Third International Computer Engineering Conference:

"Smart Applications for the Information Society"

Computer Engineering Department
Faculty of Engineering

Cairo University
Cairo, EGYPT

December 26-27, 2007

Four Seasons Hotel, Giza, Egypt

ICENCO'2007

This year's conference is the third one but the first in its tradition. The conference has become a yearly one, more focused as well as being a research festival. The theme this year is "Smart Applications for the Information Society". Being smart is an important step to make use if the power of computers for the advance of mankind. In a special session, computer research from all over Egypt will be presented to help give better understanding of the research topics and efforts. In this conference, the Computer Engineering Department will celebrate students who have graduated 10 years ago. Thus, ten year graduates of the Computer Engineering Department, at Cairo University are invited from around the world to celebrate their graduation. The conference will also help in focusing our attention on any requirements for changing the curricula and/or teaching techniques.

It is my pleasure to preface this third conference booklet and proceedings after the great success of the previous two held in 2004 and 2006. We are all looking forward to an intellectual feast. This year table has 37 carefully selected dishes from Canada, USA, Europe, Asia, as well as the Middle East. Assuming that half of the author chef's have at least 25 years of experience, it is my delight to invite you to these more than 700 (man year) Healthy calories of wisdom.

I wish ICENCO'07 success and hope to extend the activities in ICENCO'08 to new frontiers and to help researchers and students exchange ideas and knowledge.

Conference Chair

Samir I. Shaheen

Wednesday December 26th

- Invited Talk Opening
  courtesy of Mentor Graphics
- Session 1: Computational Intelligence
- Session 2: Machine Intelligence
- Official Opening and Banquet

Thursday December 27th

- Special Session – Computer Engineering Research
  In Egypt
- Session 3 :Image Processing and Communication
- Session 4 : Computer Networks
- Closing Session

Special Dates and Events

- **Invited Talk Opening**
- **Soft Opening & Invited Talk**
  Monday December 26th – 9:30 am

- **Official Opening & Banquet**
- **Honoring of Class of 1997**
  Wednesday December 26 – 7:00 pm

- **Special Session: Computer Research in Egypt**
  Tuesday December 27th – 9:30 am

Program

Wednesday, December 26

From 8:30	**Registration**
09:30 – 10:30	**Invited Talk Opening** Soft Opening & Invited Talk Courtesy of Mentor Graphics
10:30 – 11:00	**Coffee Break**
11:00 – 1:00	**Session 1** Computational Intelligence
1:00 – 3:00	**Lunch Break**
3:00 – 5:00	**Session 2** Machine Intelligence
7:00 – 10:00	**Official Opening & Banquet** **Honoring of Class of 1997**

Thursday, December 27

09:30 – 10:30	**Special Session**: Computer Research in Egypt
10:30 – 11:00	**Coffee Break**
11:00 – 1:00	**Session 3A** Image Processing and Communication
1:00 – 3:00	**Lunch Break**
3:00 – 5:00	**Session 4** Computer Networks
5:00 – 6:00	**Closing**

Wednesday, December 26

9:30 – 10:30	**Invited Talk Opening (courtesy of Mentor Graphics)**

Session 1 Computational Intelligence

(Moderators: *Prof. Mohamed. Zaki, Prof. Samia Mashali)*

Time	Ref. No.	Paper Title
11:00 – 11:20	Japan1	Ranking of Field Association terms using Co-word analysis, M. Badee.
11:20 – 11:40	Iran2	SLR_1_ Grammar Recognition, M. Kheirkhahzadeh
11:40 – 12:00	KSA1	Prediction of Critical Well Oil Properties Using Neural Networks, M. Elshafei
12:00 – 12:20	Egypt8	SFN_River, G. S. Eskander
12:20 – 12:40	Iran4	A New FFT-Based Technique for Determining the Rotation Independent of the Translation between Two Images, H. Ghorbani
12:40 – 1:00 (Poster)	Egypt7	color interpolation, salah eltaweel

Wednesday, December 26

Session 2: Machine Intelligence

(Moderators: *Prof. Nevin Darwish, Dr. El-Sayed Hemayed)*

Time	Ref. No.	Paper Title
3:00 – 3:20	Egypt14	Digital In-Line Holographic Microscope Algorithms for Micro-Organisms Detection and Three Dimension Tracking, A. Ayoub
3:20 – 3:40	Egypt19	Efficient and Scalable Clustering Technique For Large High-Dimensional Databases Using Self-Organizing Map, Rasha M. Elhadary
3:40 – 4:00	Egypt21	ArabicSeg: An Arabic News Story Segmentation System, M. Azmy El Shayeb
4:00 – 4:20	Egypt15	Analysis of Spoken Arabic into Interlingua Representation using Automatic Classification Approach, A F. Al-Sadek, A. Rafea, and K. Shaalan
4:20 – 4:40		Research discussion And on-site / late arrival accepted paper
4:40 – 5:00 (Poster)	Egypt5	Skin Color Spaces: A Survey, M. Arabawy
		On-site registration of accepted poster paper

7:00 – 10:00	**Official Opening and Conference Banquet (Honoring 10 year Graduates, Class of 1997 of Computer Engineering Department, Cairo University)**

