effect of each sentence feature on the summarization task. Then we use all features in combination to train genetic algorithm (GA) and mathematical regression (MR) models to obtain a suitable combination of feature weights. Moreover, we use all feature parameters to train feed forward neural network (FFNN), probabilistic neural network (PNN) and Gaussian mixture model (GMM) in order to construct a text summarizer for each model. Furthermore, we use trained models by one language to test summarization performance in the other language. The proposed approach performance is measured at several compression rates on a data corpus composed of 100 Arabic political articles and 100 English religious articles. The results of the proposed approach are promising, especially the GMM approach.

#*We're all stars now: reality television, web 2.0, and mediated identities
#@Michael A. Stefanone,Derek Lackaff,Devan Rosen
#t2008
#cProceedings of the nineteenth ACM conference on Hypertext and hypermedia
#index39865
#%612146
#!Social cognitive theory suggests a likely relationship between the rising popularity of both reality television and social networking sites. This research utilized a survey (N=456) of young adults to determine the extent to which reality television consumption explains user behavior in the context of social network sites. Results show a consistent relationship between reality television consumption on the length of time spent logged on to these sites, the size of user's networks, the proportion of friends not actually met face to face, and photo sharing frequency while controlling for age, gender and education. Other categories of television viewing like news, fiction, and educational programming were not related to user's online behavior.

#*Bent and hyper-bent functions over a field of 2l elements

#@A. S. Kuz'Min,V. T. Markov,A. A. Nechaev,V. A. Shishkin,A. B. Shishkov
#t2008
#cProblems of Information Transmission
#index39866
#%270143
#%512469
#!We study the parameters of bent and hyper-bent (HB) functions in n variables over a field $$ P = \mathbb{F}_q $$ with q = 2¿ elements, ¿ > 1. Any such function is identified with a function F: Q ¿ P, where $$ P . The latter has a reduced trace representation F = tr P Q (¿), where ¿(x) is a uniquely defined polynomial of a special type. It is shown that the most accurate generalization of results on parameters of bent functions from the case ¿ = 1 to the case ¿ > 1 is obtained if instead of the nonlinearity degree of a function one considers its binary nonlinearity index (in the case ¿ = 1 these parameters coincide). We construct a class of HB functions that generalize binary HB functions found in [1]; we indicate a set of parameters q and n for which there are no other HB functions. We introduce the notion of the period of a function and establish a relation between periods of (hyper-)bent functions and their frequency characteristics.

#*On perfect nonlinear functions (Π)
#@Xiyong Zhang,Hua Guo
#t2008
#cApplicable Algebra in Engineering, Communication and Computing
#index39867
#!Perfect nonlinear functions are of importance in cryptography. By using Galois ring, relative trace and investigating the character values of corresponding relative difference sets, we present a construction of perfect nonlinear functions from $${\mathbb{Z}_4^{2m}}$$ to $${\mathbb{Z}_4^{m'}}$$, where m′ is a divisor of 2m, and a construction of perfect nonlinear functions from $${\mathbb{Z}_{p^2}^{n}}$$ to $${\mathbb{Z}_{p^2}^m}$$ where 2m is possibly larger than the largest divisor of n. Meanwhile we prove that there exists a perfect nonlinear function from $${\mathbb{Z}_{2p}^2}$$ to $${\mathbb{Z}_{2p}}$$ if and only if p = 2, and there doesn’t exist a perfect nonlinear function from $${\mathbb{Z}_{2^kl}^{2n}}$$ to $${\mathbb{Z}_{2^kl}^m}$$ if m > n and l(l is odd) is self-conjugate modulo 2 k (k ≥ 1).

#*Cache Design for Low Power and High Yield
#@Baker Mohammad,Martin Saint-Laurent,Paul Bassett,Jacob Abraham
#t2008
#cProceedings of the 9th international symposium on Quality Electronic Design
#index39868
#!A novel circuit approach to increase SRAM Static Noise Margin (SNM) and enable lower operating voltage is described. Increasing process variability for new technologies coupled with increased reliability effects like Negative Bias Temperature Instability (NBTI) all contribute to raising the minimum voltage required for stable SRAM. Our strategy is to improve the noise margin of the 6T

SRAM cell by reducing the effect of parametric variation of the cell, especially in the low voltage operation mode. This is done using a novel circuit that selectively reduces the voltage swing on the world line and reduces the memory supply voltage during write operation. The proposed design increases the SRAM Static Noise Margin (SNM) and write margin using a single voltage supply and with minimum impact to chip area, complexity, and timing. The technique supports both on-chip corner identification to adapt the SRAM behavior to silicon, and software controllability to tradeoff yield, power, and performance.

#*Off-the-path flow handling mechanism forhigh-speed and programmable traffic management
#@Hideyuki Shimonishi,Takashi Yoshikawa,Atsushi Iwata
#t2008
#cProceedings of the ACM workshop on Programmable routers for extensible services of tomorrow
#index39869
#%79534
#%95864
#!In this paper, we propose a high-speed and programmable traffic management mechanism to enable easy and timely innovations. A control framework introduced by 4D, Tesseract, or OpenFlow, separates control functions from the switch nodes to a control server so that a variety of network control policies can be implemented outside of the switches. Within this framework, we propose a mechanism to enable flexible flow-based traffic management so that a variety of innovative traffic management schemes can be realized. Per-flow traffic management, however, requires packet-by-packet state updates, which can spoil this control framework. The proposed mechanism consists of a control server that monitors traffic conditions using sampled packets sent from the switches and calculates per-flow packet discarding rate, and switches that discard incoming packets according to the discarding rate. Packet sampling and discarding do not require packet-by-packet state handling at the switches and thus allows controls from a control server. We also propose a mechanism to compress the discarding information using a time series of bloom filters, so that frequent control updates are allowed. We tested the mechanism with per-flow WFQ emulation and the simulation results showed very good per-flow fairness. Furthermore, we found that the flow table is compressed 600 times smaller and that the processing cost at the server and the switches is small enough for use with 10 Gbps links.

