

ACIT'2009 Proceedings

Radio Network Selection for Tight-Coupled Heterogeneous Networks Mohammed M. Alkhwilani **Abstract:** In a tightly coupled Next Generation Wireless Network (NGWN), a large number of different radio access technologies (RATs) will be integrated into one common network. These RATs are owned by one operator or multi-cooperative operators. Selecting the most optimal and promising RAT is an important consideration for overall networks stability, resource utilization, operator benefits, user provisioning. However, choosing the best RAT is not a trivial task and there are many parameters and criteria to take into account when selecting the best access network. This paper presents and designs a multi criteria RNS solution that considers an environment with a co-existed WWAN, WMAN, and WLAN. The developed solution contains two modules. The first module resides in the user terminal. It contains a network-assisted terminal-controlled algorithm to reflect the user viewpoint in the selection process. The second module resides in the CRRM entity. It contains a terminal-assisted network-controlled algorithm to reflect the operator viewpoint of the selection decision. The developed solution uses a combined parallel fuzzy logic control and Multi-Criteria Decision Making (MCDM) system to achieve scalable, flexible, general, and adaptable solution. The simulation results show that our solution has better and more robust performance over several reference algorithms. **Keywords:** radio network selection, heterogeneous networks, fuzzy logic, MCDM, common radio resource management

Bandwidth Enhancement of U-Slot Microstrip Patch Antenna Ahmed Ali H. Elkhalil, Mohamed Omar, and Darwish M. Abdelaziz **Abstract:** The design of a single-layer U-slot microstrip patch antenna has been proposed by K. F Tong [1]. The -10 dB impedance bandwidth of the antenna is 9%. To enhance the bandwidth of the antenna, two modification designs are proposed. The first modification design is by adding two shorting walls to the antenna and adjusting the U-slot dimensions. The -10 dB impedance bandwidth achieved is 28%. The second modification design is same as the first one, but the dimensions of the square U-slot patch have been increased. The impedance bandwidth became 40%. Experimental and theoretical results of the two designs have been presented and discussed. **Keywords:** Bandwidth Enhancement, Printed antenna, U-slot patch.

Improving Performance in Adaptive Fault Tolerance Structure with investigating the effect of the number of replication Negar Mosharraf, and Mohammad Reza Khayyambashi **Abstract:** With widespread use of distributed systems in various applications, having fault tolerance in these system seems necessary for efficient and proper performance of programs and this is while it makes more sense in designing of real time distributed system and requires that programs simultaneously supporting the properties of fault tolerance and real time systems. Although middleware e.g. CORBA is used in designing of such systems, programs with simultaneous capability of fault tolerance and real time systems properties are not supported therein and for creating of such structures it is required to make both structures adaptive. In fact, adaptive means taking into account the properties of both structures so that the requirements of these two structures are met during performance and this is usually created by a trade off between specifications of both real time and fault tolerance systems. In this study, the FTCORBA structure as a structure used for supporting fault tolerance programs as well as relative important parameters including replication style and number of replica, which play further role in improved performance and make it adaptive to real time distributed system have been reviewed. Studying these specifications a structure adaptive to real time systems with higher performance than FT-CORBA structure have been made and, finally, the implementation of the said structure and determination of the number of replica and the objects replication style as well as the significance of related parameters have been investigated. **Keywords:** Middleware; Fault Tolerance; Trade-offs; Real time; Replication.

Representation of Images by Oriented Wavelets Rachida Imine, Mustapha K Rahmouni, and Abdelkader Benyettou **Abstract:** The wavelet transform is qualified to detect vertical, horizontal and diagonal edges. This transform is not completely adapted to represent image edges or oriented textures. Several transforms have been proposed to overcome this lack. Some of them use non adaptive methods which repose on families of fixed kernels of representations having the forms varied but independent of the image analyzed. Others use adaptive methods where the geometry is initially extracted from the image and the kernels of representations are formed according to this geometry. Our work considers this second type of transform, where the image is decomposed into coefficients of wavelet according to vectors multi scales elongated along a geometrical stream indicating the directions of regularity of image. In this paper, we give an algorithmic approach to compute such a geometric representation on the discrete wavelet. **Keywords:** Wavelets transform, directions of regularity.

Gust Load Alleviation Controllers Design for a Flexible Aircraft Dilmi smain, and Bouzouia Brahim **Abstract:** An LQG and weighted H_2 / H_∞ controller design is presented to establish a nominal performance baseline for the vertical acceleration control of a B-52 aircraft model with flexibility. The aircraft is assumed to be subjected to severe wind gusts causing undesirable vertical motion. We use the Dryden gust power spectral density model to guide the performance specifications and control designs, as well as for time-domain simulations. Motivation for the use of H_∞ nominal performance baseline specification is given in terms of a new interpretation of the Dryden model. The H_2/H_∞ optimal controller is shown to reduce dramatically the effect of wind gust on the aircraft vertical acceleration. **Keywords:** flexible aircraft, gust, robust control, flight dynamic, longitudinal aircraft model

An Energy-Efficient Routing Protocol for wireless sensor networks Samra Boulfekhar, and Mohammed Benmohammed **Abstract:** Networking unattended sensors is expected to have a significant impact on the efficiency of many military and civil applications. Sensors in such systems are typically disposable and expected to last until their energy drains. Therefore, energy is a very scarce resource for such sensor systems and has to be managed wisely in order to extend the life of the sensors for the duration of a particular mission. In this paper, we present a new protocol of routing for wireless sensor networks named EERP (Energy-Efficient Routing Protocol for wireless sensor networks) that maximizes the lifetime of the sensors. Its principle is as follows: each node sends the data captured on the way which minimizes the consumption of energy as well as the variance of energies consumed by the sensors nodes. Our experimental results show that our protocol increase the lifetime of the sensors network and conserve the energy of the nodes up to optimum level better than the Energy Aware Routing protocol (EAR). **Keywords:** Wireless Sensor

Networks, Routing protocol, Energy consumption minimization, Network lifetime. Encryption-Decryption Process Using Dynamic Key without Relative Frequency Count Saiful Islam, Mst. Jahanara Akhtar, Md. Mosharaf Hossain, and Md. Golam Moazzam Abstract: The security of many cryptographic systems depends upon the generation of cipher text in such a way that intruders can not calculate the relative frequency of the plaintext characters. In this paper, we generate plaintext dependent keys dynamically. From each key we produce some bases (3 to 31) of unconventional number system along with some conventional number system (8 and 10). ASCII decimal value of each plaintext character is converted into one of the number systems dynamically and then each digit is substituted by some characters of a private list of all printable characters used by both ends. Then we transpose the list of substituting characters. Subsequent keys are generated by bit-wise X-ORing the current key with the encrypted characters using the key. Keywords: Cryptography, Combining function, Cryptanalyst, ASCII, KDC, Unconventional number.