Thursday, December 27

9:30 – 10:30	**Computer Engineering Research in Egypt**

Session 3 : Image Procesing and Communication

(Moderators: *Prof. Ossman Hegazi , Dr. Amr Wassal)*

Time	Ref. No.	Paper Title
11:00 – 11:20	Iran3	AUT-QPM, N. Daneshpour
11:20 – 11:40	Egypt25	Proposed Algorithms for Multimedia Transmission over GPRS (General Packet Radio Service), R. M. Zaki
11:40 – 12:00	USA6	A 2-GSPS 4-Bit Flash A/D Converter Using Multiple Track/Hold Amplifiers, M. Wagdy
12:00 – 12:20	Egypt11	Contribution and limits of a Lossless Data Compression Method for Performance of Optical Wireless Channels in Digital Multimedia Applications, K. A. Moustafa
12:20– 12:30 (Poster)	USA1	Behavioral Modeling of Fast-Locking Digital PLL Using Multiple Charge Pumps, M. Wagdy
12:30 – 1:30	Visit to Engineering University Campus and Discussion of Research Collaboration	

Thursday, December 27

Session 4: Computer Networks

(Moderators: *Prof. Abd El-Rahman_El-Sawy, Dr. Ahmed Bashandi)*

Time	Ref. No.	Paper Title
3:00 – 3:20	Canada2	Call Admission Control Analysis in Heterogeneous Wireless Networks, A. H. Zahran and B. Liang
3:20 – 3:40	USA2	Security Features and Requirements of Groupware Technology, H. Abdel-Wahab.
3:40 – 4:00	Egypt28	Dynamic Port Change for Protecting Decentralized Messaging System, T. Sobh
4:00 – 4:20	USA3	ETTDD: Enhanced Two-Tier Data Dissemination in Large-Scale Mobile Wireless Sensors Networks, M. Khedr
4:20 – 4:40	USA4	Overview of Multi-Constrained Routing Algorithms and Future Directions, K. Edoh
4:40 – 5:00		Research Discussion And on-site registration/late arrival accepted papers and poster papers

5:00 – 6:00	**Closing**

Conference Chair
Samir Shaheen (Cairo U) Egypt

Conference Co-Chair
Nevin Darwish (Cairo U) Egypt

Conference Secretaries
Amir Atiya (Cairo U) Egypt
Mohammed Guda (U Texas) USA

Program Chair
Magda Fayek (Cairo U) Egypt

Publicity Chair
Ihab Talkhan (Cairo U) Egypt

International Technical Program Committee

Ahmed Elgammal (Rutgers U)	USA	Sajal Das (U Texas Arl)	USA
Amr El Abbadi (UCSB)	USA	Selim Awad (Michigan U)	USA
Benjamin Wah (U Illinois)	USA	Sonia Fahmy (Purdue U)	USA
Fei-Fei Li (U Illinois)	USA	Tarek Saadawi (City U)	USA
Hesham Ali (U Nebraska)	USA	Vladimir Cherkassky (U Minnesota)	USA
Hesham El Gamal (Ohio St U)	USA	Hossam Hassanein (Queens U)	Canada
Ibrahim Habib (City U)	USA	Mahmoud Elsakka (U Wstrn Ontario)	Canada
Jerry Trahan (LSU)	USA	Rabab Ward (U British Col)	Canada
Magdi Kamel (NPS)	USA	Youshen Xia (U Waterloo) Canada	Canada
Mahmoud F. Wagdy (Cal State U)	USA	Mathias Bauer (Mineway GmbH)	Germany
Ramachandran Vaidyanathan (LSU)	USA	Khaled Ragab (U Tokyo)	Japan
Reda Ammar (U Connecticut)	USA	Charles Shoniregun (U East London)	UK

Egyptian Technical Program Committee

Ahmed Bashendy	Cairo Uni	Adib El Ghonaimy	Ain Shams Uni
Ahmed El-Arabawi	Cairo Uni	Ahmed Z. BAdr	Ain Shams Uni
Aly Aly Fahmy	Cairo Uni	Gamal Ali	Ain Shams Uni
Aly Hassan Fahmy	Cairo Uni	Hossam Fahmy	Ain Shams Uni
Amr Wasssal	Cairo Uni	M Zaki Abdelmegid	Al Azjhar Uni
El-Sayed Hemayed	Cairo Uni	Nazih Elderrini	Alexandria Uni
Fuad S Atiya	Cairo Uni	Moumen T. Hanafy	Assuit Uni
Hatem El –Boghdadi	Cairo Uni	Ashraf A. El-Wahab	ERI
Howaida F. Ismail	Cairo Uni	Ayman El-Dessouky	ERI
Ibrahim Farag	Cairo Uni	Mohamed S. El–Sherif	ERI
Osman Hegazy	Cairo Uni	Salwa Nassar	ERI
Ossman Lotfi	Cairo Uni	Samia Mashaly	ERI
Raafat El Fouly	Cairo Uni	Mohamed Younes	IEEE-Egypt
Reem Bahgat	Cairo Uni	Ahmed El Sherbini	NTI
Sherif Hashem	Cairo Uni	Magdi el Sudani.	NTI