#*Speech feature analysis using step-weighted linear discriminant analysis
#@Jiang Hai,Er Meng Joo
#t2003
#cProceedings of the 2nd WSEAS International Conference on Electronics, Control and Signal Processing
#index39870
#%95021
#%322316
#%451863
#!In the speech feature extraction procedure, the relative simple strategy to

promote the discriminant of feature vectors is to plus their deltas. Followed the dimension of the feature vector will increase remarkably. Therefore, how to effectively decrease the feature space dimension is key to the performance of calculation. In this paper, a step-weighted linear discriminant dimensionality reduction technique is proposed. Dimensionality reduction using the linear discriminant analysis (LDA) is commonly based on optimization of certain separability criteria in the output space. The resulting optimization problem using LDA is linear, but these separability criteria are not related to the classification accuracy in the output space directly. As a result, even the best weighting function among the input-space results in poor classification of data in the output-space. Through the step-weighted linear discriminant dimensionality reduction technique, we can adjust the weight function of between-class scatter matrix based on the output-space when one dimension is reduced. We describe this method and present an application to a speaker-independent isolated digit recognition task.

#*Comparisons of weakly compressible and truly incompressible algorithms for the SPH mesh free particle method
#@E. -S. Lee,C. Moulinec,R. Xu,D. Violeau,D. Laurence,P. Stansby
#t2008
#cJournal of Computational Physics
#index39871
#%605541
#%293827
#%87137
#%511290
#!In the smoothed particle hydrodynamics (SPH) discretisation method for the Navier-Stokes equations the most widespread method to solve for pressure and mass conservation is the weakly compressible assumption (WCSPH). This includes hydraulics applications and leads to some drawbacks such as severe artificial pressure fluctuations and a limitation to very small time steps related to the WCSPH Mach number and explicit method. This paper presents comparisons of a semi-implicit and truly incompressible SPH (ISPH) algorithm with the classical WCSPH method, showing how some of the problems encountered in WCSPH have been resolved by using ISPH to simulate incompressible flows. Mathematical models are presented before describing SPH formalism. Several standard boundary conditions are introduced and special attention is given to tracking the surface particles. The lid-driven cavity flow (Re=400 and 1000) is performed as a benchmarking test. A bluff body test case (a square cylinder in a closed channel, Re"d=20 and 100 based on the cylinder diameter) shows that pressure fields extracted from WCSPH are very unreliable whereas ISPH predict pressures and forces in closer agreement with classical finite volume CFD methods. Dam-breaking cases, with dry or wet beds downstream, are then presented to highlight free-surface flow and rapid dynamics effects. The WCSPH and ISPH results are generally verified with reference data from experiment and/or another numerical method. All the comparisons show improvement with ISPH and good agreement in general.

#*Shared Sub-Path Protection Algorithm with Recovery Time Constraint in WDM

Networks
#@Lei Guo,Xingwei Wang,Jin Cao,Lemin Li,Ting Yang,Fei Yang
#t2008
#cProceedings of the Fourth International Conference on Networking and Services
#index39872
#!This paper proposes a new heuristic algorithm called Traffic recovery time Constrained Shared Sub-Path Protection (TC_SSPP) to provide survivability in WDM networks with Shared-Risk-Link-Group (SRLG). By properly setting the delay parameter of each link and running the Delay Constrained Shortest Path Algorithm (DCSPA) to compute the backup sub-paths, TC_SSPP can effectively guarantee the traffic recovery time for connection requests. Simulation results show that TC_SSPP outperforms the traditional algorithms.

#*Hierarchical second-order sliding-mode observer for linear time invariant systems with unknown inputs
#@F. J. Bejarano,A. Poznyak,L. Fridman
#t2007
#cInternational Journal of Systems Science
#index39873
#%75765
#!The problem of observability for systems with unknown inputs is revised. The sufficient and necessary conditions are used for the design of an observer for linear systems with bounded unknown inputs. To realize the observation of the state, a second-order sliding-mode observer is suggested to be applied. Such an observer provides a robust estimate of the state vector in a finite time, without filtration. The design is based on the concept of the hierarchical output injection maintaining zero value for output tracking error at each level of the hierarchy. The equivalent control is used to identify the unknown inputs. A numerical example illustrates the effectiveness of the suggested technique.

#*Selecting an IT Control Framework
#@Steven Schlarman
#t2007
#cThe EDP Audit, Control, and Security Newsletter
#index39874
#!Companies have now weathered several years of scrutiny under regulatory requirements with the inception of HIPAA, Sarbanes Oxley, and other industry regulations. To meet these compliance challenges, many companies have looked to different frameworks to help build controls structures within the organization. For IT organizations, this has required a shift in mindset to adopt a "controls oriented" approach while keeping up with the technology needs of the business. A key to the adoption of any framework has been ensuring the approach is applicable to your business.

#*Vection change exacerbates simulator sickness in virtual environments
#@Frederick Bonato Andrea Bubka,Stephen Palmisano,Danielle Phillip Giselle Moreno
#t2008

#cPresence: Teleoperators and Virtual Environments
#index39875
#!The optic flow patterns generated by virtual reality (VR) systems typically produce visually induced experiences of self-motion (vection). While this vection can enhance presence in VR, it is often accompanied by a variant of motion sickness called simulator sickness (SS). However, not all vection experiences are the same. In terms of perceived heading and/or speed, visually simulated self-motion can be either steady or changing. It was hypothesized that changing vection would lead to more SS. Participants viewed an optic flow pattern that either steadily expanded or alternately expanded and contracted. In one experiment, SS was measured pretreatment and after 5 min of viewing using the Simulator Sickness Questionnaire. In a second experiment employing the same stimuli, vection onset and magnitude were measured using a computer-interfaced slide indicator. The steadily expanding flow pattern, compared to the expanding and contracting pattern, led to: 1) significantly less SS, 2) lower subscores for nausea, oculomotor, and disorientation symptoms, 3) more overall vection magnitude, and 4) less changing vection. Collectively, these results suggest that changing vection exacerbates SS.

