

SEABIRDS

IEEE 2013 – 2014

SOFTWARE PROJECTS IN
VARIOUS DOMAINS

| JAVA | J2ME | J2EE

| DOTNET | MATLAB | NS2 |

SBGC

24/83, O Block, MMDA COLONY
ARUMBAKKAM
CHENNAI-600106

SBGC

4th FLOOR SURYA COMPLEX,
SINGARATHOPE BUS STOP,
OLD MADURAI ROAD, TRICHY- 620002

Web: www.ieeeproject.in

E-Mail: ieeeproject@hotmail.com

Trichy

Mobile:- 09003012150
Phone:- 0431-4013174

Chennai

Mobile:-
09944361169

SBGC Provides IEEE 2013 - 2014 projects for all Final Year Students. We do assist the students with Technical Guidance for two categories.

Category 1: Students with new project ideas / New or Old IEEE Papers.

Category 2: Students selecting from our project list.

When you register for a project we ensure that the project is implemented to your fullest satisfaction and you have a thorough understanding of every aspect of the project.

SEABIRDS PROVIDES YOU THE LATEST IEEE 2012 PROJECTS / IEEE 2013 PROJECTS FOR FOLLOWING DEPARTMENT STUDENTS

B.E, B.TECH, M.TECH, M.E, DIPLOMA, MS, BSC, MSC, BCA, MCA, MBA, BBA, PHD, B.E (ECE, EEE, E&I, ICE, MECH, PROD, CSE, IT, THERMAL, AUTOMOBILE, MECHATRONICS, ROBOTICS) B.TECH(ECE, MECHATRONICS, E&I, EEE, MECH, CSE, IT, ROBOTICS) M.TECH(EMBEDDED SYSTEMS, COMMUNICATION SYSTEMS, POWER ELECTRONICS, COMPUTER SCIENCE, SOFTWARE ENGINEERING, APPLIED ELECTRONICS, VLSI Design) M.E(EMBEDDED SYSTEMS, COMMUNICATION SYSTEMS, POWER ELECTRONICS, COMPUTER SCIENCE, SOFTWARE ENGINEERING, APPLIED ELECTRONICS, VLSI Design) DIPLOMA (CE, EEE, E&I, ICE, MECH, PROD, CSE, IT)

MBA (HR, FINANCE, MANAGEMENT, OPERATION MANAGEMENT, SYSTEM MANAGEMENT, PROJECT MANAGEMENT, HOSPITAL MANAGEMENT, EDUCATION MANAGEMENT, MARKETING MANAGEMENT, TECHNOLOGY MANAGEMENT)

We also have training and project, R & D division to serve the students and make them job oriented professionals

PROJECT SUPPORT AND DELIVERABLES

- ❖ Project Abstract
- ❖ IEEE PAPER
- ❖ IEEE Reference Papers, Materials &
- ❖ Books in CD
- ❖ PPT / Review Material
- ❖ Project Report (All Diagrams & Screen shots)
- ❖ Working Procedures
- ❖ Algorithm Explanations
- ❖ Project Installation in Laptops
- ❖ Project Certificate

TECHNOLOGY: JAVA

DOMAIN: CLOUD COMPUTING

S.No.	IEEE TITLE	ABSTRACT	IEEE YEAR
1.	T o w a r d P r i v a c y P r e s e r v i n g a n d C o l l u s i o n R e s i s t a n c e i n a L o c a t i o n P r o o f U p d a t i n g S y s t e m	By leveraging virtual machine (VM) technology which provides performance and fault isolation, cloud resources can be provisioned on demand in a fine grained, multiplexed manner rather than in monolithic pieces. By integrating volunteer computing into cloud architectures, we envision a gigantic self-organizing cloud (SOC) being formed to reap the huge potential of untapped commodity computing power over the Internet. Toward this new architecture where each participant may autonomously act as both resource consumer and provider, we propose a fully distributed, VM-multiplexing resource allocation scheme to manage decentralized resources. Our approach not only achieves maximized resource utilization using the proportional share model (PSM), but also delivers provably and adaptively optimal execution efficiency. We also design a novel multiattribute range query protocol for locating qualified nodes. Contrary to existing solutions which often generate bulky messages per request, our protocol produces only one lightweight query message per task on the Content Addressable Network (CAN). It works effectively to find for each task its qualified resources under a randomized policy that mitigates the contention among requesters. We show the SOC with our optimized algorithms can make an improvement by 15-60 percent in system throughput than a P2P Grid model. Our solution also exhibits fairly high adaptability in a dynamic node-churning environment.	2013
2.	Scalable and S e c u r e	Personal health record (PHR) is an emerging patient-centric model of health	2013

	Sharing of Personal Health Records in Cloud Computing Using Attribute-Based Encryption	<p>information exchange, which is often outsourced to be stored at a third party, such as cloud providers. However, there have been wide privacy concerns as personal health information could be exposed to those third party servers and to unauthorized parties. To assure the patients' control over access to their own PHRs, it is a promising method to encrypt the PHRs before outsourcing. Yet, issues such as risks of privacy exposure, scalability in key management, flexible access, and efficient user revocation, have remained the most important challenges toward achieving fine-grained, cryptographically enforced data access control. In this paper, we propose a novel patient-centric framework and a suite of mechanisms for data access control to PHRs stored in semitrusted servers. To achieve fine-grained and scalable data access control for PHRs, we leverage attribute-based encryption (ABE) techniques to encrypt each patient's PHR file. Different from previous works in secure data outsourcing, we focus on the multiple data owner scenario, and divide the users in the PHR system into multiple security domains that greatly reduces the key management complexity for owners and users. A high degree of patient privacy is guaranteed simultaneously by exploiting multiauthority ABE. Our scheme also enables dynamic modification of access policies or file attributes, supports efficient on-demand user/attribute revocation and break-glass access under emergency scenarios. Extensive analytical and experimental results are presented which show the security, scalability, and efficiency of our proposed scheme.</p>	
--	--	---	--