Organizing Committee

Faculty and Graduate and Research Students
Department Of Computer Engineering
Cairo University
Faculty of Engineering

Ranking FA terms using Co-word analysis
Mahmoud Rokaya, Elsayed Atlam, Masao Fuketa, Tshering C. Dorji and Jun-Ichi Aoe

Information retrieval (IR) involves finding some desired information in a store of information or a database. Co-word analysis aims at finding the relation between concepts, ideas and problems in a specific discipline. This paper will present a method to find relations between Field Association terms depending on Co-word analysis. Co-word analysis will be used to achieve a ranking of a selected sample of FA terms. Based on this ranking a better arranging of search results can be achieved. Experimental results achieved using 41 MB of data (7660 documents), from the experimental results, the average number of relevant documents, among the first 50documents, after applying the arranging scheme was 34.92 documents whereas the average number was 29.92 before applying the arranging scheme. The average precision increased by18.3% after applying the proposed arranging scheme.

AKU-SLR(1): An Efficient Algorithm For SLR(1) Grammar Recognition
Masoumeh Kheirkhahzadeh and Ahmad Abdollahzadeh Barfourosh

LR parsers which are the most pubic shift/reduce non-backtracking parse methods, present an efficient bottom-up syntax parse method that can be used for parsing a big class of context-free grammars. These parsers recognize syntax errors in the earliest possible time but implementation of a LR parser is cost and time consuming. Reviewing literatures recognized to the authors to overcome this shortcoming shows no serious work in this field. In this work we introduce an efficient algorithm to distinguish SLR(1) grammars. The proposed algorithm uses first and follow sets without drawing transition diagram and parse table in contrast to the usual ways. We couldn't find similar work to facilitate the SLR(1)grammar recognition. The benefits of the new algorithm consist of: Its manual implementation is very simple and we can do it in a short time. It has no need to create LR(0) items and closure function. It removes the steps of building associative transition diagram and parse table for given grammar. All of necessary steps to build transition diagram and parse table are summarized in the algorithm. In fact the algorithm consists of all of the needed operations of usual method and does necessary operations in a simpler and faster way. In fact finding first and follow sets is the only requirement of the algorithm.

Prediction of Critical Well Oil Properties Using Neural Networks
Moustafa. Elshafei and Emad Elsebakhy

This paper presents a novel method for predicting critical oil parameters from the composition analysis of oil samples of new wells. The predicted parameters are the oil API, the oil gas/oil ratio, and formation volume factor. These parameters play important role in assessment of the economic prospect of oil production of the explored wells. The recently proposed Functional Networks technique is applied for rapid and accurate prediction of these parameters using only the oil composition analysis, which can be found experimentally at the well site. Functional network is a generalization of the conventional Feed Forward Neural Networks, which overcome many of the drawbacks of the conventional neural network techniques. The proposed functional network was trained using data gathered from over 300 wells in the Middle East region. The paper presents the details of the proposed method, and the training and the validation results.

A Novel Symbolic Type Neural Network Model— Application to River Flow Forecasting
George S. Eskander and Amir F. Atiya

In this paper we introduce a new symbolic type neural tree network called symbolic function network (SFN) that is based on using elementary functions to model systems in a symbolic form. The proposed formulation permits feature selection, functional selection, and flexible structure. We applied this model on the River Flow forecasting problem. The results found to be superior in both fitness and sparsity.

A New FFT-Based Technique for Determining the Rotation Independent of the Translation between Two Images
Hassan Ghorbani and Ali Asghar Beheshti

Distinguishing many local optimums from the global optimum is a critical problem in sub-pixel image registration by optimization techniques. We can tell, getting an acceptable initial guess of parameters is the key of success. Thus, we propose a new method for determining the rotation angle independent of the translation between two images, using Fourier transform features when the transformation only include translation-rotation parameters. We compute the similarity between Fourier domain of two images in different rotation angles and we choose the angle corresponding to the maximum similarity. Then, using the well known phase correlation method, the translation between them can be resolved. It is shown that our proposed method produces an accurate result formultitempotal satellite images.

Color Image Interpolation Using Color Projection
S. G. El Taweel

In this paper, an algorithm is introduced to interpolate the RGB color images in the YUV color space. YUV color space vectors has two vectors orthogonal to (1, 1, 1) and the third is parallel. The image is color projected in the YUV color space and then it is returned to RGB color space. Firstly, the Discrete Wavelet Transform (DWT) Haar type is applied on the three YUV image components. The pixel is projected to one of the two orthogonal vectors of YUV color space vectors in any band of the wavelet transform bands, LH , HL or HH band. The blue component of color image in YUV color space is reconstructed with the projection. After projection, the RGB color image is sampled horizontally and vertically to produce the interpolated image.