#*Cruise control using model predictive control with constraints
#@T. Coen,J. Anthonis,J. De Baerdemaeker
#t2008
#cComputers and Electronics in Agriculture
#index39876
#!Model Predictive Control (MPC) originated in process industry, but in recent years it has been used in many applications beyond this sector. MPC implies solving a quadratic optimisation problem with constraints online. For a practical prototype implementation, it is often necessary to implement the optimisation method yourself. First, the application is presented; then an overview of the most important optimisation methodologies is given. A modified Active Set Method (ASM) is derived. The advantage of this method is its straightforward implementation and good timing behaviour. This method is compared to a commercially implemented Interior Point Method (IPM) on a numerical example and on a real-life implementation.

#*On replacing cryptographic keys in hierarchical key management systems
#@Anne V. D. M. Kayem_ca,Selim G. Akl Patrick Martin
#t2008
#cJournal of Computer Security
#index39877
#%333663
#%431152
#%324732
#%150370
#%327827
#%143225
#%448019
#%111258

#!Shared data access maximizes resource utilization on the Internet but raises the issue of data security. We consider a method of shared data access control whereby the data is sub-divided into categories and each encrypted with a unique cryptographic key that is distributed to the user group requiring access. Key management can be simplified by classifying every user into exactly one of a number of disjoint groups that are partially ordered such that lower level keys are mathematically derivable from higher level keys, but not the reverse. The drawback in this approach is that changes in group membership imply updating both the affected group key and those that are derivable from it. Moreover, the data encrypted with the affected keys must be re-encrypted with the new keys to preserve data security. In the worst case, when the affected group is at the highest level of the hierarchy, the entire hierarchy is affected. This paper presents an algorithm that minimizes the cost of key replacement (rekeying) by associating a timestamp to each key. The timestamp and key are used to compute a verification signature that is used to authenticate users before data access is granted. Thus, whenever group membership changes, instead of rekeying and re-encrypting the affected data, only the timestamp is updated and a new verification signature computed. The new scheme is analyzed using both a time complexity and experimental analysis.

#*Memory karaoke: using a location-aware mobile reminiscence tool to support aging in place
#@Karen P. Tang,Jason I. Hong,Ian E. Smith,Annie Ha,Lalatendu Satpathy
#t2007
#cProceedings of the 9th international conference on Human computer interaction with mobile devices and services
#index39878
#%295055
#%100634
#%284902
#%326172
#!Episodic memory exercises such as reminiscing and storytelling have been shown to provide therapeutic benefits for older adults by prolonging their ability to lead an independent lifestyle. In this paper, we describe a mobile reminiscence tool called Memory Karaoke, which facilitates episodic memory exercise through contextualized storytelling of meaningful experiences by using contextual cues such as location, time, and photos. We present results from two studies we conducted with Memory Karaoke to explore which contextual cues contribute to best exercising a person's episodic memory. Our findings suggest that while viewing photos do exercise episodic memory to some extent, additional contextual cues (e.g. location and time) can solicit a greater amount of episodic memory exercise. This suggests that Memory Karaoke's selective capture process and its ability to contextualize memories while users retell stories are two effective features which help it to support episodic memory use. These results, together with positive qualitative feedback, provide promising evidence for Memory Karaoke as a viable mobile alternative for helping older adults to exercise their episodic memory and, in turn, assist them in successfully "aging in place".

#*Response of the Rhône deltaic margin to loading and subsidence during the last climatic cycle
#@Gwenael Jouet,Eric W. H. Hutton,James P. M. Syvitski,Serge Berné
#t2008
#cComputers Geosciences
#index39879
#!Passive continental margin subsidence is initiated by the synrift mechanical stretching of the lithospheric upper brittle layer and continues during the postrift phase; the thermal cooling and contraction of the upwelled asthenosphere forces the margin to subside in addition to the overloads from sea water and sediments. Therefore, the total subsidence in stretched basins includes fault-controlled initial sinking, thermal subsidence and flexural isostatic compensations. Decoupling and estimating the different components of this subsidence from stratigraphic analysis and restricted geophysical and sedimentological databases remains problematic. In particular, backstripping the sediment layers requires a well-constrained geological framework. A method is proposed here to investigate the subsidence history of a margin based on forward stratigraphic modelling. Using the Sedflux model, several experiments are done using generally agreed upon assumptions on the parameters describing lithospheric rheology and isostatic behaviour of a margin. The stratigraphic modelling of the Rhone deltaic margin during the last climatic cycle (125kyr) provides an assessment of these parameter estimates and their influence on geohistory (tectonic/thermal subsidence and sediment loading). The model results confirm the important impact of water loading on vertical deflection along the platform between glacial low sea-level and interglacial high sea-level. Based on Gulf of Lions (NW Mediterranean) observations, a conceptual method that uses the stratigraphic simulations is produced in order to evaluate the different components of the total subsidence of a margin, and, in particular, the relative impact of tectonic subsidence and sediment load.