Intelligent Radio Network Selection for Next Generation Wireless Networks Mohammed M. Alkhwilani Abstract: Next Generation Wireless Network (NGWN) will be composed of multiple radio access technologies (RATs), therefore new radio resource management (RRM) schemes and mechanisms are necessary to benefit from the individual characteristics of each RAT and to exploit the gain resulting from jointly considering the whole set of available radio resources in each RAT. Radio Network Selection is the RRM mechanism responsible for selecting the most optimal and promising RAT for a new service request in the NGWN. This paper presents and designs an intelligent multi criteria RNS solution that considers NGWN environment with a co-existed WWAN, WMAN, and WLAN. The proposed solution uses a combined parallel fuzzy logic control and Analytic Hierarchy Process (AHP) system to achieve scalable, flexible, general, and adaptable solution. The simulation results show that the developed algorithm has better and more robust performance over the random selection algorithm, the terminal speed based selection algorithm, and the service-type based selection algorithm that are used as reference algorithms. Keywords: radio network selection, NGWN, fuzzy logic, AHP, common radio resource management

Micro-Profile of a Glass Surface Determined By Image Processing Kh. Ayadi Abstract: The three dimensional reconstitution of a rough surface calls for sophisticated techniques. In this work, we present an optical technique of surface scanning which consists to determine the phase shifting which leads to the reconstitution of the micro profile. The technique was applied with a five-structure algorithm, in order to obtain the surface micro profiles of a glass surface. The quadratic roughness is estimated by using a calculating program based on a mathematical model described in the text. The application is done on a sample of polite glass, the pictures of the reflection beam are taking directly with a camera then treated in order to reconstitute the profile of surface, the results are presented as a figures and values of the surface roughness and interpreted in this work. Keywords: Imagery, Phase shifting, interferometer, laser, roughness.

A Distance Ratio Based Face Recognition Using 2d And 3d Data and Enhancement for Features Extraction. Rahmita W. Rahmat, Azizi A. Ibrahim, Kho Tuz Kuang, Elham Bagherian, and Muhamad T. Abdullah Abstract: This paper introduced a basic Face Recognition system where it was based on distances and ratios and takes 2D image as input and 3D face models as database. Calculation for the distances and ratios is made on the same features of 2D and 3D data, where finally matching is carried out. To extend and prove the usefulness of this proposed system, a basic attendance system was developed. The attendance system takes 2D images captured using webcam, as an input. While 3D faces data was captured using 3D laser scanner and the coordinate points (x,y, and z) was stored in a designed database. To enable 3D Face Recognition system (3DREC) to retrieve the 3D data, preprocessing has to be done. Preprocessing of 3D data includes cropping, noise-reducing, patching, and smoothing. 3DREC reads preprocessed new entry 3D data, extracts the features, and calculates the distances and ratios and finally add in our simple designed database. Both distances and ratios information from 2D input and 3D database will be matched, in order to complete the recognition. This paper also introduced an enhanced facial features extraction to be compiled in our proposed 3DREC. Keywords: Face Recognition, Feature Points, Distance Ratio

Voice Activation Visualization for Echocardiograph and 3d Angiographic Images in Surgery Rahmita W. Rahmat, Mohd Z. Dimon, Zinah R. Hussein, and Hasan H. Khalil Abstract: The medical images have been widely studied for various purposes, especially to assist surgeon and medical practitioners. In this paper we proposed a Voice Control Assisted Surgery System, where it was developed using Microsoft Visual Basic 6.0, Microsoft Access 2003 and Microsoft Speech Recognition Engine 4.0, to display necessary images with chosen features. In this system, the processing and visualizing the medical images and voice recognition control are the most challenging work. Development of this system is useful for surgeons; where they can navigate the system using voice commands instead of keyboard and mouse. Medical practitioners also can facilitate more the angiogram and echocardiograph images. With this system, it can help and ease the work of surgeons in analyzing and processing the medical images especially in-vivo procedure. Keywords: angiographic, echocardiograph, voice activation.

Developing Measurements for Steganography Covers Nidhal k. El-abbadi, and ahmed n. El-abbadi Abstract: In this paper, some techniques are developed for discriminating between images to use as steganography cover. Our approach is based on the hypothesis that a particular message embedding scheme leaves statistical evidence or structure that can be exploited for detecting the aid of proper selection of image feature analysis. We pointed out that the image features should be taken more seriously into account in the design of a more successful steganography. The weight for each of these features is determined by using Analytic Hierarchy Process (AHP) which helps maximize some of features and gives weight according to the relation between these features. The proposed algorithm is tested by using worst case (LSB) method to hide secret message in cover. A stego-image is compared with the original one which gave good results. Keywords: steganography, image features, AHP, information hiding, image in image.

A Tool to Develop Arabic Handwriting Recognition System Using Genetic Approach Hanan Aljuaid, Zulkifli Mohamad, and Muhammad Sarfraz Abstract: This paper presents a complete system to recognize offline Arabic handwriting image and Arabic handwriting and printed text database AHPD-UTM that used to implement and test the system. That system start from preprocessing and segmentation phases that deepened on thinning the image and found the V and H projection profile until recognition phase by genetic algorithm. The genetic algorithm stand on feature extraction algorithm that defines six

feature for each segment beak. Keywords: Arabic characters Recognition, Genetic algorithm, Feature extraction, Arabic characters pattern, OCR, AOCR, off-line characters recognition. Singular Points Deduction Using Enhanced Image Reliability Mohammed S. Khalil, Dr. Dzulkifli Muhammad, M. Masroor Ahmed, and Qais AL-Nuzaili Abstract: Singular Points Detection is the most challenging task; it is an important process in most fingerprints verification and algorithms identification in locating reference points for minutiae matching and classification. In this paper, a novel algorithm is proposed for singular points detection, which is based on the orientation reliability. The algorithm starts by enhancing the fingerprint image using the Gabor filter, followed by calculation of the reliability to locate the core and delta. Experimental results have proven that the proposed algorithm locates singular points in a fingerprint image with high accuracy. Keywords: Fingerprint, Singular Points, Core, Delta, Enhancement, Reliability, Fingerprint Image.

Psoriasis Detection Using Skin Color and Texture Features Nidhal K. Al abbadi, Nizar Saadi Dahir, Muhsin A. AL-Dhalimi, and Hind Restom Abstract: In this work a skin disease diagnosis system was developed and tested. The system is used for diagnosis of psoriasis skin disease. Our work relies on both skin color and texture features (features derives from the GLCM) to give a better and more efficient recognition accuracy of skin Diseases. We used feed forward neural networks to classify input images to be psoriasis infected or non psoriasis infected. The system gave very encouraging results during the neural network training and generalization face. Keywords: skin recognition, skin texture, computer aided disease diagnosis, texture analysis, neural networks, psoriasis.

Handwritten Digits Recognition Using an Hybrid Approach For Mlp Training Salima Nebti, and Abd Ellah Boukerram Abstract: The work below describes a particle swarm optimization (PSO) based approach for learning a multi layer perceptron network in order to solve the handwritten digits recognition problem. Actually, the gradient descent methods are widely used for this aim, since they can provide good results in a reduced time. Unfortunately, they can converge towards local optima. Within this issue, the present paper outlines the hybridization of PSO and neural networks to deal with digits recognition through the use of PSO as an initialization step for gradient backpropagation. The proposed approach has been applied to a variety of handwritten digits with different characteristic features namely the principal component analysis and Gabor features, good quality results have been obtained when compared to a pure PSO based learning method due to the hybridization of global search using PSO and local search using the gradient back-propagation. Keywords: handwritten digits recognition, artificial neural networks, backpropagation, features extraction.