Digital In-Line Holographic Microscope Algorithms for Micro-Organisms Detection and Three Dimension Tracking

Ahmed Ayoub and Szabolcs Tõkés

Digital holographic microscopy (DHM) is a twofold problem: holographic and computational. The first optically records one 3D information hologram of a microscopic object. The second digitally computes and reconstructs the optical wave front at certain distance. Once the object is detected in the reconstruction focus; all of image processing and target tracking techniques can be applied. In this manuscript we develop a straight forward algorithm to reconstruct a hologram for biological organisms (e.g. Daphnia) and define a part of its anatomy. Furthermore, we describe how DHM can be used for micro organisms tracking and show some results. Finally, we propose a quasi-automatic algorithm to track moving objects in depth (3D target tracking.)

Efficient and Scalable Clustering Technique For Large High-Dimensional Databases Using Self-Organizing Map

Rasha. S. Elhadary, Ahmed. S. Tolba, Mohamed. A. Elsharkawy and Omar. H. Karam

Cluster analysis is a primary method for database mining. It either used as a stand-alone tool to get insight into the distribution of a data set or as a preprocessing step for other algorithms operating on the detected clusters. The explosive size and dimensionality of data in contemporary data-mining applications call for efficient and scalable clustering algorithms. The self-organizing map (SOM) is an excellent tool in exploratory phase of data mining. It projects input space on prototypes of alow-dimensional regular grid that can be effectively utilized to visualize and explore properties of the data. The main objective of this paper is to propose a scalable clustering technique for large high-dimensional databases using self-organizing map (SOM).Results on synthetic data sets are given to show that the performance and scalability of the proposed technique in terms of size of database and dimensionality of data are increased.

ArabicSeg: An Arabic News Story Segmentation System
Michael A. El-Shayeb, Samhaa R. El-Beltagy and Ahmed Rafea

Text segmentation is a very critical step to many applications and while it has been addressed extensively for the English language, work on text segmentation for other languages is still lagging behind. In this paper the ArabicSeg system for segmenting Arabic news stories is presented. The developed system is based on a linguistic technique called lexical chaining which measures the cohesion between textual units. In conjunction with this technique, a set of error reduction filters have been introduced and were found to significantly reduce segmentation errors in the detection of borders in Arabic based news stories. The results of evaluation experiments carried out on an Arabic Reuters news story dataset are presented. An analysis of the effect of introducing each of the proposed error reduction filters is also provided. The evaluation shows that the segmentation results produced by the presented system are not only comparable to the results reported by English based segmentation algorithms, but also outperform them.

Analysis of Spoken Arabic into Interlingua Representation using Automatic Classification Approach
Ahmed Farouk Al-Sadek, Ahmed Rafea and Khaled Shaalan

Semantic analysis is the system that takes as input a sentence and outputs a list of prominent concepts that characterize the contents of the input sentence, and for each concept, gives the set of attributes that discuss the concept along with their relevancies. This paper presents a system that employs a machine learning approach that automates the semantic analysis process of spoken Arabic into interlingua representation. An experiment has been conducted to measure the performance of our approach. The results were promising and assured the ability of this approach in capturing the semantics of Arabic utterances taken from the travel and tourism domain.

Skin Color Spaces: A Survey
Mahmoud M. El-Arabawy, Ahmed S. Tolba and Sherif. I. Zaki

In the last years, there are a great interest in recognition and tracking systems. Color is one of the most powerful fundamental cues that can be used at early stage in many recognition and tracking systems. Such as in face detection of a complex human image, image content filtering, lane-markers in abroad image, and the ground in a soccer game image. There are many color spaces can be used in the skin color detection such as RGB, YCbCr, HSV, TSL, and soon. Until now, it is not clear which one of them is the best color space. Many papers focus on comparing between color spaces to determine the best one. In our paper, we will represent a survey of the color spaces and give a comprehensive discussion of the effect of color space choice on skin detection performance.

AUT-QPM: The Framework to Justify Data Warehouse Systems
N. Daneshpour and A. Abdollahzadeh Barforoush

The main reason of data warehouse systems failure is lack of justification proof. Analysis is an important task for decision about data warehouse creation. In this paper, we present the framework to justify data warehouse based on the input query types. We classify query types and execute them on the databases and data warehouses with different sizes. The query response time and the number of I/O are evaluation parameters. In the experiments, different types of queries have been processed on databases and data warehouses and the results based on time and memory have been compared. These results are presented below:

- For answering multidimensional queries and aggregated queries data warehouse systems will be required,
- For answering nested queries and join queries, data warehouse system will be useful,
- Database systems will be proper for answering simple queries and computational queries.

In this work, the tools which can process the above ideas have been produced. The software will take user query and evaluate its process to decide having or not having data warehouses.

Proposed Algorithms for Multimedia Transmission over GPRS (General Packet Radio Service)

Nawal A. El_Fishawy 1, Hala A.K. Mansour 2 and Rokaia M. Zaki

The General Packet Radio Service (GPRS) is designed for packet switching data transmission and provides mobile access to packet data networks, e.g. the Internet. In this paper, two different protocols are proposed to study the performance of multimedia integrated traffic (as voice, rt-VBR video and data traffics) over GPRS network. Data traffic is presented as Web documents. This work is based on PRMA(Packet Reservation Multiple Access) access techniques. The simulation objectives include maximizing the system capacity by finding the optimum permission probabilities of sending contending voice and data, the number of video reserved slots, also measuring Qos through two parameters, the packet dropping probability and the average delay suffered by each packet . The obtained Results show that, the performance of GPRS measured in terms of system throughput, video and voice dropping probability and the average data delay are more enthusiastic compared with the previous studies. So mobile users can access to Internet and obtain data in short time.