#*Hamiltonian chains in hypergraphs
#@Gyula Y. Katona,H. A. Kierstead
#t1999
#cJournal of Graph Theory
#index39880
#!A cyclic ordering of the vertices of a k-uniform hypergraph is called a hamiltonian chain if any k consecutive vertices in the ordering form an edge. For k = 2 this is the same as a hamiltonian cycle. We consider several natural questions about the new notion. The main result is a Dirac-type theorem that provides a sufficient condition for finding hamiltonian chains in k-uniform hypergraphs with large (k - 1)-minimal degree. If it is more than (1 - 1/2k)n + 4 - k - 5/2k than the hypergraph contains a hamiltonian chain. © 1999 Wiley Sons, Inc. J Graph Theory 30: 205212, 1999

#*Discrimination with spike times and isi distributions
#@Kukjin Kang,Shun-ichi Amari
#t2008

#cNeural Computation
#index39881
#%565051
#%284165
#!We study the discrimination capability of spike time sequences using the Chernoff distance as a metric. We assume that spike sequences are generated by renewal processes and study how the Chernoff distance depends on the shape of interspike interval (ISI) distribution. First, we consider a lower bound to the Chernoff distance because it has a simple closed form. Then we consider specific models of ISI distributions such as the gamma, inverse gaussian (IG), exponential with refractory period (ER), and that of the leaky integrate-and-fire (LIF) neuron. We found that the discrimination capability of spike times strongly depends on high-order moments of ISI and that it is higher when the spike time sequence has a larger skewness and a smaller kurtosis. High variability in terms of coefficient of variation (CV) does not necessarily mean that the spike times have less discrimination capability. Spike sequences generated by the gamma distribution have the minimum discrimination capability for a given mean and variance of ISI. We used series expansions to calculate the mean and variance of ISIs for LIF neurons as a function of the mean input level and the input noise variance. Spike sequences from an LIF neuron are more capable of discrimination than those of IG and gamma distributions when the stationary voltage level is close to the neuron's threshold value of the neuron.

#*Characterizing multistage nonlinear drivers and variability for accurate timing and noise analysis
#@Peng Li,Zhuo Feng,Emrah Acar
#t2007
#cIEEE Transactions on Very Large Scale Integration (VLSI) Systems
#index39882
#%435132
#%434925
#%576253
#!Nanoscale device characteristics and noise coupling have rendered traditional waveform-based gate delay models increasingly difficult to adopt. While the widely adopted delay models are built upon the assumption of simple ramp-like signal waveforms, realistic signal shapes in nanoscale designs can be far more complex. The need for considering process-voltage-temperature (PVT) variations imposes further accuracy requirement on gate models. We present a parameterizable waveform independent gate model (PWiM) where no assumption is made upon the input waveforms. The PWiM model is constructed by encapsulating the driver's intrinsic nonlinear dc and dynamic characteristics, which are important to model for complex signal waveforms, via novel and yet easy-to-implement characterization steps. As such, PWiM can provide near-SPICE accuracy for input signals that significantly deviate from simple ramps. While recently developed current-based models can only be applied to single channel-connected component, PWiM can work for multistage cells leading to improved library compactness and analysis efficiency. Our experiments have indicated that the proposed driver model not only provides up to two orders of magnitude speedups

over SPICE for delay and noise analysis, it also offers accurate assessment of performance variability introduced by process and environmental variations.

#*Adaptive layout for dynamically aggregated documents
#@Evan Schrier,Mira Dontcheva,Charles Jacobs,Geraldine Wade,David Salesin
#t2008
#cProceedings of the 13th international conference on Intelligent user interfaces
#index39883
#%328107
#%609502
#%77320
#%544080
#%454802
#%90483
#%470349
#!We present a system for designing and displaying grid-based document designs that adapt to many different viewing conditions and content selections. Our system can display traditional, static documents, or it can assemble dynamic documents "on the fly" from many disparate sources via the Internet. Our adaptive layouts for aggregated documents are inspired by traditional newspaper design. Furthermore, our system allows documents to be interactive so that readers can customize documents as they read them. Our system builds on previous work on adaptive documents, using constraint-based templates to specify content-independent page designs. The new templates we describe are much more flexible in their ability to adapt to different types of content and viewing situations. This flexibility comes from allowing the individual components, or "elements," of the templates to be mixed and matched, according to the content being displayed. We demonstrate our system with two example applications: an interactive news reader for the New York Times, and an Internet news aggregator based on MSN Newsbot.

#*Surface reconstruction via geodesic interpolation
#@N. Sprynski,N. Szafran,B. Lacolle,L. Biard
#t2008
#cComputer-Aided Design
#index39884
#%622154
#%343460
#%303576
#!This paper is concerned with reconstruction of numerical or real surfaces based on the knowledge of some geodesic curves on the surface. So, considering two regular 3D-curves f"0(t) and f"1(t), our purpose is to construct a surface which interpolates these two curves in such a way that these two curves are geodesics on this surface. This will be accomplished using Hermite interpolation. For a real surface, it will be shown that geodesics can be acquired using a ribbon of micro-sensors.

#*Abstraction abstracted
#@Russ Abbott,Chengyu Sun
#t2008
#cProceedings of the 2nd international workshop on The role of abstraction in software engineering
#index39885
#%281933
#%324771
#%335365
#!An abstraction is the reification and conceptualization of a distinction. We use the process of forming abstractions to make sense of the world, i.e., to form concepts. Once created we are often able to externalize these concepts as software. Abstractions are what give software elegance. Abstractions build on each other, producing a hierarchical dependency structure that often creates challenges for understanding. We can teach the use of pre-packaged abstractions. It is more difficult to teach the self-awareness necessary for inventing new abstractions. The process of building abstractions is bottom-up. Thought externalization is where top-down meets bottom-up.