Seal: An Aspect Oriented Adl Djamel Bennouar, and Abberrezak Henni Abstract: Architecture description languages (ADLs) have been proposed as modeling notations to support architecturebased development. The majority of ADL, through the concept of reusable connector, clearly separate Component Interaction concern from component's behavior. However communication is not the unique concern that cross cut the component's behavior, plays against the component reusability, and represents the origin of poor architectures descriptions with highly coupled components. Well know ADL do not provide appropriate support to separate the other crosscutting concerns from component's behavior. Recent work in software architectures introduced the concept of Aspect Oriented System Design in order to isolate cross cutting concern from the component behavior. Current proposal in Aspect Oriented Software Architecture (AOSA) deals with aspect by extending existing ADL in order to support the new innovative concepts. Such policy has the drawback of hiding and obscuring the semantic of the new aspect concepts by the ADL basic concepts. This paper introduces the SEAL ADL which supports natively aspect orientation. The SEAL ADL deals with aspect at a high level of abstraction, totally independent from any software mechanism usually found in the concept of interface used in existing ADL to connect components.

Nl-Pi: A Natural Language Tool for the Reuse of Multidimensional Patterns Jamel Feki, and Ines Ben-Messaoud Abstract: This paper presents a natural language oriented software tool for the reuse of multidimensional pattern (MP). An MP is a star schema describing a generic solution of typical decisional requirements in a given domain. In order to facilitate the reuse of an MP, we hide its structure by generating two types of natural language queries: Dimension queries and Hierarchy queries. Dimension queries serve to select relevant dimensions in the MP and, hierarchy queries, i.e., queries expressed on dimensional attributes help to decide which analytical levels interest the analysts (i.e., decision-maker). To assist the analysts focusing on the most significant queries, we assign each query a calculated weight representing its importance in the analyses. We present a toolset, called NL-PI that implements our Natural Language Pattern Instantiation method and, we illustrate its functionalities with an example in the commercial domain. Keywords: Multidimensional pattern, decision support system, data mart construction, natural language instantiation, design reuse.

Building a Modern Nec Touch Pad System Software Assmaa A. Fahad, and Rasool H. AL-Saadi Abstract: All computers nowadays allow users to add new hardware to the system, and all operating systems provide different techniques to install device driver for this hardware. NEC touch pad is pointer device designed to work with earlier NEC PC with graphical application programs. Because of his low cost, simplicity of using, and good quality of performance, this touch pad is needed to be reused with modern computers. According to his characteristics the touch pad is connected to the PC parallel ports through a special designed interface connector. A special device driver is written to define this hardware to windows operating system. NEC touch pad is designed to work with earlier computers as an absolute pointer device only. With designed device driver the touch pad can be configured to work as absolute or relative pointer device. Intel assembly language, visual C++ and the Application Program Interface (API) functions supported by windows operating system are used to write the new touch pad device driver. The touch pad and the written programs are tested as a mouse and as a drawing tool with paint, Microsoft office XP, and Pen Office windows ME application programs and shows a very fast and accepted response time. Keywords: API: Application Program Interface, VxD: Virtual device driver, DDK: Driver Development Kit, Touch Pad NEC PC-6051 Compatible.

Reliable Multicast Error Recovery Algorithm in Ad-Hoc Networks Tariq Abdullah Alahdal Abstract: Mobile ad hoc network is an autonomous system of mobile nodes characterized by wireless links. The major challenge in ad hoc networks lies in adapting multicast communication to environments, where mobility is unlimited and failures are frequent. Reliable multicast delivery requires that a multicast message be received by all members in a group. The recovery mechanism requires feedback messages from each of

the receivers. In the tree-based recovery protocols group nodes into recovery regions and designate a forward node per region for retransmitting lost messages. In this paper, local error recovery algorithms are applied within these relatively smaller regions, where the repaired packets are retransmitted only to the requested receivers of the local group. These receivers form a sub group of the local group which itself is a subgroup of the global multicast group. By applying local error recovery algorithms the number of duplicated packets due to retransmission of packets decreases which improves the system performance. Simulation results (using C++) have demonstrated the scalability of the proposed algorithms in comparison to STRM protocol. Our algorithms achieve up to 2.33% improvement on percentage of duplicated packets in stable mobility speed without incurring any additional communication or intense computation. Keywords: Mobile ad hoc networks, reliable multicast, tree-based protocol, local error recovery.

Transform Domain Characterization of Dual Group Codes of Cyclic Group Codes Over

Adnan Abdulla Zain Alsaggaf Abstract:

elementary Abelian group has been used to define duality between its subgroups, which in turn is extended to duality between group codes. The transform domain description of the dual codes of cyclic group codes of length $h n = p m - 1$ over has been developed in this paper. Several example codes and their duals have been presented also.

Keywords: group codes, cyclic codes, dual codes, Abelian groups. Scene understanding techniques with embedded objects Nancy DANDACHY, Dimitri PLEMENOS, Safwan CHENDEB, and Bachar El HASSAN Abstract: This paper present a novel method dedicated to the Virtual world domain that enhance the visualization of 3D ray traced scenes with embedded objects by creating a hole proportional to its interior parts. The method compute first of all the apparent contour of the interior object that we want to see by using the ray tracing algorithm with the selective refinement optimization approach. The second step tend to search for pixels which are orthogonal in a certain depth, and directed toward the outside of the silhouette in order to create a hole. With this technique and by creating a hole around an interior object, we will be able to have at the same time a global idea about the scene as well as a possibility to explore its interior while saving time and memory Key words: Computer Graphics, 3D visualization, selective refinement and ray tracing, contour detection.

How to Overcome Some Segmentation Problems In a Handwritten Arabic Character Recognition System Z. Tamen, H. Drias Abstract: When using usual segmentation algorithms we have problems in segmenting certain handwritten characters like the letters 'u' and 'w' in Script Latin and 3 and 5 in Arabic. To overcome these problems we decided to correct some segmentation problems after the rejection or the ambiguous decision of the recognition system for certain entries. Indeed the major rejection problems are coming from errors in segmentation. The problem we're speaking about is the segmentation inside the character so we decided to paste the segmented parts to rebuild the whole character. Instead of pasting the images parts we concatenate the characteristic vectors. Satisfying results have been achieved and new perspectives are offered in this area. Keywords: MLP Nets, Handwritten Recognition, OCR, over-segmentation, Arabic character recognition

The Improvement of the Emotionnel State of Learner Using a Conversational Emotional Agent mahmoud neji, and wajdi jerjir Abstract: Emotions are now seen as closely related to cognition processes including decision-making, memory, attention, etc. Thus, e-learning environments have begun to take into consideration the emotional state of the learner in order to enhance his performance. This paper aims at the conception of an affective and animated conversational agent which is responsible for the emotional interaction between students and tutors in a learning environment. The agent catches the student's affective state by his observable behavior, and applies actions according to the student's affective state. We describe each of its components: we first review, in section 1 a brief introduction to the e-learning in emotional environment, in section 2 we present some of previous works, in section 3 we discuss our proposed work and we terminate with a conclusion and perspectives. Keywords: ECA, emotion, emotional conversational agent, PECS

Specialization of Recursive Predicates From Positive Examples Only M. DEMBA Abstract: Our aim is to outline a method for synthesizing a correct program that satisfies the intended semantics. The synthesized program is a specialization of the original one. In contrast to the previous approaches for logic program specialization, no negative examples are given as input but they will be discovered by the algorithm itself. The specialization process is performed according to the positive examples only. A method for refining logic programs into specialized version is then proposed. Keywords: program specialization, theorem proving, positive/negative examples, folding/unfolding rules, finite-state machine.