<p>3.</p>	<p>O n D a t a S t a g i n g A l g o r i t h m s f o r S h a r e d D a t a A c c e s s e s i n C l o u d s</p>	<p>In this paper, we study the strategies for efficiently achieving data staging and caching on a set of vantage sites in a cloud system with a minimum cost. Unlike the traditional research, we do not intend to identify the access patterns to facilitate the future requests. Instead, with such a kind of information presumably known in advance, our goal is to efficiently stage the shared data items to predetermined sites at advocated time instants to align with the patterns while minimizing the monetary costs for caching and transmitting the requested data items. To this end, we follow the cost and network models in [1] and extend the analysis to multiple data items, each with single or multiple copies. Our results show that under homogeneous cost model, when the ratio of transmission cost and caching cost is low, a single copy of each data item can efficiently serve all the user requests. While in multicopy situation, we also consider the tradeoff between the transmission cost and caching cost by controlling the upper bounds of transmissions and copies. The upper bound can be given either on per-item basis or on all-item basis. We present efficient optimal solutions based on dynamic programming techniques to all these cases provided that the upper bound is polynomially bounded by the number of service requests and the number of distinct data items. In addition to the homogeneous cost model, we also briefly discuss this problem under a heterogeneous cost model with some simple yet practical restrictions and present a 2-approximation algorithm to the general case. We validate our findings by implementing a data staging solver, whereby conducting extensive simulation studies on the behaviors of the algorithms.</p>	<p>2013</p>
-----------	--	---	-------------

TECHNOLOGY: JAVA

DOMAIN: DATA MINING

S.No.	IEEE TITLE	ABSTRACT	IEEE YEAR
1.	A New Algorithm for Inferring User Search Goals with Feedback Sessions	For a broad-topic and ambiguous query, different users may have different search goals when they submit it to a search engine. The inference and analysis of user search goals can be very useful in improving search engine relevance and user experience. In this paper, we propose a novel approach to infer user search goals by analyzing search engine query logs. First, we propose a framework to discover different user search goals for a query by clustering the proposed feedback sessions. Feedback sessions are constructed from user click-through logs and can efficiently reflect the information needs of users. Second, we propose a novel approach to generate pseudo-documents to better represent the feedback sessions for clustering. Finally, we propose a new criterion)"Classified Average Precision (CAP)" to evaluate the performance of inferring user search goals. Experimental results are presented using user click-through logs from a commercial search engine to validate the effectiveness of our proposed methods.	2013
2.	Facilitating Effective User Navigation through Website Structure Improvement	Designing well-structured websites to facilitate effective user navigation has long been a challenge. A primary reason is that the web developers' understanding of how a website should be structured can be considerably different from that of the users. While various methods have been proposed to relink webpages to improve navigability using user navigation data,	2013

		<p>the completely reorganized new structure can be highly unpredictable, and the cost of disorienting users after the changes remains unanalyzed. This paper addresses how to improve a website without introducing substantial changes. Specifically, we propose a mathematical programming model to improve the user navigation on a website while minimizing alterations to its current structure. Results from extensive tests conducted on a publicly available real data set indicate that our model not only significantly improves the user navigation with very few changes, but also can be effectively solved. We have also tested the model on large synthetic data sets to demonstrate that it scales up very well. In addition, we define two evaluation metrics and use them to assess the performance of the improved website using the real data set. Evaluation results confirm that the user navigation on the improved structure is indeed greatly enhanced. More interestingly, we find that heavily disoriented users are more likely to benefit from the improved structure than the less disoriented users.</p>	
3.	Annotating Search Results from Web Databases	<p>An increasing number of databases have become web accessible through HTML form-based search interfaces. The data units returned from the underlying database are usually encoded into the result pages dynamically for human browsing. For the encoded data units to be machine processable, which is essential for many applications such as deep web data collection and Internet comparison shopping, they need to be extracted out and assigned meaningful labels. In this paper, we present an automatic annotation approach that</p>	2013

		<p>first aligns the data units on a result page into different groups such that the data in the same group have the same semantic. Then, for each group we annotate it from different aspects and aggregate the different annotations to predict a final annotation label for it. An annotation wrapper for the search site is automatically constructed and can be used to annotate new result pages from the same web database. Our experiments indicate that the proposed approach is highly effective.</p>	
<p>4.</p>	<p>Building a Scalable Database-Driven Reverse Dictionary</p>	<p>In this paper, we describe the design and implementation of a reverse dictionary. Unlike a traditional forward dictionary, which maps from words to their definitions, a reverse dictionary takes a user input phrase describing the desired concept, and returns a set of candidate words that satisfy the input phrase. This work has significant application not only for the general public, particularly those who work closely with words, but also in the general field of conceptual search. We present a set of algorithms and the results of a set of experiments showing the retrieval accuracy of our methods and the runtime response time performance of our implementation. Our experimental results show that our approach can provide significant improvements in performance scale without sacrificing the quality of the result. Our experiments comparing the quality of our approach to that of currently available reverse dictionaries show that of our approach can provide significantly higher quality over either of the other currently available implementations.</p>	<p>2013</p>

5.	Supporting Flexible, Efficient, and User-Interpretable Retrieval of Similar Time Series	Supporting decision making in domains in which the observed phenomenon dynamics have to be dealt with, can greatly benefit of retrieval of past cases, provided that proper representation and retrieval techniques are implemented. In particular, when the parameters of interest take the form of time series, dimensionality reduction and flexible retrieval have to be addresses to this end. Classical methodological solutions proposed to cope with these issues, typically based on mathematical transforms, are characterized by strong limitations, such as a difficult interpretation of retrieval results for end users, reduced flexibility and interactivity, or inefficiency. In this paper, we describe a novel framework, in which time-series features are summarized by means of Temporal Abstractions, and then retrieved resorting to abstraction similarity. Our approach grants for interpretability of the output results, and understandability of the (user-guided) retrieval process. In particular, multilevel abstraction mechanisms and proper indexing techniques are provided, for flexible query issuing, and efficient and interactive query answering. Experimental results have shown the efficiency of our approach in a scalability test, and its superiority with respect to the use of a classical mathematical technique in flexibility, user friendliness, and also quality of results.	2013
----	---	---	------