A 2-GSPS 4-Bit Flash A/D Converter Using Multiple Track/Hold Amplifiers

Mahmoud Fawzy Wagdy and Chun-Shou (Charlie) Huang

Flash A/D converters (ADCs) play an important role in many applications, such as radar systems, aerospace applications, etc. A typical flash ADC includes only one track/hold amplifier (THA),however, in this paper a multi-THA topology is presented and investigated, where one THA is connected to every comparator. A comparative study is performed employing a 4-Bit ADC; this includes measuring the integral nonlinearity (INL) for both architectures at different frequencies. Behavioral modeling using Verilog-A is used to quantify the accuracy of the circuits. The ADCs under consideration were implemented using Cadence0.18µm CMOS process.

Contribution and limits of a Lossless Data Compression Method for Performance of Optical Wireless Channels in Digital Multimedia Applications
K. A. Moustafa

The modification of the transmission rate, transmission capacity and the bandwidth, parameters are an important for the performance of the Optical Wireless Channel (OWLC). Multilevel-Digital pulse Interval Modulation (MDPIM) is the most method which contributes in the improving of these parameters. The large size of multimedia sources has been performed the main problem for the data transmission. Thus, in this paper a new lossless images compression method by Minimizing Pixels Number of Objects (MPNO) is applied for the Images compression. The properties of the Digital Images Transmission (DIT) with and without compression by using MPNO method are discussed. Transmission Parameters Values (TPV) of the M-DPIM system with and without compressed input by using MPNO method are computed. The compression ratio of the MPNO method compared with other compression methods is presented. Finally, at special types of the DIT, the MPNO method has been satisfied good results.

Behavioral Modeling of Fast-Locking Digital PLL Using Multiple Charge Pumps
Mahmoud Fawzy Wagdy and M. Shoaib Waheed

Design and simulations of a fast locking digital phase-locked loop (DPLL) based on[1], which covers a wide frequency range of 200MHz– 2GHz and employs 0.18µm CMOS process were presented before [2]. In this paper, behavioral modeling of the same DPLL using Simulink in both Sand Z domains are presented. Cadence-Spectre simulation results are compared with Simulink behavioral modeling results in both S and Z domains, and found to agree within acceptable limits. Effects of component propagation delays on the DPLL performance are also investigated in both S and Z domains, thus providing a valuable help to the designer.

Call Admission Control Analysis in Heterogeneous Wireless Networks
Ahmed H. Zahran and Ben Liang

The service integration of different wireless access technologies is envisioned as a viable approach to accommodate the expected increase in the demand on wireless resources. This vision originates a new networking paradigm that introduces anew vertical mobility dimension, which significantly magnifies the mobility impact on the system performance and creates new challenging design issues. In this paper, we focus on the impact of technology vertical mobility on the design and analysis of call admission control (CAC) schemes in next-generation heterogeneous wireless networks. We present the impact of network integration on the channel holding time and traffic arrival rates. Additionally, we present an iterative approach for integrating first-level and second-level analysis of wireless communication systems. The obtained results show that resource utilization is significantly affected by the user mobility pattern. Additionally, the results propel developing an optimal dynamic CAC analysis formulation for achieving high resource utilization in the presence of frequent vertical mobility transitions in the integrated system.

Security Features and Requirements of Groupware Technology
Hussein Abdel-Wahab, Ravi Mukkamala, Mohamed G. Gouda and Nagi El Naga

In recent years, Internet conferencing applications have flourished due to the availability of powerful and affordable computing devices and high-speed networking. For many of these applications to be used in productive real-world settings, the users must have flexible and assured security measures built, managed and enforced, conveniently and transparently, by these systems. This paper is concerned with the task of identifying the security features and requirements, and seamless integration of the features into this new and emerging web based groupware technology.

The next generation of a secure groupware system should have the following features. First, it should offer flexible mixed mode that makes it possible for different parts of a document to be accessible to different individuals. It should support secure multimedia where the system should use appropriate cryptographic techniques for each type of data. It should offer situational-awareness to each participant according to his/her defined role. It should provide limited-time secure documents where data may be retained for only a limited time after which it automatically becomes public or gets destroyed. It should provide the feature of continuing a secure meeting over several sessions by retaining a session state. It should support the concept of jointly owned objects where an object may be owned by a group of individuals. Finally, it should provide a wide variety of security policy monitoring and enforcement services.

Dynamic Port Change for Protecting Decentralized Messaging System
Tarek S. Sobh

Most probably, any administrator of a large network will tell you that his network has been probed before. As cracking tools become more popular and increase in number, this trend is likely to continue. Although network probes are technically not attack tools, they should not be taken simply; they may lead to actual attacks in the future. As we know better be safe than sorry. This work introduces a decentralized system using a group of servers where only one of them is active at a time. Also, the concepts behind network port scans are explained as well as how they are performed and what can be done to avoid them. The port that the server uses to communicate with the other clients changes frequently to a new free random port, which makes the server safer from suspected network-scanning activities. Additionally, encrypted messages are available in order to achieve a secure level for sending and receiving data through the network.