Fuzzy System for Autonomous Navigation with Obstacle Avoidance of a Tricycle Mobile Robot Manel Moussaoui, Mohammed Ben mohammed and Okba Kazar Abstract: In this paper, we discuss a strategy to integrate of fuzzy reasoning in an autonomous navigation system with obstacle avoidance of a tricycle mobile robot in a partially known environment. We used a fuzzy reactive system in order to facilitate the navigation task, to overcome the uncertainties presented in the real world and help the robot to follow the best paths. This system allows our robot to autonomously achieve a defined goal and avoiding obstacles in real-time, without requiring a complete environment model. Keywords: Mobile robot, Autonomous navigation, Obstacle avoidance, Fuzzy logic.

A Comparative Study for Reactive and Proactive Routing Protocols in Mobile Ad Hoc Networks Ammar Zahary, and Aladdin Ayesh Abstract: Mobile Ad hoc Network (MANET) is a collection of mobile nodes that form a dynamic topology and highly resource constrained network which are the most important characteristics of a MANET come from node mobility and Infrastructureless nature of MANETs. These characteristics essentially lead to adopt a routing protocol that quickly adapts to nodes mobility. Routing protocols in MANETs are classified into three types: proactive (table-driven), reactive (on-demand) and hybrid protocols. A routing protocol also may be considered a single path protocol or multipath protocol based on the routing mechanism. A routing protocol should try to minimize routing overhead such as control traffic and delay time overhead, maximize data packet delivery and throughput. This paper provides a comparative study for the performance of reactive against proactive routing protocols in MANETs. A comparison study has been introduced between proactive-reactive, single path-multipath protocols, and between reactive protocols only in terms of packet delivery fraction, average end-to-end delay, routing overhead and throughput. This evaluation and comparison study have been performed by means of simulation using NS2. Keywords: routing comparison; table-driven; ondemand; single path; multipath; mobility Decentralized Optimal

Control of Dynamic Systems with Reference Model Younes Alfitorey Mousa Abstract: The purpose of this work is to present the method of decentralized optimal adaptive control, which ensures the dynamic properties of the individual subsystems. These properties are determined by help of the reference model of these subsystems. I show a basic relations and derivations of this model. Keywords: decentralized contrl, reference model. Copyright Protection and Fingerprinting For Still Digital Image by Using Digital Watermarking Muath Shakir Al-Ubaydi , Ahmed Sultan Al-Hegami, and Taha Al-Rawhani Abstract: he Internet has today become the main channel to perform the e-business activities, and consequently, most of the products and services have been transformed from physical products/services to digital products/services, and the manner of delivery of such products (eg. Journals, certificates, images, advertising, video… etc) have been converted to the digital way. The ease of copying and transforming digital products generates an intellectual property problem; that means, the copying and transformation of digital products will be achieved without the permission of the owner or publisher. The digital watermarking is introduced to solve this intellectual property problem. Digital watermarking technique has been developed to protect the copyright of digital products (or digital media), such as audio, video, images and the multimedia documents. Copyright protection involves the authentication of ownership and the identification of illegal copies of digital media [7]. In this paper, we propose a copyright protection and fingerprinting scheme that met the main objectives: 1) Minimize the number of the original image blocks when we use the DCT transform in order to increase the speed of embedding process, (treatment of the capacity issue), 2) Raise the level of security by using unique Key to encrypt the watermark, 3) Increase the robustness to compression by JPEG and cropping, and, 4) Identify each image through buyer information (fingerprinting). We tested the proposed scheme and experiment with some common images and found the results quite promising. Keywords: Digital watermarking, Discrete Cosine Transform (DCT), encryption/decryption, image copyright protection, fingerprinting, Digital Intellectual Property. 603

Distributed Boosting Algorithm Using Decision Trees As Base Classifier Djamilia Mokeddem, Hafida Belbachir, and Redouane Sengouni Abstract: Boosting method has been shown to be extremely effective at increasing the performance of various learning algorithms, among which decision tree algorithms. The basic idea is to train a sequence of classifiers where the training set chosen at a given time depends on the performance of earlier classifiers, and focusing more on difficult points. Since this sequential aspect will increase considerably the processing time, the method may turn out impractical in cases for which a single training step is already computationally expensive. In this paper, we propose a distributed version of boosting method using C4.5 as base classifier. In each round, a local decision tree is built in each site, from only a percentage M of local data set partition. A global classifier based on the k best decision trees is then built, by exchanging local classifiers, and computing necessary information in a master site. Keywords: Distributed data mining, boosting algorithm, decision trees. 622

Speech Recognition Using Lpc and Svm Statistical Learning Application on a Calculator Abstract: With the very important development of computing and storage resources, human-machine interfaces become more and more closer to the natural human interaction. In this paper, we present a vocal calculator based on support vector machine learning and classification. Learning techniques used until now, in this research domain, such as Artificial Neural Networks (ANN) are characterized by weak classification rate and learning speed. SVM based classification is a very powerful method which yield good results in many domains such as face and hand writing recognition. The application of such learning method in voice recognition applied on a calculator give very interesting recognition rate. Keywords: speech recognition, machine learning, Support vector machine

Automatic Construction Of The Medical Thesaurus Yousef Abuzir Abstract: Due to the current availability of a large collection of electronic resources, there is an interest in extracting knowledge and retrieving automatically from these electronic resources. Thus, researchers may miss relevant, even critical, information in parallel or disparte fields, which in turn may lead them to recreate information already developed or to miss important information that could advance each discipline. A Medical thesaurus identifies and clarifies important concepts from these disciplines and standardizes their corresponding terms. This paper reviews the structure, construction and use of Medical thesauri, and outlines how Medical Thesauri may help resolve a number of common difficulties encountered when searching these recourses. The increasing importance of the medical online resources as an information resource make the thesaurus as an aid tool for both professionals and non-experts. Keywords: Medical thesaurus, Thesauri use, thesaurus construction, indexing, information retrieval.

An Xml-Based Approach for Online Management Of Electronic Medical Record Evolution Afef Samet Ellouze, Zouhaier Brahmia, and Rafik Bouaziz Abstract: In this paper, we present an XML-based approach to define electronic medical records and to manage their evolution and their publishing on the web. Whereas many researches has recently focused on the problem of modeling medical records through XML, a few attention has been devoted to schema evolution and schema versioning in such XML documents. For this finality, we introduce a multi-version data model based on XML schema and define basic mechanisms for the management of multi-version medical records. Schema versioning of XML medical records creates new schema versions and preserves old ones and their corresponding data. This allows to: (i) keep and maintain the complete therapeutic history of the patient, (ii) have efficient preservation of critical medical information and (iii) be able to support historical queries on the evolution of medical records and their contents. This approach is based on the XML Schema language for describing XML schema medical records taking their multimedia characteristic in consideration. Keywords: Electronic medical record, Temporal XML, Version management, Schema versioning, XML documents.