S.No.	IEEE TITLE	ABSTRACT	IEEE YEAR
1.	Discovering Temporal Change Patterns in the Presence of Taxonomies	<p>Frequent itemset mining is a widely exploratory technique that focuses on discovering recurrent correlations among data. The steadfast evolution of markets and business environments prompts the need of data mining algorithms to discover significant correlation changes in order to reactively suit product and service provision to customer needs. Change mining, in the context of frequent itemsets, focuses on detecting and reporting significant changes in the set of mined itemsets from one time period to another. The discovery of frequent generalized itemsets, i.e., itemsets that 1) frequently occur in the source data, and 2) provide a high-level abstraction of the mined knowledge, issues new challenges in the analysis of itemsets that become rare, and thus are no longer extracted, from a certain point. This paper proposes a novel kind of dynamic pattern, namely the History Generalized Pattern (HiGen), that represents the evolution of an itemset in consecutive time periods, by reporting the information about its frequent generalizations characterized by minimal redundancy (i.e., minimum level of abstraction) in case it becomes infrequent in a certain time period. To address HiGen mining, it proposes HiGen Miner, an algorithm that focuses on avoiding itemset mining followed by postprocessing by exploiting a support-driven itemset generalization approach. To focus the attention on the minimally redundant frequent generalizations and thus reduce the amount of the</p>	2013

		<p>generated patterns, the discovery of a smart subset of HiGens, namely the Non-redundant HiGens, is addressed as well. Experiments performed on both real and synthetic datasets show the efficiency and the effectiveness of the proposed approach as well as its usefulness in a real application context.</p>	
<p>2.</p>	<p>Information-Theoretic Outlier Detection for Large-Scale Categorical Data</p>	<p>Outlier detection can usually be considered as a pre-processing step for locating, in a data set, those objects that do not conform to well-defined notions of expected behavior. It is very important in data mining for discovering novel or rare events, anomalies, vicious actions, exceptional phenomena, etc. We are investigating outlier detection for categorical data sets. This problem is especially challenging because of the difficulty of defining a meaningful similarity measure for categorical data. In this paper, we propose a formal definition of outliers and an optimization model of outlier detection, via a new concept of holoentropy that takes both entropy and total correlation into consideration. Based on this model, we define a function for the outlier factor of an object which is solely determined by the object itself and can be updated efficiently. We propose two practical 1-parameter outlier detection methods, named ITB-SS and ITB-SP, which require no user-defined parameters for deciding whether an object is an outlier. Users need only provide the number of outliers they want to detect. Experimental results show that ITB-SS and ITB-SP are more effective and efficient than mainstream methods and can be used to deal with both large and high-dimensional data sets where existing algorithms fail.</p>	<p>2013</p>

3.	Robust Module-Based Data Management	<p>The current trend for building an ontology-based data management system (DMS) is to capitalize on efforts made to design a preexisting well-established DMS (a reference system). The method amounts to extracting from the reference DMS a piece of schema relevant to the new application needs—a module—, possibly personalizing it with extra constraints w.r.t. the application under construction, and then managing a data set using the resulting schema. In this paper, we extend the existing definitions of modules and we introduce novel properties of robustness that provide means for checking easily that a robust module-based DMS evolves safely w.r.t. both the schema and the data of the reference DMS. We carry out our investigations in the setting of description logics which underlie modern ontology languages, like RDFS, OWL, and OWL2 from W3C. Notably, we focus on the DL-liteA dialect of the DL-lite family, which encompasses the foundations of the QL profile of OWL2 (i.e., DL-liteR): the W3C recommendation for efficiently managing large data sets.</p>	2013
4.	Protecting Sensitive Labels in Social Network Data Anonymization	<p>Privacy is one of the major concerns when publishing or sharing social network data for social science research and business analysis. Recently, researchers have developed privacy models similar to k-anonymity to prevent node reidentification through structure information. However, even when these privacy models are enforced, an attacker may still be able to infer one's private information if a group of nodes largely share the same sensitive labels (i.e., attributes). In other words, the label-node relationship is not well</p>	2013

		<p>protected by pure structure anonymization methods. Furthermore, existing approaches, which rely on edge editing or node clustering, may significantly alter key graph properties. In this paper, we define a k-degree-diversity anonymity model that considers the protection of structural information as well as sensitive labels of individuals. We further propose a novel anonymization methodology based on adding noise nodes. We develop a new algorithm by adding noise nodes into the original graph with the consideration of introducing the least distortion to graph properties. Most importantly, we provide a rigorous analysis of the theoretical bounds on the number of noise nodes added and their impacts on an important graph property. We conduct extensive experiments to evaluate the effectiveness of the proposed technique.</p>	
--	--	---	--

TECHNOLOGY: JAVA

DOMAIN: IMAGE PROCESSING

S.No.	IEEE TITLE	ABSTRACT	IEEE YEAR
1.	Circular Reranking for Visual Search	<p>Search reranking is regarded as a common way to boost retrieval precision. The problem nevertheless is not trivial especially when there are multiple features or modalities to be considered for search, which often happens in image and video retrieval. This paper proposes a new reranking algorithm, named circular reranking, that reinforces the mutual exchange of information across multiple modalities for improving search performance, following the philosophy that strong performing modality could learn from</p>	2013

		<p>weaker ones, while weak modality does benefit from interacting with stronger ones. Technically, circular reranking conducts multiple runs of random walks through exchanging the ranking scores among different features in a cyclic manner. Unlike the existing techniques, the reranking procedure encourages interaction among modalities to seek a consensus that are useful for reranking. In this paper, we study several properties of circular reranking, including how and which order of information propagation should be configured to fully exploit the potential of modalities for reranking. Encouraging results are reported for both image and video retrieval on Microsoft Research Asia Multimedia image dataset and TREC Video Retrieval Evaluation 2007-2008 datasets, respectively.</p>	
2.	Efficient Method for Content Reconstruction With Self-Embedding	<p>This paper presents a new model of the content reconstruction problem in self-embedding systems, based on an erasure communication channel. We explain why such a model is a good fit for this problem, and how it can be practically implemented with the use of digital fountain codes. The proposed method is based on an alternative approach to spreading the reference information over the whole image, which has recently been shown to be of critical importance in the application at hand. Our paper presents a theoretical analysis of the inherent restoration trade-offs. We analytically derive formulas for the reconstruction success bounds, and validate them experimentally with Monte Carlo simulations and a reference image authentication system. We perform an exhaustive reconstruction quality assessment,</p>	2013