#*Stability of asynchronous variational integrators
#@William Fong,Eric Darve,Adrian Lew
#t2008
#cJournal of Computational Physics
#index39886
#%255006
#%299752
#%94236
#%243477
#%82847
#%86216
#!The adoption of multiple time step integrators can provide substantial computational savings for mechanical systems with multiple time scales. However, the scope of these savings may be limited by the range of allowable time step choices. In this paper we analyze the linear stability of the fully asynchronous methods termed AVI, for asynchronous variational integrators. We perform a detailed analysis for the case of a one-dimensional particle moving under the action of a soft and a stiff quadratic potential, integrated with two time steps in rational ratios. In this case, we provide sufficient conditions for the stability of the method. These generalize to the fully asynchronous AVI case the results obtained for synchronous multiple time stepping schemes, such as r-RESPA, which show resonances when the larger time step is a multiple of the effective half-period of the stiff potential. Additionally, we numerically investigate the appearance of instabilities. Based on the experimental observations, we conjecture the existence of a dense set of unstable time steps when arbitrary rational ratios of time steps are considered. In this way, unstable schemes for arbitrarily small time steps can be obtained. However, the vast majority of these instabilities are extremely weak and do not present an obstacle to the use of these integrators. We then applied these results to

analyze the stability of multiple time step integrators in the more complex mechanical systems arising in molecular dynamics and solid dynamics. We explained why strong resonances are ubiquitously found in the former, while rarely encountered in the latter. Finally, in this paper we introduce a formulation of AVI that highlights the symplectic nature of the algorithm, complementing those introduced earlier by other authors.

#*Ink features for diagram recognition
#@Rachel Patel,Beryl Plimmer,John Grundy,Ross Ihaka
#t2007
#cProceedings of the 4th Eurographics workshop on Sketch-based interfaces and modeling
#index39887
#%26680
#%288787
#%231763
#%324037
#%313189
#%373703
#%583773
#%597175
#%76379
#%282008
#%568640
#%532519
#%305105
#%449185
#!The ability to automatically recognize a sketch accurately is important to computer-based diagramming. Many recognition techniques have been proposed but few researchers have reported the use of formal methods to select the most appropriate ink features for recognition algorithms. We have used a statistical approach to identify the most important distinguishing features of ink for dividing text and shapes. We implemented these into an existing recognition engine and conducted a comparative evaluation. Our feature set more successfully classified a range of common diagram elements than two existing dividers.

#*Tone interference suppression in DS-SS systems with modified DFT
#@Yongmei Wei,Guoan Bi,Gang Li
#t2008
#cSignal Processing
#index39888
#%39888
#!The performance of traditional interference excision methods based on the discrete Fourier transform (DFT) in direct sequence spread spectrum (DS-SS) systems varies significantly with the frequency of the interference because the DFT of the interference becomes more dispersive with the increase of grid biases in the DFT operation. This paper presents a new excision method using modified DFT (MDFT) with an estimated grid bias. Minimum dispersion of the interference

is achieved in the MDFT domain. Both theoretical analysis and experimental simulation are presented to show that the interference can be excised with a minimum distortion of the desired signal in a large range of interference-to-signal ratio.

#*Dreadlocks: efficient deadlock detection
#@Eric Koskinen,Maurice Herlihy
#t2008
#cProceedings of the twentieth annual symposium on Parallelism in algorithms and architectures
#index39889
#%314219
#%450444
#%612239
#%173916
#%458841
#%245625
#%457593
#%326351
#!We present Dreadlocks, an efficient new shared-memory spin lock that actively detects deadlocks. Instead of spinning on a Boolean value, each thread spins on the lock owner's per-thread digest, a compact representation of a portion of the lock's waits-for graph. Digests can be implemented either as bit vectors (for small numbers of threads) or as Bloom filters (for larger numbers of threads). Updates to digests are propagated dynamically as locks are acquired and released. Dreadlocks can be applied to any spin lock algorithm that allows threads to time out. Experimental results show that Dreadlocks outperform timeouts under many circumstances, and almost never do worse.

#*Real time computation of difference equations
#@Carlos Celaya Borges,Jorges Illescas Chávez
#t2008
#cProceedings of the 2nd WSEAS International Conference on Circuits, Systems, Signal and Telecommunications
#index39890
#%239319
#%242836
#!A system for real time computation of difference equations is presented. The prototype was implemented with a PIC18F458 microcontroller; two applications are presented. First, by means of basic functions: adder, delay and attenuator, a complex audio processor was achieved. The second application, a digital control of a third order plant is implemented. The analog outputs are derived from a pulse width output of PWM signals and then an external A/D converter was not required. The program was written in 'C' language. As a result, we get a compact device programmable for audio processing and control.

#*Exact identification of circuits using fixed points of amplification functions
#@S. A. Goldman,M. J. Kearns,R. E. Schapire

#t1990
#cProceedings of the 31st Annual Symposium on Foundations of Computer Science
#index39891
#!A technique for exactly identifying certain classes of read-once Boolean formulas is introduced. The method is based on sampling the input-output behavior of the target formula on a probability distribution which is determined by the fixed point of the formula's amplification function (defined as the probability that a 1 is output by the formula when each input bit is 1 independently with probability p). By performing various statistical tests on easily sampled variants of the fixed-point distribution, it is possible to infer efficiently all structural information about any logarithmic-depth target family (with high probability). The results are used to prove the existence of short universal identification sequences for large classes of formulas. Extensions of the algorithms to handle high rates of noise and to learn formulas of unbounded depth in L.G. Valiant's (1984) model with respect to specific distributions are described.