An Agents Based Approach For Semantic Discovery of Web Services Soheyb Ayad, and Okba Kazar Abstract: The current web services discovery techniques allow search based only on syntactic keywords with human intervention in almost every stage of Web services life cycle. The emergence of semantic web has provided several researchers to use it to cope with the current boundaries of the web services discovery in UDDI to enable the automatic (semantic) Web services search based on their functional capacities (inputs, outputs, preconditions and effects) in their descriptions. The semantic web can be exploited by a set of tools and applications to optimize the current web platform. These tools allow the execution of a complex interaction that follows specific protocols in order to achieve the expected functionality. The implementation of these tools results

with the use of multi-agent systems. This paper presents, an agent based architecture to implement a new framework based on the semantic web to make a semantic discovery of functional capacities of Web services. Keywords: Web Services, MAS, semantic Web, Ontology, Publication, Discovery

Arabic Phoneme Recognition Using Neural Fuzzy Petri Net and Lpc Feature Extracting Ghassaq S. Mosa , and Abduladhem Abdulkareem Ali Abstract: In this neural fuzzy Petri net is employed for the recognition for Arabic phonemes. Feature extraction is performed using linear predictive coding. The results from this technique is compared with neural and fuzzy neural system. It is shown that using neural fuzzy petri net gives results better than neural based recognition and lower than fuzzy neural based recognition system. Keywords: neural fuzzy Petri net; phoneme recognition; speech recognition; Linear predictive coding; pattern recognition; Fuzzy system; Neural networks.

Bridging the Digital Divide in Yemen: National Initiatives, Challenges and Recommendations Baseem Taher Othman Al-Athwari Abstract: The term digital divide refers to the gap between people with effective access to digital and information technology and those with very limited or no access at all. Being one of the developing countries, remarkable digital divide is a reality of Yemen. The digital divide in Yemen is not the result of one factor, but it is cumulative interaction of many factors. The complicated topology and poor infrastructural facilities related to ICT sector in rural areas, economic vulnerability and low educational development are some of them. The digital divide in Yemen largely exists between people living in rural areas and those living in urban areas though it exists among urban areas as well. Although Yemen has made encouraging efforts to bridge the gap by initiating a number of projects and programs for rural and remote locations, a lot more needs to be done to bring the people into the information society. This paper discusses reasons of digital divide in Yemen and some key initiatives made by the government towards digital access to information and the role of several programs in bridging the digital divide. Challenges faced by Yemen's government in this regard will be reviewed. The paper also offers an important recommendation to the government to narrow down the digital divide problem in Yemen. Keywords: Digital divide, infrastructure, internet access, IT literacy, information society, e-government.

Efficient Techniques for Low Power Leakage Current Based on Header/Footer Techniques in Nano-scale Circuits Abdoul Rjoub, Samer Khasawneh, and Mutasem Ajlouni Abstract: In this paper we extensively analyze and evaluate the leakage current power dissipation based on the most popular Header/Footer approaches. Five different Nano- Scale SPICE parameters are used to evaluate each approach in this paper. An efficient approach based on Header/Footer technique to reduce the leakage current and increase the speed operation is proposed. Based on the new approach, it indicates that the SPICE parameters themselves decide rather than designer which approach it should employ (Header, Footer or Header & Footer), in order to achieve best low power reduction and high speed operation, comparison results between the proposed approach with other approaches are measured and analyzed. Keywords: Footer Approach, Header Approach, Leakage Current, Nanotechnology.

Unsupervised Sentence Boundary Detection Approach for Arabic Abduelbaset M. Goweder, Husam M. Elgasair, and Abdurraouf A. Elbibas Abstract: Punkt (German for period) is a sentence boundary detection system that divides an English text into a list of sentences using an unsupervised algorithm developed by Kiss and Strunk (2006) [6]. This algorithm is based on the assumption that a large number of ambiguities in the determination of sentence boundaries can be eliminated once abbreviations have been identified. The Punkt system was adapted to support Arabic language. The modified Punkt is trained on Arabic Corpus to build a model for abbreviation words, collocations, and words that start sentences. An evaluation of the performance of the modified Punkt system has revealed that an accuracy rate close to 99% has been achieved for detecting Arabic sentence boundaries. Keywords: Internal Periods, Arabic Collocations, Arabic Abbreviations, Dunning's Likelihood Ratio, Arabic Orthography, Frequent Sentence Starter.

Multi Agent System to Aid Breast Cancer Diagnosis Hadya Boufera, and Fatima Bendella Abstract: Breast cancer represents one of main causes of death among women in the world. Mammography is the best method of screening for breast cancer because it can show lesions in their initial phases. In this paper, we propose a novel approach to classify breast lesions, despite their benignancy or malignancy. The proposed method is based on cognitive multi agent system to take advantage of decision making of cognitive agents, where each agent represents a particular sub-process of the whole of decision. So, we built an architecture based on cognitive decision theories to take human (radiologist) bounded rationality into account. Keywords: Diagnosis aid; Interpretation; cognitive multi agent system; mammography.

Dialogue Act Recognition Using Probabilistic Networks and Ranking Feature Selection Approaches Anwar Ali Yahya, and Abd Rahman Ramli Abstract: The automatic recognition of dialogue act is a task of crucial importance for the processing of natural language dialogue. It is also a challenging task as most often the dialogue act is not expressed directly in a speaker's utterance. This paper presents a dynamic bayesian network model for dialogue act recognition. The model is induced from annotated dialogue corpus via machine learning algorithms. Furthermore, the model is based on a proposed systematic approach to specify its random variables. In this approach, each variable is a binary classifier for exactly one dialogue act and constituted from a set of lexical cues selected using a specific feature selection approaches, called ranking approaches. To evaluate the model, three stages of experiments have been conducted. In the initial stage, the model is constructed using sets of lexical cues selected manually from the dialogue corpus, and evaluated against two baseline models. In the second stage, several ranking approaches are experimented for the selection of sets of lexical cues which constitute the random variables. In the third stage, the model is reconstructed using the random variables generated from the second stage. The results confirm the effectiveness of the proposed approaches for designing dialogue act recognition model. Keywords: Dynamic Bayesian networks, Dialogue act recognition, Ranking-based feature selection, Lexical cue selection

Prediction of Groundwater Availability in Arid Areas Using Integration of Remote Sensing, GIS and DSS Mapping Ayoub Ahmed Almhab Abstract: In this research we used remote sensing and GIS technologies in conjunction with Analytical Hierarchical Process (AHP) for delineation of groundwater potential areas in the arid environment of southern Yemen. The study area consists of the main watershed in the south coastal region (i.e. Wadi Tuban and Wadi Abyan). The water shortage, drought persistency and salinity have made this region survive under sever environmental conditions. Several studies have been carried out

to overcome prevailing problems. However, none of these has used the integration of Remote Sensing and GIS. The analytical results show that potential groundwater zones are located in the valleys of the main Wadi with two percent of high to excellent potentiality zones, sixty-four percent of unsuitable zone (this zone extends from the North-East to the South-East) and twenty four percent of very poor potentiality. These numbers shows the limitation of water resources in this region and the effectiveness of the presented methodology for arid land water resources planning. Keywords: DSS, Yemen, ET, AHP, Remote Sensing, GIS.