		<p>where the presented reference scheme is compared to five state-of-the-art alternatives in a common evaluation scenario. Our paper leads to important insights on how self-embedding schemes should be constructed to achieve optimal performance. The reference authentication system designed according to the presented principles allows for high-quality reconstruction, regardless of the amount of the tampered content. The average reconstruction quality, measured on 10000 natural images is 37 dB, and is achievable even when 50% of the image area becomes tampered.</p>	
<p>3.</p>	<p>Modeling IrisCode and Its Variants as Convex Polyhedral Cones and Its Security Implications</p>	<p>IrisCode, developed by Daugman, in 1993, is the most influential iris recognition algorithm. A thorough understanding of IrisCode is essential, because over 100 million persons have been enrolled by this algorithm and many biometric personal identification and template protection methods have been developed based on IrisCode. This paper indicates that a template produced by IrisCode or its variants is a convex polyhedral cone in a hyperspace. Its central ray, being a rough representation of the original biometric signal, can be computed by a simple algorithm, which can often be implemented in one Matlab command line. The central ray is an expected ray and also an optimal ray of an objective function on a group of distributions. This algorithm is derived from geometric properties of a convex polyhedral cone but does not rely on any prior knowledge (e.g., iris images). The experimental results show that biometric templates, including iris and palmprint templates, produced by different</p>	<p>2013</p>

		<p>recognition methods can be matched through the central rays in their convex polyhedral cones and that templates protected by a method extended from IrisCode can be broken into. These experimental results indicate that, without a thorough security analysis, convex polyhedral cone templates cannot be assumed secure. Additionally, the simplicity of the algorithm implies that even junior hackers without knowledge of advanced image processing and biometric databases can still break into protected templates and reveal relationships among templates produced by different recognition methods.</p>	
<p>4.</p>	<p>R o b u s t D o c u m e n t I m a g e B i n a r i z a t i o n T e c h n i q u e f o r D e g r a d e d D o c u m e n t I m a g e s</p>	<p>Segmentation of text from badly degraded document images is a very challenging task due to the high inter/intra-variation between the document background and the foreground text of different document images. In this paper, we propose a novel document image binarization technique that addresses these issues by using adaptive image contrast. The adaptive image contrast is a combination of the local image contrast and the local image gradient that is tolerant to text and background variation caused by different types of document degradations. In the proposed technique, an adaptive contrast map is first constructed for an input degraded document image. The contrast map is then binarized and combined with Canny's edge map to identify the text stroke edge pixels. The document text is further segmented by a local threshold that is estimated based on the intensities of detected text stroke</p>	<p>2013</p>

		<p>edge pixels within a local window. The proposed method is simple, robust, and involves minimum parameter tuning. It has been tested on three public datasets that are used in the recent document image binarization contest (DIBCO) 2009 & 2011 and handwritten-DIBCO 2010 and achieves accuracies of 93.5%, 87.8%, and 92.03%, respectively, that are significantly higher than or close to that of the best-performing methods reported in the three contests. Experiments on the Bickley diary dataset that consists of several challenging bad quality document images also show the superior performance of our proposed method, compared with other techniques.</p>	
5.	<p>Per-Colorant-Channel Color Barcodes for Mobile Applications: An Interference Cancellation Framework</p>	<p>We propose a color barcode framework for mobile phone applications by exploiting the spectral diversity afforded by the cyan (C), magenta (M), and yellow (Y) print colorant channels commonly used for color printing and the complementary red (R), green (G), and blue (B) channels, respectively, used for capturing color images. Specifically, we exploit this spectral diversity to realize a three-fold increase in the data rate by encoding independent data in the C, M, and Y print colorant channels and decoding the data from the complementary R, G, and B channels captured via a mobile phone camera. To mitigate the effect of cross-channel interference among the print-colorant and capture color channels, we develop an algorithm for interference cancellation based on a physically-motivated mathematical model for the print and capture processes. To estimate the model parameters required for cross-channel</p>	2013

		<p>interference cancellation, we propose two alternative methodologies: a pilot block approach that uses suitable selections of colors for the synchronization blocks and an expectation maximization approach that estimates the parameters from regions encoding the data itself. We evaluate the performance of the proposed framework using specific implementations of the framework for two of the most commonly used barcodes in mobile applications, QR and Aztec codes. Experimental results show that the proposed framework successfully overcomes the impact of the color interference, providing a low bit error rate and a high decoding rate for each of the colorant channels when used with a corresponding error correction scheme.</p>	
--	--	---	--

TECHNOLOGY: JAVA

DOMAIN: MOBILE COMPUTING

S.No.	IEEE TITLE	ABSTRACT	IEEE YEAR
1.	A Neighbor Coverage-Based Probabilistic Rebroadcast for Reducing Routing Overhead in Mobile Ad Hoc Networks	Due to high mobility of nodes in mobile ad hoc networks (MANETs), there exist frequent link breakages which lead to frequent path failures and route discoveries. The overhead of a route discovery cannot be neglected. In a route discovery, broadcasting is a fundamental and effective data dissemination mechanism, where a mobile node blindly rebroadcasts the first received route request packets unless it has a route to the destination, and thus it causes the broadcast storm problem. In this paper, we propose a	2013