#*IBM POWER6 reliability
#@M. J. Mack,W. M. Sauer,S. B. Swaney,B. G. Mealey
#t2007
#cIBM Journal of Research and Development
#index39892
#!This paper describes the state-of-the art reliability features of the IBM POWER6 microprocessor. The POWER6 microprocessor includes a high degree of detection of soft and hard errors in both dataflow and control logic, as well as a feature--instruction retry recovery (IRR)--usually available only on mainframe systems. IRR provides full hardware error recovery of those registers that are defined by the instruction set architecture. This is accomplished by taking a checkpoint of the defined state for both of the core threads and recovering the machine state back to a known good point. To allow changing memory accessibility without using different page table entries, the POWER6 microprocessor implements virtual page class keys, a new architectural extension that enables the OS (operating system) to manage eight classes of memory with efficiently modifiable access authority for each class. With this feature, malfunctioning kernel extensions can be prevented from destroying OS data that may, in turn, bring an OS down.

#*ASPicDB
#@T. Castrignanò,M. D'Antonio,A. Anselmo,D. Carrabino,A. D'Onorio De Meo,A. M. D'Erchia,F. Licciulli,M. Mangiulli,F. Mignone,G. Pavesi,E. Picardi,A. Riva,R. Rizzi,P. Bonizzoni,G. Pesole
#t2008
#cBioinformatics
#index39893
#!Motivation: Alternative splicing has recently emerged as a key mechanism responsible for the expansion of transcriptome and proteome complexity in human and other organisms. Although several online resources devoted to alternative splicing analysis are available they may suffer from limitations related both to

the computational methodologies adopted and to the extent of the annotations they provide that prevent the full exploitation of the available data. Furthermore, current resources provide limited query and download facilities. Results: ASPicDB is a database designed to provide access to reliable annotations of the alternative splicing pattern of human genes and to the functional annotation of predicted splicing isoforms. Splice-site detection and full-length transcript modeling have been carried out by a genome-wide application of the ASPic algorithm, based on the multiple alignments of gene-related transcripts (typically a Unigene cluster) to the genomic sequence, a strategy that greatly improves prediction accuracy compared to methods based on independent and progressive alignments. Enhanced query and download facilities for annotations and sequences allow users to select and extract specific sets of data related to genes, transcripts and introns fulfilling a combination of user-defined criteria. Several tabular and graphical views of the results are presented, providing a comprehensive assessment of the functional implication of alternative splicing in the gene set under investigation. ASPicDB, which is regularly updated on a monthly basis, also includes information on tissue-specific splicing patterns of normal and cancer cells, based on available EST sequences and their library source annotation. Availability: www.caspur.it/ASPicDB Contact: graziano.pesole@biologia.uniba.it Supplementary information: Supplementary data are available at Bioinformatics online.

#*Development platform for parallel image processing
#@Radu Dobrescu,Matei Dobrescu,Stefan Mocanu,Sebastian Taralunga
#t2006
#cProceedings of the 6th WSEAS International Conference on Signal, Speech and Image Processing
#index39894
#%283617
#%98759
#%99209
#!This paper describes a development distributed platform with client-server architecture that allows developing parallel primary image processing on a cluster with variable number of workstations. The principles of the software and hardware architecture of this platform are presented underlining the versatility and the capacity of adaptation to a specific application. Experimental results show that for a realistic image processing application performances are accurate and consequently the core of the architecture forms a powerful basis for automatic parallelization of a wide range of image processing software.

#*Particle swarm optimization for electric power systems
#@A. Giorgi,F. Riganti Fulginei,A. Salvini
#t2005
#cProceedings of the 9th WSEAS International Conference on Systems
#index39895
#!In the present paper will be analyzed the Swarm Algorithm and in particular the Particle Swarm Optimization (P.S.O.) applied in the field of electric power systems. The main purpose is to create a linear approach to analyze, to solve

and to optimize a particular chosen circuit, that has been previously tested through classical and not linear mathematical methods. The generated code, observing the tolerances imposed by specifications concerning above all active and reactive power of the load, looks for an adaptive combination of input values, in order to minimize the ohmic power loss of the whole system.

#*Design and code reviews in the age of the internet
#@Bertrand Meyer
#t2008
#cCommunications of the ACM
#index39896
#%254162
#!New collaboration tools allow geographically distributed software-development teams to boost the venerable concept of code review.

#*Defect prediction
#@
#t2008
#cProceedings of the 4th international workshop on Predictor models in software engineering
#index39897

#*An All-Digital High-Precision Built-In Delay Time Measurement Circuit
#@Ming-Chien Tsai,Ching-Hwa Cheng,Chiou-Mao Yang
#t2008
#cProceedings of the 26th IEEE VLSI Test Symposium
#index39898
#!Delay testing has become a major issue for manufacturing advanced Systems on a Chip. Automatic Test Equipment and scan techniques are usually applied in delay testing. However, the circuits under test have many circuit paths and dependent input patterns; it is hard to measure delay times accurately, especially when debugging small delay defects. We propose a Built-In Delay Measurement (BIDM) circuit that is modified from Vernier Delay Lines. All digitally designed BIDMs with small area overhead can be easily embedded within testing circuits. BIDMs can be used to record the data propagation delay times within circuit path segments, for delay testing, diagnosis, and calibration requirements internal to the chip. Our BIDM was implemented in a 32bit error correction circuit by a chip using TSMC 0.18u technology. The instruments measured results showing that the BIDM chip correctly reported the CUT segment path delay times. The chip measurement results were a 95.83% match to the postlayout SPICE simulation values. This BIDM makes it possible to debug small delay defects in chips.