Investigation of Vegetation Covers Change on Arabia Peninsula Using Remote Sensing and GIS Ayoub Almhab Abstract: This study provides an overview of the vegetation index characteristics of the Arabian Peninsula, which is a vast plateau bounded by mountainous terrain. Its main characteristic is aridity, due to low and erratic rainfall, and high temperatures. As a result, productivity of rangelands and agriculture is variable and poor. The interaction of temperature and precipitation gradients leads to a great diversity of climatic conditions, which is evidenced by many distinct agroclimatic zones. The use of remote sensing in relation to determining parameters of the vegetation indices and surface temperature is increasing worldwide. In The Arabian Peninsula, there has been limited success with using remote sensing imagery and GIS to predict ground based normalize vegetation index (NDVI) and leaf area index (LAI) measurements. This study investigates four commonly used vegetation indices, NDVI, SAVI, MSAVI and NDVIc. The NDVI does not correlate well with ground based methods of estimated LAI; ($r^2 = 0.2127$). The NDVIc, which takes into account the mid-infrared band, has shown very promising results; ($r^2 = 0.942$). Future work needs to be done in the Arabian Peninsula to determine the usefulness of remote sensing for vegetation indices as ground based methods of determining vegetation indices parameters is becoming increasing expensive, time consuming and unsafe in many parts of the region. The Arabian Peninsula is perceived as having limited heterogeneity, poor agricultural potential, and has great agroecological diversity. Priority should be given to the regional assessment of crop water requirements with a view to enhancing water use efficiency, and agroecological zoning for biodiversity conservation, and development planning. Underpinning these research goals should be a strengthening of climate monitoring networks. Keywords: Agroclimatic , Arabia peninsula , MODIS, LAI, NDVI , SAVI, MSAVI and NDVIc.

Intelligent Discovery of Novel Classification Rules Based on Genetic Algorithms Fahd Nasir A. Alwesabi, and Ahmed Sultan Al-Hegami Abstract: Data mining deals with the problem of discovering novel and interesting knowledge from large amount of data. This problem is often performed heuristically when the extraction of patterns is difficult using standard query mechanisms or classical statistical methods. Data mining researchers have studied subjective measures of interestingness to reduce the volume of discovered rules to ultimately improve the overall efficiency of KDD process. In this study, we pushed the novelty measure into a genetic algorithm to form constraints to the algorithm to discover only novel and hence interesting patterns. The proposed approach has a flexible chromosome encoding technique that uses Bayesian theorem where each chromosome corresponds to a classification rule. The proposed approach makes use of a hybrid approach that uses objective and subjective measures to quantify novelty of rules during the discovery process in terms of their deviations from the known rules. We experiment the proposed framework with some public dataset and tested using real life applications. The experimental results are quite promising. Keywords: Data mining, KDD, Classification, Genetic algorithm, Interestingness, Rule Discovery, Novelty Measures.

Toponym Disambiguation by Arborescent Relationships Imene Bensalem, and Mohamed-Khireddine Kolladi Abstract: The way of referring to a place in the geographical space can be formal, based on the spatial coordinates, or informal, which we use in natural language by using toponyms (place names). A toponym can represent several geographical places. This ambiguity made problematic its conversion towards a unique formal representation. Toponym disambiguation in text is the task of assigning a unique location to an ambiguous place name in a given context. Several toponym disambiguation heuristics assume a geographical proximity between the toponyms of the same context. This proximity can be in term of spatial distance or in term of arborescent relationship, i.e. proximity in the hierarchical tree of the world places. This paper presents a new toponym disambiguation heuristic in text based on the quantification of the arborescent proximity between toponyms. Our method was compared to the state of the art methods using GeoSemCor corpus, and it has outperformed them. Keywords: Toponym Disambiguation, arborescent relationship, Geographical Density, referent hierarchical path

A General Technique for Generating SQL Schema from XML Schema Ali S. Elbekaie, and Abdulbaset M. Goweder Abstract: It is possible to generate an SQL schema from XML Schema manually; however automatically generating an SQL schema from XML Schema would generally be very beneficial. This paper presents XML Schema-driven generation architecture components with XSL Stylesheet. In this paper, an algorithm for this type of generation is presented. The inputs of the algorithm are XML Schema and XSL Stylesheet, and the output is an SQL schema. The proposed algorithm shows how this component can automatically be generated. An evaluation of the proposed algorithm is also presented by testing the algorithm with different examples. Keywords: XML Schema, XQuery, SQL, DOM, XSL Stylesheet

Using Multi-Agents Systems and Web Services to Support Cooperation in Information Systems Leila Ouahrani, and Zaia Alimazighi Abstract: Proportionally with the complexity and the evolutionarily of the organizations and subjacent technologies, the Information System became increasingly complex and evolutionary. In this paper, we propose an agent based model for uniform access to distributed resources of a company where the cooperative information system constitutes the support of any application, allowing various resources, to cooperate to achieve a global task. Our approach is articulated around Resource Agents and Federator Agents of which integration would form a coherent and faithful structure of the company which plays the role of a communication mediator between these agents. To implement our Multi-Agent System we use, as technological framework, the Web Services which make applications possible to expose their functionalities through standardized interfaces using agents (customer, suppliers, and directory). Indeed, a Web Services layer makes the capacities of the Resources Agents accessible through the Web. The interaction protocol is integrated into Federator Agents which implement the group directory. Keywords: resource, cooperation, resource agent; federator agent; multi-agent system, web services

A Framework of Personalized Healthcare Web-Mobile Intelligent Management and Monitoring System Wahidah Husain, Faten Damanhoori, Nasriah

Zakaria, and Norlia Mustaffa Abstract: The growing number of our population with obesity and chronic diseases encourage us to propose the Personalized Healthcare Web-Mobile Intelligent Management and Monitoring System. Current technologies such as internet and mobile phone can be used to replace the intensive face to face consultation. The objectives of the system are to provide intelligent health-care management that will contribute to better decision making and to improve the current process of healthcare delivery by supporting communication and sharing of information. The system will focus on three critical issues in management and monitoring health status which are promoting weight control; encouraging physical activity; and improving knowledge of healthy life style. In order to handle these issues, the system will be designed to provide daily/weekly healthcare data management, intelligent monitoring of diet and physical activities, intelligent alert and reminding message and intelligent diet planning and menu construction. The system will combine internet with mobile-phone technologies and will integrate personal, food composition databases and general healthcare knowledge-based, including decision support system to assist in both technical and clinical decision making. It can also become an effective tool to communicate and educate the users in order to improve their understanding of the related diseases. The system will only focus on the management of obesity problems in our society. In future the system can also be applicable to other chronic diseases related to obesity such as diabetes, high blood pressure and heart disease. Keywords: Chronic diseases, mobile-phone, internet, knowledge-based, rule-based, case-based

An Evaluation Study of the Mobile Keypad Layout for Arabic Suleiman H. Mustafa, and Adel Balout Abstract: The cellular phone is becoming widely used nowadays, and the use of Short Message Services (SMS) is increasing rapidly. In the existing standard mobile keypad layout, Arabic letters are arranged alphabetically over 8 key buttons. This paper suggests three strategies for improving the traditional keypad layout. The first is based on the idea of reordering letters, the second layout is based on the idea of remapping letters, while the third uses a technique called rolling for which 10 key buttons instead of 8 ones. All the proposed strategies were based on an analysis of the frequency of Arabic letters. The keystrokes per character (KSPC) model and the time model have been used to evaluate the performance of these keypad layouts. The results indicate that the proposed keypad layouts provide some improvement over the traditional layout. However, this improvement was so much apparent in respect to the reordering and remapping approaches. Keywords: Mobile Phones. Mobile Keypad Layout. Arabic Keypad. Multitap Text Entry, Rolling Text Entry. Predictive Text Entry.