		<p>neighbor coverage-based probabilistic rebroadcast protocol for reducing routing overhead in MANETs. In order to effectively exploit the neighbor coverage knowledge, we propose a novel rebroadcast delay to determine the rebroadcast order, and then we can obtain the more accurate additional coverage ratio by sensing neighbor coverage knowledge. We also define a connectivity factor to provide the node density adaptation. By combining the additional coverage ratio and connectivity factor, we set a reasonable rebroadcast probability. Our approach combines the advantages of the neighbor coverage knowledge and the probabilistic mechanism, which can significantly decrease the number of retransmissions so as to reduce the routing overhead, and can also improve the routing performance.</p>	
<p>2.</p>	<p>Relay Selection for Geographical Forwarding in Sleep-Wake Cycling Wireless Sensor Networks</p>	<p>Our work is motivated by geographical forwarding of sporadic alarm packets to a base station in a wireless sensor network (WSN), where the nodes are sleep-wake cycling periodically and asynchronously. We seek to develop local forwarding algorithms that can be tuned so as to tradeoff the end-to-end delay against a total cost, such as the hop count or total energy. Our approach is to solve, at each forwarding node enroute to the sink, the local forwarding problem of minimizing one-hop waiting delay subject to a lower bound constraint on a suitable reward offered by the next-hop relay; the constraint serves to tune the tradeoff. The reward metric used for the local problem is based on the end-to-end total cost objective (for</p>	<p>2013</p>

		<p>instance, when the total cost is hop count, we choose to use the progress toward sink made by a relay as the reward). The forwarding node, to begin with, is uncertain about the number of relays, their wake-up times, and the reward values, but knows the probability distributions of these quantities. At each relay wake-up instant, when a relay reveals its reward value, the forwarding node's problem is to forward the packet or to wait for further relays to wake-up. In terms of the operations research literature, our work can be considered as a variant of the asset selling problem. We formulate our local forwarding problem as a partially observable Markov decision process (POMDP) and obtain inner and outer bounds for the optimal policy. Motivated by the computational complexity involved in the policies derived out of these bounds, we formulate an alternate simplified model, the optimal policy for which is a simple threshold rule. We provide simulation results to compare the performance of the inner and outer bound policies against the simple policy, and also against the optimal policy when the source knows the exact number of relays. Observing the good performance and the ease of implementation of the simple policy, we apply it to our motivating problem, i.e., local geographical routing of sporadic alarm packets in a large WSN. We compare the end-to-end performance (i.e., average total delay and average total cost) obtained by the simple policy, when used for local geographical forwarding, against that obtained by the globally optimal</p>	
--	--	---	--

		forwarding algorithm proposed by Kim et al.	
3.	Toward Privacy Preserving and Collusion Resistance in a Location Proof Updating System	Today's location-sensitive service relies on user's mobile device to determine the current location. This allows malicious users to access a restricted resource or provide bogus alibis by cheating on their locations. To address this issue, we propose A Privacy-Preserving LocAtion proof Updating System (APPLAUS) in which colocated Bluetooth enabled mobile devices mutually generate location proofs and send updates to a location proof server. Periodically changed pseudonyms are used by the mobile devices to protect source location privacy from each other, and from the untrusted location proof server. We also develop user-centric location privacy model in which individual users evaluate their location privacy levels and decide whether and when to accept the location proof requests. In order to defend against colluding attacks, we also present betweenness ranking-based and correlation clustering-based approaches for outlier detection. APPLAUS can be implemented with existing network infrastructure, and can be easily deployed in Bluetooth enabled mobile devices with little computation or power cost. Extensive experimental results show that APPLAUS can effectively provide location proofs, significantly preserve the source location privacy, and effectively detect colluding attacks.	2013
4.	Distributed Cooperation and Diversity for Hybrid Wireless	In this paper, we propose a new Distributed Cooperation and Diversity Combining framework. Our focus is on heterogeneous networks with devices	2013

	N e t w o r k s	<p>equipped with two types of radio frequency (RF) interfaces: short-range high-rate interface (e.g., IEEE802.11), and a long-range low-rate interface (e.g., cellular) communicating over urban Rayleigh fading channels. Within this framework, we propose and evaluate a set of distributed cooperation techniques operating at different hierarchical levels with resource constraints such as short-range RF bandwidth. We propose a Priority Maximum-Ratio Combining (PMRC) technique, and a Post Soft-Demodulation Combining (PSDC) technique. We show that the proposed techniques achieve significant improvements on Signal to Noise Ratio (SNR), Bit Error Rate (BER) and throughput through analysis, simulation, and experimentation on our software radio testbed. Our results also indicate that, under several communication scenarios, PMRC and PSDC can improve the throughput performance by over an order of magnitude.</p>	
5.	T o w a r d a Statistical Framework for Source Anonymity in Sensor Networks	<p>In certain applications, the locations of events reported by a sensor network need to remain anonymous. That is, unauthorized observers must be unable to detect the origin of such events by analyzing the network traffic. Known as the source anonymity problem, this problem has emerged as an important topic in the security of wireless sensor networks, with variety of techniques based on different adversarial assumptions being proposed. In this work, we present a new framework for modeling, analyzing, and evaluating anonymity in sensor networks. The novelty of the proposed framework is twofold: first, it introduces the notion of</p>	2013

		<p>"interval indistinguishability" and provides a quantitative measure to model anonymity in wireless sensor networks; second, it maps source anonymity to the statistical problem of binary hypothesis testing with nuisance parameters. We then analyze existing solutions for designing anonymous sensor networks using the proposed model. We show how mapping source anonymity to binary hypothesis testing with nuisance parameters leads to converting the problem of exposing private source information into searching for an appropriate data transformation that removes or minimize the effect of the nuisance information. By doing so, we transform the problem from analyzing real-valued sample points to binary codes, which opens the door for coding theory to be incorporated into the study of anonymous sensor networks. Finally, we discuss how existing solutions can be modified to improve their anonymity.</p>	
6.	<p>Vampire Attacks: Draining Life from Wireless Ad Hoc Sensor Networks</p>	<p>Ad hoc low-power wireless networks are an exciting research direction in sensing and pervasive computing. Prior security work in this area has focused primarily on denial of communication at the routing or medium access control levels. This paper explores resource depletion attacks at the routing protocol layer, which permanently disable networks by quickly draining nodes' battery power. These "Vampire" attacks are not specific to any specific protocol, but rather rely on the properties of many popular classes of routing protocols. We find that all examined protocols are susceptible to Vampire attacks, which are devastating, difficult to detect, and</p>	2013

		are easy to carry out using as few as one malicious insider sending only protocol-compliant messages. In the worst case, a single Vampire can increase network-wide energy usage by a factor of $O(N)$, where N is the number of network nodes. We discuss methods to mitigate these types of attacks, including a new proof-of-concept protocol that provably bounds the damage caused by Vampires during the packet forwarding phase.	
--	--	--	--