#*Relational-style XML query
#@Taro L. Saito,Shinichi Morishita
#t2008
#cProceedings of the 2008 ACM SIGMOD international conference on Management of data
#index39899

#%30226
#%433648
#%287837
#%324961
#%561524
#%438380
#%369070
#%351546
#!We study the problem of querying relational data embedded in XML. Relational data can be represented by various tree structures in XML. However, current XML query methods, such as XPath and XQuery, demand explicit path expressions, and thus it is quite difficult for users to produce correct XML queries in the presence of structural variations. To solve this problem, we introduce a novel query method that automatically discovers various XML structures derived from relational data. A challenge in implementing our method is to reduce the cost of enumerating all possible tree structures that match the query. We show that the notion of functional dependencies has an important role in generating efficient query schedules that avoid irrelevant tree structures. Our proposed method, the relational-style XML query, has several advantages over traditional XML data management. These include removing the burden of designing strict tree-pattern schemas, enhancing the descriptions of relational data with XML's rich semantics, and taking advantage of schema evolution capability of XML. In addition, the independence of query statements from the underlying XML structure is advantageous for integrating XML data from several sources. We present extensive experimental results that confirm the scalability and tolerance of our query method for various sizes of XML data containing structural variations.

#*Collision Avoidance in Hierarchical Peer-to-Peer Systems
#@Yong Meng Teo,Marian Mihailescu
#t2008
#cProceedings of the Seventh International Conference on Networking
#index39900
#!In a two-level Chord-based hierarchical peer-to-peer system, nodes from the first-level overlay network, called supernodes, act as gateways to peers organized in the second-level overlay. Collision occurs when peer-to-peer operations create more than one supernode with the same node identifier in the first-level overlay. Collisions are reported to enlarge first-level overlay by more than 12 times the ideal size and thus increase the lookup path length. Other consequences of collisions include lookup failures even though the lookup resources exist in the network and reduced scalability of the system. In contrast to collision detection and correction techniques, this paper proposes: (i) a collision-free approach for the join and leave operations, and (ii) a new stabilization scheme to recover from second-level overlay node failures. However, avoiding collision due to supernode failures is complex and remains a challenge. Simulation results show that collisions can be avoided and our algorithms improve the overall system performance.

#*Proactive temperature management in MPSoCs

#@Ayse Kivilcim Coskun,Tajana Simunic Rosing,Kenny C. Gross
#t2008
#cProceeding of the 13th international symposium on Low power electronics and design
#index39901
#%427465
#%303421
#%339811
#%118094
#%434238
#!Preventing thermal hot spots and large temperature variations on the die is critical for addressing the challenges in system reliability, performance, cooling cost and leakage power. Reactive thermal management methods, which take action after temperature reaches a given threshold, maintain the temperature below a critical level at the cost of performance, and do not address the temperature variations. In this work, we propose a proactive thermal management approach, which estimates the future temperature using regression, and allocates workload on a multicore system to reduce and balance the temperature to avoid temperature induced problems. Our technique reduces the hot spots and temperature variations significantly in comparison to reactive strategies.

#*A new method to the solution of oblique wave incidence to oblique plane
#@M. Vosooghi,M. N. Azarmanesh
#t2004
#cProceedings of the 4th WSEAS International Conference on Applied Informatics and Communications
#index39902
#!This paper introduces a new method to the solution of oblique wave incidence to oblique planes. The method we use is applicable for TEM waves. We introduce a method which will help us to find electric and magnetic fields of incidence and reflection waves using angles of wave and plane of incidence with x, y and z axis. Given a wave equation or its travel direction we can calculate angles of wave route with x, y and z axis i.e. x, y and z.

#*Design methodology and hands-on practices for Embedded Operating Systems
#@Yu-Lun Huang,Jwu-Sheng Hu
#t2007
#cProceedings of the 13th International Conference on Parallel and Distributed Systems - Volume 02
#index39903
#!Operating systems play an important role in interacting with hardware and software, while embedded operating systems deal more with hardware-specific functions, optimization and customization. To emphasize the education in embedded operating systems, in this paper, we present the design methodologies of two courses in this area: Embedded Operating Systems and Real-Time Embedded Operating Systems for SoC. The former course focus on the basic concepts of embedded kernel primitives. The latter one emphasizes more on the insight of the real-time kernel and its scheduling protocols. Both courses consist of

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comprehensive hands-on practices to provide students more opportunities to fully
participate in this blooming field.

#*Analysis of finite element method for one-dimensional time-dependent
Schrödinger equation on unbounded domain
#@Jicheng Jin,Xiaonan Wu
#t2008
#cJournal of Computational and Applied Mathematics
#index39904
#%293855
#%326456
#%237675
#%74428
#!This paper addresses the theoretical analysis of a fully discrete scheme for
the one-dimensional time-dependent Schrodinger equation on unbounded domain. We
first reduce the original problem into an initial-boundary value problem in a
bounded domain by introducing a transparent boundary condition, then fully
discretize this reduced problem by applying Crank-Nicolson scheme in time and
linear or quadratic finite element approximation in space. By a rigorous
analysis, this scheme has been proved to be unconditionally stable and
convergent, its convergence order has also be obtained. Finally, two numerical
examples are performed to show the accuracy of the scheme.