ETTDD: Enhanced Two-Tier Data Dissemination in Large-Scale Mobile Wireless Sensors Networks
Mohamed Khedr, Roshdy Abdel Rasoul and Mohamed Nadeem

Dissemination protocols in a mobile large sensor network typically take a data-centric paradigm in which the communication primitives are organized around the sensing data instead of the network nodes. A user expresses his interest in a given data type by specifying a query message, which then propagates through the network. When detecting a nearby stimulus that matches the query type, sensors generate data reports which traverse the network to reach the interested user. In a large scale sensor network, the resource constraints of each node in terms of energy, computation and memory, and potentially frequent node failures and mobility present formidable challenges to reliable data dissemination. The protocols must be energy efficient, robust against failures and channel dynamics, and be able to scale to large networks. In this paper, we provide a brief overview and critique of the state-of-art dissemination protocols and discuss the new proposed enhancements. Our approach is built over the Two Tier Data Dissemination protocol with differences mainly in the virtual grid construction, maintenance, data query and forwarding.

Overview of Multi-Constrained Routing Algorithms and Future Directions
Hussein Abdel-Wahab and Kossi Edoh

Internet multimedia applications need efficient Quality-of-Service (QoS)routing for their services. The routing paths are required to satisfy certain multiple QoS constraints. Multi-constrained QoS routing problems with two or more constraints are known to be NP- complete and several heuristics algorithms have been proposed to determine their optimum feasible paths. In this paper we give an overview of multiple constraints QoS routing protocols in both unicast and multicast network environments. We discuss the strengths, weaknesses and challenges of the various routing strategies and provide some possible new directions.

A Classifier Integration Method for Improvement of Classification Accuracy
Hossein Morshedlou , Ahmad Abdollahzadeh Barfourosh

One of the issues of high importance in knowledge extraction from various data sources is to enable data sources with data on the same semantics to utilize each other's classifiers. This improves the precision and accuracy of their predictions and classifications. However, despite the similarity in the semantics behind the data, it is not possible for data sources to use each other's classifiers because of the difference in data schemas. In this paper, we present a method for integration of classifiers learnt over data sources with different schemas by adopting classifiers. In addition, we use the Semantic Triangle concept to solve the issue of difference meta-data in data sources. The proposed method is implemented as a system that is described in this paper. We discuss the issues of creating a system in which data source sites with similar data (regarding their semantics) but with different schema as dynamic and autonomous entities cooperate with each other for performing the classification task. According to potentials of software agents and multi agent systems, we also propose to implement this idea as a multi agent system. In this system, each agent acts as a classifier and works on a different data source.

On Site Registration Accepted Papers

An Energy Efficient Multi Rate Based Time Slot Pre-Schedule Scheme in Wireless Sensor Networks

Wei Wei, Wei Wang , Hongliang Gu , Kuo Zhang ,Jun Liang

In this paper, we propose a novel multi rate based local framing pre-schedule scheme to further reduce collisions and improve energy saving in CSMA/TDMA hybrid MAC layer of wireless sensor network. This MAC combines CSMA and TDMA functionalities together, while obviates their shortcomings. After the time slot assignment, slot 0 is preserved as the pre-schedule slot, to let neighbor nodes know the schedule of the senders. During this pre-schedule slot, each node knows exactly the schedule of other neighbor nodes. Multi rate and power scaling are used to achieve further energy saving, by using an acceptable rate rather than maximum rate. Data rate is dynamically adjusted according to the traffic load of sending nodes, in an energy efficient data rate, to save energy. Performances are compared with Z-MAC showing local framing pre-schedule and multi rate achieved further energy efficiency.

A Modified Congestion Control Algorithm for Evaluating High BDP Networks

Ehab Aziz Khalil

It is well known that the TCP congestion control algorithm has been remarkably successful in improving the current TCP/IP function better and efficiently. However, it can perform poorly in networks with high Bandwidth Delay Product (BDP) paths. This paper presents modification to a congestion control algorithm that may help the TCP better utilize the bandwidth provided by huge bandwidth long delay links. It also presents results to show a comparison of the original algorithm.

ROUGH SETS ANALYSIS FOR FEATURE SELECTION AND REDUCTION
Mostafa Abdel Aziem Mostafa and Hoda Saleh Ahmed

One fundamental aspect of rough set theory is the search of subsets of attributes that provide the same information for classification purposes as the full set of attributes. A new rough set algorithm is proposed for attributes reduct described in [1]. This algorithm proposes a method of generating a best reduct of the data based on rough set theory to overcome the problems of generating all reducts. The approach can select a best subset of attributes quickly and effectively from a large database with a lot of attributes. This paper compares two different feature selection algorithms represented in [1] and [2]. We found that our algorithm described in [1] is much faster, robust and more efficient.