TECHNOLOGY: JAVA

DOMAIN: DEPENDABLE AND SECURE COMPUTING

S.No.	IEEE TITLE	ABSTRACT	IEEE YEAR
1.	On Inference-Proof View Processing of XML Documents	This work aims at treating the inference problem in XML documents that are assumed to represent potentially incomplete information. The inference problem consists in providing a control mechanism for enforcing inference-usability confinement of XML documents. More formally, an inference-proof view of an XML document is required to be both indistinguishable from the actual XML document to the clients under their inference capabilities, and to neither contain nor imply any confidential information. We present an algorithm for generating an inference-proof view by weakening the actual XML document, i.e., eliminating confidential information and other information that could be used to infer confidential information. In order to avoid inferences based on the schema of the XML documents, the DTD of the actual XML document is modified according	2013

		to the weakening operations as well, such that the modified DTD conforms with the generated inference-proof view.	
2.	SORT: A Self-Organizing Trust Model for Peer-to-Peer Systems		2013

TECHNOLOGY: JAVA

DOMAIN: NETWORKING

S.No.	IEEE TITLE	ABSTRACT	IEEE YEAR
1.	A Distributed Control Law for Load Balancing in Content Delivery Networks	In this paper, we face the challenging issue of defining and implementing an effective law for load balancing in Content Delivery Networks (CDNs). We base our proposal on a formal study of a CDN system, carried out through the exploitation of a fluid flow model characterization of the network of servers. Starting from such characterization, we derive and prove a lemma about the network queues equilibrium. This result is then leveraged in order to devise a novel distributed and time-continuous algorithm for load balancing, which is also reformulated in a time-discrete version. The discrete formulation of the proposed balancing law is eventually discussed in terms of its actual implementation in a real-world scenario. Finally, the overall approach is validated by means of simulations.	2013
2.	Achieving Efficient Flooding by Utilizing Link Correlation in Wireless Sensor Networks	Although existing flooding protocols can provide efficient and reliable communication in wireless sensor networks on some level, further performance improvement has been hampered by the assumption of link	2013

		<p>independence, which requires costly acknowledgments (ACKs) from every receiver. In this paper, we present collective flooding (CF), which exploits the link correlation to achieve flooding reliability using the concept of collective ACKs. CF requires only 1-hop information at each node, making the design highly distributed and scalable with low complexity. We evaluate CF extensively in real-world settings, using three different types of testbeds: a single-hop network with 20 MICAz nodes, a multihop network with 37 nodes, and a linear outdoor network with 48 nodes along a 326-m-long bridge. System evaluation and extensive simulation show that CF achieves the same reliability as state-of-the-art solutions while reducing the total number of packet transmission and the dissemination delay by 30%-50% and 35%-50%, respectively.</p>	
<p>3.</p>	<p>Complexity Analysis and Algorithm Design for Advance Bandwidth Scheduling in Dedicated Networks</p>	<p>An increasing number of high-performance networks provision dedicated channels through circuit switching or MPLS/GMPLS techniques to support large data transfer. The link bandwidths in such networks are typically shared by multiple users through advance reservation, resulting in varying bandwidth availability in future time. Developing efficient scheduling algorithms for advance bandwidth reservation has become a critical task to improve the utilization of network resources and meet the transport requirements of application users. We consider an exhaustive combination of different path and bandwidth constraints and formulate four types of advance bandwidth scheduling problems, with the same</p>	<p>2013</p>

		<p>objective to minimize the data transfer end time for a given transfer request with a prespecified data size: fixed path with fixed bandwidth (FPFB); fixed path with variable bandwidth (FPVB); variable path with fixed bandwidth (VPFB); and variable path with variable bandwidth (VPVB). For VPFB and VPVB, we further consider two subcases where the path switching delay is negligible or nonnegligible. We propose an optimal algorithm for each of these scheduling problems except for FPVB and VPVB with nonnegligible path switching delay, which are proven to be NP-complete and nonapproximable, and then tackled by heuristics. The performance superiority of these heuristics is verified by extensive experimental results in a large set of simulated networks in comparison to optimal and greedy strategies.</p>	
<p>4.</p>	<p>Efficient Algorithms for Neighbor Discovery in Wireless Networks</p>	<p>Neighbor discovery is an important first step in the initialization of a wireless ad hoc network. In this paper, we design and analyze several algorithms for neighbor discovery in wireless networks. Starting with a single-hop wireless network of n nodes, we propose a $\Theta(n \ln n)$ ALOHA-like neighbor discovery algorithm when nodes cannot detect collisions, and an order-optimal $\Theta(n)$ receiver feedback-based algorithm when nodes can detect collisions. Our algorithms neither require nodes to have a priori estimates of the number of neighbors nor synchronization between nodes. Our algorithms allow nodes to begin execution at different time instants and to terminate neighbor discovery upon discovering all their neighbors. We finally show that receiver feedback can be used to achieve a</p>	<p>2013</p>