Automatic Modification of Field Ontology: Web Sites Textual Analysis Fatma Achour, and Anis Jedidi Abstract: Among the four most knowing types of ontology, we can distinguish the domain ontology. Indeed, this type of ontology may exist in different fields. Besides, several methods allow the creation and modification of domain ontology. In this article, we propose a process to update the domain ontology relative to archaeologies and museums. Our proposition consists of three steps: the creation of a sorted list of relevant terms, modification of the ontology by a term selected from the list already created and finally validation of result by the expert. Keywords: Ontology, semantic web, information retrieval, descriptors, annotation.

A New Efficient Kea Based Approach for E-Mail Spam Detection Qusai Abuein , Hassan Najadat, Sana Wedian , and Deya Alzoubi Abstract: With the increased advancement in technology and the proliferation of internet applications, electronic mails become an increasingly essential means of communication, for both individuals and organizations. In the recent years, however, spam's become the most unsolicited forms of messages that invade the most important services of internet: Electronic mail and search engines. The last decade witnessed a great reaction towards these annoying spam's by applying a variety of filtering techniques to combat spammers, based on the assumption that in any spam mail, there are specific words/patterns that provide indications of spam's, that is, there are predefined barriers that distinguish a spam message from a legitimate one. The most used techniques for spam detection are Bayesian Classifiers that have been argued to be efficient for filtering E-mail spam. However, as spam detection techniques evolve, spammers evolve too so as to prove their excellence to adapt to the predefined barriers. Therefore, content- based recognition techniques must be applied on e-mails to detect spams based on the semantic of their contents. In this paper, we propose a new approach for e-mail spam detection based on kmeans algorithm and the Keyphrase Extraction Algorithm (KEA). Our approach achieves high classification accuracy in the sense that it takes into consideration the semantic nature of the textual contents. Keywords: E-mail Spam, Keyphrase Extraction, KEA, Semantic Content

Adopting Hadith Verification Techniques into Digital Evidence Authentication Yunus Yusoff, Roslan Ismail, Mohd Zaliman Mohd Yusoff, and Zainuddin Hassan Abstract: Computer forensics investigation processes are still undergoing development and improvement at different stages throughout the entire computer forensic processes. We are presenting a digital authentication technique derived from an extensive work done in another domain, namely Hadith authentication. It has been observed that there exist a number of similarities between the method to verify the authenticity of a hadith and the method to verify the validity of digital evidence. This paper is a continuation of our previous work to identify those similarities and apply them in the realm of digital forensics. The methods of authenticating the content of hadith and verification of the isnad are extracted and applied into our proposed framework for authenticating digital evidence. Keywords: Computer forensics, Digital evidence authentication, Hadith authentication

Context Based Query Reformulation for Information Retrieval on the Web Abdelkrim BOURAMOUL, Mohamed-Khireddine KHOLLADI, and Bich-Liên DOAN Abstract: Searching for information on the Web engages the user in a process of interrogating and querying the chosen search engine. However, the initial user's query rarely returns a result that satisfies his need for information. The reformulation of the initial query is to modify its terms in order to return a result that better meets the user's needs. In this paper we propose a contextual query reformulation system that takes user's context into consideration via his profile, thus we identify the parts of the context to be used to assist in the contextual reformulation and we show how the user's profiles are used to catch the context, we present also the proposed architecture and the developed prototype. Keywords: Information Retrieval, query reformulation, dynamic context, static context, user Profiles

Development of Neighbors Atomic Coordinate Tables and Plot-Graphical Representation for Tertiary Structure in Proteins Hamed Fawareh, and Jehad Q. Odeh Abstract: This paper developed a method to

predict a protein 3D structure from the amino acid sequence using contact map, the method shows prediction a protein in a binary space of exposure states. The 3D structure of protein can be represented using symmetrical binary matrix C called contact map whose element $C(i, j) = 1$ when the physical distance between amino acid i and j is less than or equal to a pre assigned threshold t . Contact map used for solvent accessibility predictions. In view of this a direct random coordinate was desired, in terms of the contribution of atomic neighbors in making them exposed to predict a protein 3D structure. Present work aims to prediction of a protein 3D structure from contact map, how the random prediction of an atomic coordinate is affected by the change threshold t in a neighboring residue, or other positions of these residues. In addition, a graphical method of representing a protein 3D structure was developed. A Collaborative Platform to the Power Grid Seïdali REHAB, and Mourad BOUZENADA Abstract: This article aims to present a proposal for architecture of a flexible collaborative platform in terms of layers based on key concepts of OGSA and its reliable sharing process of resources. The participants of the virtual community can communicate in both synchronous and asynchronous modes using various tools including Agora shared desktop. Indeed, this tool fits well with the virtual classroom and distance learning contexts by offering integrated features such as videoconference, shared desktop, whiteboard and instant messaging. To finalize our architecture, we have exploited the new version of Sakai, which was chosen for its rich features to serve as a model for the order of Web/Grid services. A demo for the co-deployment of a shared Grid Service mounted the flexibility and the effectiveness of this approach in overcoming the problems often encountered in such collaboration: problem of distance, heterogeneous resources, large number of participants, high cost of collaboration, lack of historical, limited collaboration over time and criticisms of profitability and productivity. A demonstration illustrated the flexibility and the effectiveness of our approach. Keywords: Collaborative environment on the Web, Web Services, Grid Services, OGSA, WSRF, Shared desktop

Recognition of Placental Tissues Using Neural Network Mohammad Ayache, Mohamad Khalil, and Francois Tranquart Abstract: The aim of our study is to propose an approach for recognition of placental tissues using ultrasound images. This approach is based to the selection of tissues, feature extraction by wavelet transform and recognition of tissues by neural network and especially the multi layer perceptron MLP. The method is tested for ultrasound placental images; resulting in 95% success rate. The proposed approach showed a good recognition for placental tissues and will be useful for detection of the placental anomalies those concerning the premature birth and the intrauterine growth retardation. Keywords: Placenta, wavelet transform, Neural network, MLP.