#*Bilingual topic aspect classification with a few training examples
#@Yejun Wu,Douglas W. Oard
#t2008
#cProceedings of the 31st annual international ACM SIGIR conference on Research
and development in information retrieval
#index39905
#%250081
#%317537
#%512712
#%198352
#%615015
#%322944
#%320222
#%283769
#%360014
#!This paper explores topic aspect (i.e., subtopic or facet) classification for
English and Chi
```

We made sure that the data we had was more clear and organized by giving the necessary titles in a table.

[ ]:
```
file_path = "/content/outputacm.txt"
records = parse_file(file_path)

df = pd.DataFrame(records)
```

```
df = df[["index", "year", "authors", "title", "abstract"]]


from IPython.display import display
display(df)
```

```
         index  year                                              authors  \
0            0  2006                          [Hoon Hong, Dongming Wang]
1            1  2003                                [Charles J. Brooks]
2            2  2007                  [Ahmed E. Hassan, Parminder Flora]
3            3  2005                   [Darrel Creacy, Carlito Vicencio]
4            4  2006                       [Neil Daswani, Anita Kesavan]
…          …   …                                                    …
629809  629809  2008                                                 []
629810  629810  2008                                                 []
629811  629811  2008         [Manolis Perakakis, Alexandros Potamianos]
629812  629812  2007                                       [V. K. Jain]
629813  629813  2009  [Maryam Shokri, Hamid R. Tizhoosh, Mohamed S. …

                                                    title  \
0       Automated Deduction in Geometry: 5th Internati…
1       A+ Certification Core Hardware (Text & Lab Man…
2       Performance engineering in industry: current p…
3           Dude, You Can Do It! How to Build a Sweeet PC
4       What Every Programmer Needs to Know about Secu…
…                                                     …
629809                                        Mining A
629810                                  Review article
629811  Multimodal system evaluation using modality ef…
629812                      Computer System Architecture
629813  Oppositional target domain estimation using gr…

                                                 abstract
0                                                     NaN
1                                                     NaN
2       This panel session discusses performance engin…
3       Whether you're frustrated with current PC offe…
4                                                     NaN
…                                                     …
629809                                                NaN
629810                                                NaN
629811  In this paper, we propose two new objective me…
629812                                                NaN
629813  In this paper we address the problem of estima…
```

[629814 rows x 5 columns]

By adding the "is_duplicated" column to the template, we could see which rows were duplicates or not.

[ ]:
```
def parse_file(file_path):
    with open(file_path, "r") as file:
        lines = file.readlines()

    records = []
    temp_record = {}

    for line in lines:
        line = line.strip()
        if line.startswith("#*"):  # Title
            if temp_record:
                records.append(temp_record)
            temp_record = {"title": line[2:].strip()}
        elif line.startswith("#@"):  # Authors
            temp_record["authors"] = [author.strip() for author in line[2:].
 ↪split(",")]
        elif line.startswith("#t"):  # Year
            try:
                temp_record["year"] = int(line[2:].strip())
            except ValueError:
                temp_record["year"] = None
        elif line.startswith("#index"):  # Index ID
            temp_record["index"] = int(line[6:].strip())
        elif line.startswith("#!"):  # Abstract
            temp_record["abstract"] = line[2:].strip()

    if temp_record:
        records.append(temp_record)

    return records


file_path = "/content/outputacm.txt"


records = parse_file(file_path)


df = pd.DataFrame(records)

df = df.reindex(columns=["index", "year", "authors", "title", "abstract"],␣
 ↪fill_value=None)
```

```
new_record = df.iloc[-1].to_dict()


new_record["index"] = df["index"].max() + 1

new_df = pd.DataFrame([new_record])
df = pd.concat([df, new_df], ignore_index=True)


df['authors_str'] = df['authors'].apply(lambda x: ', '.join(x) if isinstance(x,␣
 ↪list) else x)


df['is_duplicate'] = df.duplicated(subset=['year', 'authors_str', 'title',␣
 ↪'abstract'], keep=False)


from IPython.display import display
display(df)
```

```
         index  year                                              authors  \
0            0  2006                          [Hoon Hong, Dongming Wang]
1            1  2003                                 [Charles J. Brooks]
2            2  2007                  [Ahmed E. Hassan, Parminder Flora]
3            3  2005                   [Darrel Creacy, Carlito Vicencio]
4            4  2006                       [Neil Daswani, Anita Kesavan]
…          …   …                                                     …
387347  387347  2007                       [Mario Köppen, Kaori Yoshida]
387348  387348  2008                 [Davy Preuveneers, Yolande Berbers]
387349  387349  2008         [Laura Gori, Carla Manni, Elisabetta Santi]
387350  387350  2008  [J. Schneider, A. Kienzler, M. Deuchert, V. Sc…
387351  387351  2008  [J. Schneider, A. Kienzler, M. Deuchert, V. Sc…

                                                    title  \
0       Automated Deduction in Geometry: 5th Internati…
1       A+ Certification Core Hardware (Text & Lab Man…
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3           Dude, You Can Do It! How to Build a Sweeet PC
4       What Every Programmer Needs to Know about Secu…
…                                                     …
387347  Many-Objective Particle Swarm Optimization by …
387348  Pervasive Services on the Move: Smart Service …
387349                                        Editorial
387350  Mechanical structuring, surface treatment and …
387351  Mechanical structuring, surface treatment and …
```

```
                                                  abstract  \
0                                                      NaN
1                                                      NaN
2       This panel session discusses performance engin…
3       Whether you're frustrated with current PC offe…
4                                                      NaN
…                                                      …
387347  Many-objective optimization refers to multi-ob…
387348  The ubiquity of wireless ad hoc networks and t…
387349                                                 NaN
387350  Manufacturing of ceramic and metallic micro co…
387351  Manufacturing of ceramic and metallic micro co…

                                          authors_str  is_duplicate
0                              Hoon Hong, Dongming Wang         False
1                                     Charles J. Brooks         False
2                         Ahmed E. Hassan, Parminder Flora         False
3                          Darrel Creacy, Carlito Vicencio         False
4                              Neil Daswani, Anita Kesavan         False
…                                                      …           …
387347                         Mario Köppen, Kaori Yoshida         False
387348                   Davy Preuveneers, Yolande Berbers         False
387349           Laura Gori, Carla Manni, Elisabetta Santi         False
387350  J. Schneider, A. Kienzler, M. Deuchert, V. Sch…          True
387351  J. Schneider, A. Kienzler, M. Deuchert, V. Sch…          True

[387352 rows x 7 columns]
```