		<p>$\Theta(n)$ running time, even when nodes cannot detect collisions. We then analyze neighbor discovery in a general multihop setting. We establish an upper bound of $O(\Delta \ln n)$ on the running time of the ALOHA-like algorithm, where Δ denotes the maximum node degree in the network and n the total number of nodes. We also establish a lower bound of $\Omega(\Delta + \ln n)$ on the running time of any randomized neighbor discovery algorithm. Our result thus implies that the ALOHA-like algorithm is at most a factor $\min(\Delta, \ln n)$ worse than optimal.</p>	
5.	Semi-Random Backoff: Towards Resource Reservation for Channel Access in Wireless LANs	<p>This paper proposes a semi-random backoff (SRB) method that enables resource reservation in contention-based wireless LANs. The proposed SRB is fundamentally different from traditional random backoff methods because it provides an easy migration path from random backoffs to deterministic slot assignments. The central idea of the SRB is for the wireless station to set its backoff counter to a deterministic value upon a successful packet transmission. This deterministic value will allow the station to reuse the time-slot in consecutive backoff cycles. When multiple stations with successful packet transmissions reuse their respective time-slots, the collision probability is reduced, and the channel achieves the equivalence of resource reservation. In case of a failed packet transmission, a station will revert to the standard random backoff method and probe for a new available time-slot. The proposed SRB method can be readily applied to both 802.11 DCF and 802.11e EDCA networks with minimum modification to the existing DCF/EDCA</p>	2013

		<p>implementations. Theoretical analysis and simulation results validate the superior performance of the SRB for small-scale and heavily loaded wireless LANs. When combined with an adaptive mechanism and a persistent backoff process, SRB can also be effective for large-scale and lightly loaded wireless networks.</p>	
<p>6.</p>	<p>A Utility Maximization Framework for Fair and Efficient Multicasting in Multicarrier Wireless Cellular Networks</p>	<p>Multicast/broadcast is regarded as an efficient technique for wireless cellular networks to transmit a large volume of common data to multiple mobile users simultaneously. To guarantee the quality of service for each mobile user in such single-hop multicasting, the base-station transmitter usually adapts its data rate to the worst channel condition among all users in a multicast group. On one hand, increasing the number of users in a multicast group leads to a more efficient utilization of spectrum bandwidth, as users in the same group can be served together. On the other hand, too many users in a group may lead to unacceptably low data rate at which the base station can transmit. Hence, a natural question that arises is how to efficiently and fairly transmit to a large number of users requiring the same message. This paper endeavors to answer this question by studying the problem of multicasting over multicarriers in wireless orthogonal frequency division multiplexing (OFDM) cellular systems. Using a unified utility maximization framework, we investigate this problem in two typical scenarios: namely, when users experience roughly equal path losses and when they experience different path losses, respectively. Through theoretical analysis, we obtain optimal</p>	<p>2013</p>

		<p>multicast schemes satisfying various throughput-fairness requirements in these two cases. In particular, we show that the conventional multicast scheme is optimal in the equal-path-loss case regardless of the utility function adopted. When users experience different path losses, the group multicast scheme, which divides the users almost equally into many multicast groups and multicasts to different groups of users over nonoverlapping subcarriers, is optimal.</p>	
--	--	---	--

TECHNOLOGY: JAVA

DOMAIN: PARALLEL AND DISTRIBUTED SYSTEMS

S.No.	IEEE TITLE	ABSTRACT	IEEE YEAR
1.	A Secure Payment Scheme with Low Communication and Processing Overhead for Multihop Wireless Networks	<p>We propose RACE, a report-based payment scheme for multihop wireless networks to stimulate node cooperation, regulate packet transmission, and enforce fairness. The nodes submit lightweight payment reports (instead of receipts) to the accounting center (AC) and temporarily store undeniable security tokens called Evidences. The reports contain the alleged charges and rewards without security proofs, e.g., signatures. The AC can verify the payment by investigating the consistency of the reports, and clear the payment of the fair reports with almost no processing overhead or cryptographic operations. For cheating reports, the Evidences are requested to identify and evict the cheating nodes that submit incorrect reports. Instead of requesting the Evidences from all the nodes participating in the cheating reports, RACE can identify the cheating</p>	2013

		<p>nodes with requesting few Evidences. Moreover, Evidence aggregation technique is used to reduce the Evidences' storage area. Our analytical and simulation results demonstrate that RACE requires much less communication and processing overhead than the existing receipt-based schemes with acceptable payment clearance delay and storage area. This is essential for the effective implementation of a payment scheme because it uses micropayment and the overhead cost should be much less than the payment value. Moreover, RACE can secure the payment and precisely identify the cheating nodes without false accusations.</p>	
2.	<p>Cluster-Based Certificate Revocation with Vindication Capability for Mobile Ad Hoc Networks</p>	<p>Mobile ad hoc networks (MANETs) have attracted much attention due to their mobility and ease of deployment. However, the wireless and dynamic natures render them more vulnerable to various types of security attacks than the wired networks. The major challenge is to guarantee secure network services. To meet this challenge, certificate revocation is an important integral component to secure network communications. In this paper, we focus on the issue of certificate revocation to isolate attackers from further participating in network activities. For quick and accurate certificate revocation, we propose the Cluster-based Certificate Revocation with Vindication Capability (CCRVC) scheme. In particular, to improve the reliability of the scheme, we recover the warned nodes to take part in the certificate revocation process; to enhance the accuracy, we propose the threshold-based</p>	2013

		<p>mechanism to assess and vindicate warned nodes as legitimate nodes or not, before recovering them. The performances of our scheme are evaluated by both numerical and simulation analysis. Extensive results demonstrate that the proposed certificate revocation scheme is effective and efficient to guarantee secure communications in mobile ad hoc networks.</p>	
<p>3.</p>	<p>Fault Tolerance in Distributed Systems Using Fused Data Structures</p>	<p>Replication is the prevalent solution to tolerate faults in large data structures hosted on distributed servers. To tolerate f crash faults (dead/unresponsive data structures) among n distinct data structures, replication requires $f + 1$ replicas of each data structure, resulting in nf additional backups. We present a solution, referred to as fusion that uses a combination of erasure codes and selective replication to tolerate f crash faults using just f additional fused backups. We show that our solution achieves $O(n)$ savings in space over replication. Further, we present a solution to tolerate f Byzantine faults (malicious data structures), that requires only $nf + f$ backups as compared to the $2nf$ backups required by replication. We explore the theory of fused backups and provide a library of such backups for all the data structures in the Java Collection Framework. The theoretical and experimental evaluation confirms that the fused backups are space-efficient as compared to replication, while they cause very little overhead for normal operation. To illustrate the practical usefulness of fusion, we use fused backups for reliability in Amazon's highly</p>	<p>2013</p>