FAIR QUEUE OPTIMIZATION-BASED RESOURCE ALLOCATION ALGORITHM FOR VIDEO TRAFFIC OVER WIRELESS MULTIMEDIA SYSTEM
M. R. M. Rizk, Senior Member, IEEE, M. I. Dessouky, Sami A. El-Dolil, and Mohammed Abd-Elnaby

The major issue related to the realization of wireless multimedia system is the design of suitable medium access control (MAC) protocol. The design challenge is to maximize the utilization of the limited wireless resources while guaranteeing the various quality of services requirements for all traffic classes especially for the stringent real-time constraint of real time variable bit rate (rt-VBR) video service. In this paper a novel resource allocation algorithm for video traffic is proposed. The proposed allocation algorithm aims to optimize queue fairing for video packets by minimizing the queue length difference among user's buffers. At the same time it adaptively controls the allocated resources (bandwidth) for video traffic around the corresponding average bit rate. A minimized control overhead of only two bits is needed to increase the utilization efficiency. Simulation results show that the proposed algorithm achieves very high utilization and provides nearly fair queuing for video packets. Its efficiency is also investigated under traffic integration condition with voice and data traffic. Under traffic integration condition the data traffic increases the utilization while a good QoS is achieved for all traffic classes.

Performance Evaluation for Integrated High Altitude Platforms-Terrestrial General Packet Radio Service System.
SAMI A. EL-DOLIL and AMIR S. EL-SAFRAWEY

General Packet Radio service (GPRS) is a part of the evolution path towards 3G. This paper investigates the effect of using two representative scenarios: a macro cellular system operating from a high altitude platform line of sight system and a terrestrial non-line-of-sight System, in each case a packet-based such as GPRS system is considered. The macro cellular layer will serve as second server to the mobile data terminals located in a microcellular layer, both layers form a Multi-layer cellular system. A comparison between GPRS system using only microcellular structure and when using both microcellular and macro cellular structures is evaluated. A simulator model was developed to study the behavior of data transmission between a GPRS server and data terminals via air interface. Simulation results show the validity of using macro cells to serve as a second layer, and how this can enhance the GPRS system performance.

Study of m-tuple for RC4
Tarik T. Gad; Amr M. Yousef

In this paper, we study a weakness point in the security strength of RC4. This point depends on the repetitions rate of the output of RC4.

Recognition for handwritten words of three alphabets using modified gradient descent technique and representation of conjugate descent for training patterns.
Vijaypal Singh Dhaka and Manu Pratap Singh

The purpose of this study is to analyze the performance of Back propagation algorithm with changing training patterns and the second momentum term in feed forward neural networks. This analysis is conducted on150 different samples of three letter English words. These words are presented to two vertical segmentation programs which are designed in MATLAB and based on portions (1/2 and 2/3) of average height of the words, for segmentation into characters. These Characters are clubbed together after binarization to form training patterns for neural network. Network is trained by adjusting the connection strengths on every iteration with introducing the second momentum term. This term alters the process of connection strength fast and efficiently. The conjugate gradient descent of each presented training pattern has found to identify the error minima for each training pattern. The network is made to learn its behavior by presenting each one of the 5 samples 100 times thus achieved 500trials indicate the significant difference between the two momentum variables in the data sets presented to the neural network. The results indicate that the segmentation based on 2/3 portion of height yields better segmentation and the performance of the neural network is more convergent and accurate for the learning with newly introduced momentum term.

Security in Next Generation Metro Ethernet Network
Suchismita Dasbiswas

Next Generation Networks (NGN) require innovative, converged infrastructures to improve delivery of current services and provide a scalable framework for tomorrow's new, bandwidth-intensive services. Solutions that provide greater network intelligence, integration, and flexibility will not only give short-term relief but also position them to seize new market opportunities. Protecting networked applications from attackers that threaten application availability, data-base integrity, data-presentation integrity, and data privacy is on the forefront of IT security. Ethernet is becoming an extension of the corporate network, and preventing outsiders from getting in was the foundation of network security. The firewalls, intrusion detection systems, virus protection and other perimeter security technologies are the first line of defense in network security. Since that time, the nature of the corporate network has changed quickly, and dramatically. The main driver of the changing corporate network is the move to IP and the rapid adoption of Ethernet across the enterprise, including the wide area network. The benefits are obvious: interoperability, lower cost, flexibility, and the elimination of geographic limitations.

Constructing Field Association Words Using Declinable words and Concurrent Words
El-Sayed Atlam, Kazuhiro Morita, Elmarhomy Ghada, Masoa Fuketa and Jun-ichi Aoe

Readers can know the subject of many document fields by reading only some specific Field Association (FA) words. Document fields can be decided efficiently if there are many rank 1 FA words (words that direct connect to terminal fields) and if the frequency rate is high. This paper proposes a new method for increasing rank 1 FA words using declinable words and concurrent words which relate to narrow association categories and eliminate FA word ambiguity. Concurrent words become Concurrent Field Association Words (CFA words) if there is a little field overlap. Usually, efficient CFA words are difficult to extract using only frequency, so this paper proposes weighting according to degree of importance of concurrent words. The new weighting method causes Precision and Recall to be higher than by using frequency alone. Moreover, combining CFA words with FA words allow easy search of fields which can not be searched by using only FA words.

Performance Evaluation of Interpolative BTC Image Coding Algorithms
Fituri Belgassem, Karima Al-Alamy, Munira El-Hashmi

Block Truncation Coding ""BTC"" is one of spatial coding techniques of images. This technique has a simple and fast algorithm which achieves constant bit rate of 2 bits per pixel. The compression ratio may be improved by coding only half of the bits in the BTC bit plane of each block; the other half will be interpolated. The resulting bit rate will be 1.5 bits per pixel.

In this paper, different interpolative algorithms for coding the block truncated image bit plane are presented. Several gray scale test images are used to evaluate the coding efficiency and performance of these algorithms. It is generally shown that these algorithms give good quality for the reconstructed images at reduced bit rate. Comparison of the interpolative algorithms in terms of the Peak Signal-to-Noise ratio (PSNR) of coded images is also given.

Worm Interactions in Encounter-Based Networks: Modeling and Realistic Analysis
Sapon Tanachaiwiwat and Ahmed Helmy

An encounter-based network is a frequently disconnected wireless ad-hoc network requiring nearby neighbors to store and forward data utilizing mobility and encounters over time. Using traditional approaches such as gateways or firewalls for deterring worm propagation in encounter-based networks is inappropriate. Because this type of network is highly dynamic and has no specific boundary, a distributed counter-worm mechanism is needed. We propose models for the worm interaction approach that relies upon automated beneficial worm generation to alleviate problems of worm propagation in such networks. We study and analyze the impact of key mobile node characteristics including node cooperation, immunization, on-off behavior on the worm propagations and interactions. We validate our proposed model using extensive simulations. We also find that, in addition to immunization, cooperation can reduce the level of worm infection. Furthermore, on-off behavior linearly impacts only timing aspect but not the overall infection. Using realistic mobile network measurements, we find that encounters are non-uniform, the trends are consistent with the model but the magnitudes are drastically different. Immunization seems to be the most effective in such scenarios. These findings provide insight that we hope would aid to develop counter-worm protocols in future encounter-based networks.

On Site Registration Poster Papers

Digital Data Compression by Segments Indices Reassignment
Mohamed W. El Mahallawy, Undergraduate ,Senior Year

The LZW data compression technique has been used for several years in many applications. LZW has proved to be a very efficient technique so I will express my thesis based on it . I will try to make use of the indices that are not used after some time through the compression\decompression process. These indices can be assigned to different data segments to them after we are sure that the data they contain will not be used again. This technique will be more complicated in programming and have some disadvantages but will give a compression better than the ordinary LZW by about 60%. I have developed a software to simulate this technique and the ordinary LZW to use them to compress same files ,results of comparison are shown..

Speech Coding Applied On Wireless Channels
Nemat S. Abd-Elkader

Speech coders have assumed considerable importance in communication systems as their performance determines the quality of the recovered speech and the storage of the system. In wireless communication systems, bandwidth is a precious commodity, and service provides are continuously facing the challenge of accommodating more users within a limited allocated bandwidth. Low bit rate speech coding offers a way to meet this challenge. The lower the bit-rate, the more speech channels can be compressed within a given bandwidth. A number of techniques were developed and standardized as speech coding algorithms. In this paper, some compression techniques are used to compress the parameters of the Mixed Excitation Linear Prediction (MELP) coder in the time domain without degradation of the speech quality. The proposed speech coder achieves good quality over a wide range of sound effects and human voices. At around 2 Kbps, it performs as well as the standard MELP (2.4 Kbps). The proposed speech coder is applied to the Binary Phase Shift Keying (BPSK) technique with slow fading and fast fading channels at different signal to noise ratios. Mean opinion score tests show that the coder gives good quality speech with very low bit rate.

Using Gridsim to Evaluate the Performance of Grid Computing
Rasha Sakr,Taha Elarif and Samir Elmougy

Grid Computing is a new technology in the fields of scientific, engineering, and as well as in commercial, and industrial enterprises. This growing technology facilitates the conduct of virtual organization by bringing together appropriate, and effective human, information, and computing resources for tackling highly complex, and multidisciplinary projects. Scheduling strategy plays an important role in the Grid environment to schedule the user jobs, and dispatch them to appropriate Grid resources. The main purpose of this paper is to use the GridSim Toolkit to measure the performance grid computing parameters such as the response time, the system utilization, and the throughput (no of jobs per unit time).

Knowledge Representation and Reasoning Using Standard Web Languages for Risk Analysis
Hanaa Ismail El Shazly, Hesham A. Hassan and Khaled EL-Bahnasy

The semantic web is a future vision of the web in which information is a given explicit meaning, making it easier for machines to automatically process and integrate information available on the web [5]. It is an effort that has been going on in the W3C to provide richer and explicit descriptions of web resources [12]. In this pa-per we propose a generic tool for building risk assessment knowledge bases using two standard languages: Web Ontology Language (OWL) for representing ontology and Semantic Web Rule Language (SWRL) for representing rules. This tool contains: a transformation module which is used to convert SWRL standard rules into XML representation, an inference mechanism to reason on this representation and facility for rules editing. The proposed tool is validated by implementing a case study for risk assessment in construction industry.