		<p>available key-value store, Dynamo. While the current replication-based solution uses 300 backup structures, we present a solution that only requires 120 backup structures. This results in savings in space as well as other resources such as power.</p>	
<p>4.</p>	<p>Flexible Symmetrical Global-Snapshot Algorithms for Large-Scale Distributed Systems</p>	<p>Most existing global-snapshot algorithms in distributed systems use control messages to coordinate the construction of a global snapshot among all processes. Since these algorithms typically assume the underlying logical overlay topology is fully connected, the number of control messages exchanged among the whole processes is proportional to the square of number of processes, resulting in higher possibility of network congestion. Hence, such algorithms are neither efficient nor scalable for a large-scale distributed system composed of a huge number of processes. Recently, some efforts have been presented to significantly reduce the number of control messages, but doing so incurs higher response time instead. In this paper, we propose an efficient global-snapshot algorithm able to let every process finish its local snapshot in a given number of rounds. Particularly, such an algorithm allows a tradeoff between the response time and the message complexity. Moreover, our global-snapshot algorithm is symmetrical in the sense that identical steps are executed by every process. This means that our algorithm is able to achieve better workload balance and less network congestion. Most importantly, based on our framework, we demonstrate that the minimum number of control</p>	<p>2013</p>

		<p>messages required by a symmetrical global-snapshot algorithm is $\Omega(N \log N)$, where N is the number of processes. Finally, we also assume non-FIFO channels.</p>	
5.	<p>High Performance Resource Allocation Strategies for Computational Economies</p>	<p>Utility computing models have long been the focus of academic research, and with the recent success of commercial cloud providers, computation and storage is finally being realized as the fifth utility. Computational economies are often proposed as an efficient means of resource allocation, however adoption has been limited due to a lack of performance and high overheads. In this paper, we address the performance limitations of existing economic allocation models by defining strategies to reduce the failure and reallocation rate, increase occupancy and thereby increase the obtainable utilization of the system. The high-performance resource utilization strategies presented can be used by market participants without requiring dramatic changes to the allocation protocol. The strategies considered include overbooking, advanced reservation, just-in-time bidding, and using substitute providers for service delivery. The proposed strategies have been implemented in a distributed metascheduler and evaluated with respect to Grid and cloud deployments. Several diverse synthetic workloads have been used to quantify both the performance benefits and economic implications of these strategies.</p>	2013
6.	<p>Optimal Client-</p>	<p>We investigate an underlying</p>	2013

	<p>Server Assignment for Internet Distributed Systems</p>	<p>mathematical model and algorithms for optimizing the performance of a class of distributed systems over the Internet. Such a system consists of a large number of clients who communicate with each other indirectly via a number of intermediate servers. Optimizing the overall performance of such a system then can be formulated as a client-server assignment problem whose aim is to assign the clients to the servers in such a way to satisfy some prespecified requirements on the communication cost and load balancing. We show that 1) the total communication load and load balancing are two opposing metrics, and consequently, their tradeoff is inherent in this class of distributed systems; 2) in general, finding the optimal client-server assignment for some prespecified requirements on the total load and load balancing is NP-hard, and therefore; 3) we propose a heuristic via relaxed convex optimization for finding the approximate solution. Our simulation results indicate that the proposed algorithm produces superior performance than other heuristics, including the popular Normalized Cuts algorithm.</p>	
<p>7.</p>	<p>Scheduling Sensor Data Collection with Dynamic Traffic Patterns</p>	<p>The network traffic pattern of continuous sensor data collection often changes constantly over time due to the exploitation of temporal and spatial data correlations as well as the nature of condition-based monitoring applications. This paper develops a novel TDMA schedule that is capable of efficiently collecting sensor data for any network traffic pattern and is thus well suited to continuous data</p>	<p>2013</p>

		<p>collection with dynamic traffic patterns. Following this schedule, the energy consumed by sensor nodes for any traffic pattern is very close to the minimum required by their workloads given in the traffic pattern. The schedule also allows the base station to conclude data collection as early as possible according to the traffic load, thereby reducing the latency of data collection. Experimental results using real-world data traces show that, compared with existing schedules that are targeted on a fixed traffic pattern, our proposed schedule significantly improves the energy efficiency and time efficiency of sensor data collection with dynamic traffic patterns.</p>	
--	--	---	--

TECHNOLOGY: JAVA

DOMAIN: SOFTWARE ENGINEERING

S.No.	IEEE TITLE	ABSTRACT	IEEE YEAR
1.	Ant Colony Optimization for Software Project Scheduling and Staffing with an Event-Based Scheduler	<p>Research into developing effective computer aided techniques for planning software projects is important and challenging for software engineering. Different from projects in other fields, software projects are people-intensive activities and their related resources are mainly human resources. Thus, an adequate model for software project planning has to deal with not only the problem of project task scheduling but also the problem of human resource allocation. But as both of these two problems are difficult, existing models either suffer from a very large search space or have to restrict the flexibility of human resource allocation to simplify the model. To develop a flexible and effective model</p>	2013

		<p>for software project planning, this paper develops a novel approach with an event-based scheduler (EBS) and an ant colony optimization (ACO) algorithm. The proposed approach represents a plan by a task list and a planned employee allocation matrix. In this way, both the issues of task scheduling and employee allocation can be taken into account. In the EBS, the beginning time of the project, the time when resources are released from finished tasks, and the time when employees join or leave the project are regarded as events. The basic idea of the EBS is to adjust the allocation of employees at events and keep the allocation unchanged at nonevents. With this strategy, the proposed method enables the modeling of resource conflict and task preemption and preserves the flexibility in human resource allocation. To solve the planning problem, an ACO algorithm is further designed. Experimental results on 83 instances demonstrate that the proposed method is very promising.</p>	
--	--	--	--

www.ijerph.com