Do Maximum Entropy Principle and Vapnick's Support Vector Machines Have the Same Mathematical Derivations? Fadi Chakik, Fadi Dornaika, and Ahmad Shahin Abstract: This paper investigates the mathematical derivation of the Maximum Entropy Principle (MEP) and of Support Vector Machines (SVM) for data-driven classification tasks. The main contribution is the derivation of the conditions for which the solution based on the Maximum Entropy Principle has similar form to that given by SVM for binary classification tasks. These conditions are imposed on the form of the "observables" used by the MEP. It is well known that complex expressions for the observables will make the use of MEP very difficult, even impossible. The established link shows a very interesting property by which the binary classification based on the Maximum Entropy Principle can be solved using equivalent SVMbased optimizations regardless of the complexity of the used observables. Moreover, we give a geometrical interpretation of the formulation given by the MEP. Keywords: Maximum entropy principle, Margin Decision Rules, Support Vector Machines, binary classification, Bayesian inference, learning from examples

Solving Data Availability Problem by Increasing the Granularity Hierarchy Tree Levels to Reduce the Size of Lockable Entities Dr.KHALED S. MAABREH, and Prof. Dr. ALAA AI-HAMAMI Abstract: There are many situations in which the transaction does not need the whole attributes during its process, so according to the increasing need for data to be available, there must be solutions to make the data available in a reliable way. This research suggested method here is to increase the availability of data, by reducing the size of lockable entities. This can be done by increasing the granularity hierarchy tree one more level down at the attributes to allow several transactions to access the same row simultaneously. The results proved that the suggested level has decreased the user competition for acquiring data items and to increase the performance of the database. Keywords: Centralized Database, Locking, Attribute Level, Database Deadlock, Performance.

An Hpsg Analysis of Declension in Arabic Grammar Md. Sadiqul Islam, Mahmudul Hasan Masum, Md. Shariful Islam Bhuyan, and Reaz Ahmed Abstract: The Arabic language is very rich in grammatical declension of Nouns. In classical Arabic 16 noun classes can be found based on their declension patterns. Syntactic modeling of such a rich noun system is a challenging problem and is essential for intelligent and automated processing of Arabic language. Head-Driven Phrase Structure Grammar (HPSG) provides a versatile, multidimensional, constraint-based architecture for supporting syntactic, semantic, morphological and phonological features of a language. However, HPSG does not provide any mechanism for capturing the rich declension phenomena of Arabic nouns. In this paper we analyze the declension system of Arabic nouns and propose a multidimensional type hierarchy along with appropriate features for the attribute-value matrix (AVM). This work effectively extends the capabilities of existing HPSG framework for supporting declension of noun in Arabic. Keywords: Arabic Declension, Head-Driven Phrase Structure Grammar, Constraint-Based Grammar.

Towards Evolutionary Game Generation Zahid Halim, and A. Rauf Baig Abstract: In today's technology oriented era computer games have become a major source of entertainment. From the point of view of game developer it has always been a challenging task to develop and write code for games that are both novel and entertaining at the same time On the other hand it is very difficult to quantify the entertainment value of the human player, as the entertainment value is very subjective. The two factors which mainly influence the entertainment value are the type of the game and the contents of the game. In this work we present some quantitative measures of entertainment for two different genres of computer games and apply them as a guide towards the evolution of new entertaining game generation. Keywords: Computational Intelligence and Games, Automatic Game Creation, Genetic Algorithms, Entertainment, Physical activating games.

Evaluation of Routing Protocols in Wireless Sensor Networks (Fixed Nodes) Waqar Ahmad, Muhammad Ullah, and Shoab Bakhtyar Abstract: The resource constrained nature of WSN impels various challenges in

its design and operations hence degrading a WSN's performance. On the other hand, varying numbers of applications having different constraints in their nature makes it further challenging for such resources constrained networks to attain application expectations. These challenges can be seen at different layer of WSNs starting from physical layer up to application layer. At routing layer, routing protocols are mainly concerned with WSN operation. The presence of these challenges affects the performance of routing protocols resulting in overall WSN performance degradation. In this paper we will identify the performance challenges of WSN and analyze their impact on the performance of routing protocols in a network with fixed nodes. Keywords: WSN, OLSR, DSR, fixed nodes network, OPNET, Performance Evaluation.

Evaluation of Routing Protocols in Wireless Sensor Networks (Mobile Nodes)
 Muhammad Ullah, Waqar Ahmad, and Shoaib Bakhtyar
 Abstract: The resource constrained nature of Wireless Sensor Networks (WSNs) impels various challenges in its design and operations hence degrading a WSN's performance. On the other hand, varying numbers of applications having different constraints in their nature makes it further challenging for such resources constrained networks to attain application expectations. These challenges can be seen at different layer of WSNs starting from physical layer up to application layer. At routing layer, routing protocols are mainly concerned with WSN operation. The presence of these challenges affects the performance of routing protocols resulting in overall WSN performance degradation. In this paper we will identify the performance challenges of WSN and analyze their impact on the performance of routing protocols in a mobile nodes wireless sensor network. Keywords: WSN, OLSR, DSR, mobile nodes network, OPNET, Performance evaluation.

Interfaces & Innovation in Cloud Computing Applications; Zoho & Google Docs
 Shoaib Bakhtyar, Muhammad Asif, and Waqar Ahmad
 Abstract: In today's world the importance of cloud computing cannot be denied. It is due to the availability of cloud computing applications that enables a person to work in a manner that his time, money and resources are used in a smaller number. One such technology that belongs to the cloud computing field is known as collaborative technology. The purpose of collaborative technology is to enable its users to work in groups without the need to be present physically. The user however must have the ability to access the cloud where the task is being performed. There are many collaborative tools available now-a-days, of them two important ones are Google docs and ZOHO. These both tools provide the services of an online office however both of them have its own merits and demerits. The authors are going to compare both these collaborative applications with respect to the services being provided by them with a emphasis on the innovative interface features of ZOHO that are either not present in Google Docs or they are less developed. Keywords: Cloud computing, collaborative technology, Interfaces, Google Docs, ZOHO.

GIS and Remote Sensing Techniques For Monitoring Urban Heat Island In Sana'a City
 Abdul Basit Ali Almhafdy, Abdul Malek b. Mohd Nom, and Wan Mohd Naim b. Wan Mohd
 Abstract: Remote Sensing and Geographic Information System (GIS), has been widely applied and been accepted as a powerful and effective tool in detecting urban land use and land cover change, and environmental modeling applications. Urban Heat Island is the air temperature increase relative to non-urban region as well as the physical and radiative properties of the urban environment. It is caused by the release of anthropogenic heat into the atmosphere. The urban heat island may significantly influence by different land use types. This paper has three main objectives that are: ii] to generate the surface temperature map for the study area using remote sensing method. iii] to compare the heat temperature between the remotely sensed data technology and the traditional methods. iv] to analyze effect of urban landscape features (such as buildings, vegetation) on the surface temperature within the study area. Sana 'a City has been selected as the study area. The data sets used in this paper are LANDSAT 7 Thematic Mapper (TM) and Quickbird images. Surface temperature is generated from the LANDSAT satellite image. The Quickbird satellite image is used for overly operation and visual interpretation on the effect of the land use types and fabric properties of the study area. Outcomes from this paper have shown that there is a strong correlation between spectral reflectance of thermal IR of LANDSAT 7 TM image and surface temperature. The temperature derived from the new model obtained from this paper is almost similar to that of other established models such as Markham and Barker's Model. Temperature maps derived from satellite images have shown the differences in surface temperature for different land use, the highest temperature is in hutments areas followed by industrial areas, Educations, residential or commercial areas, vegetated areas, heritage and highland. Convergence and height of buildings cause the shadows most of the daytime which cause the low temperature. Keywords: GIS, Remote sensing, UHI, temperature map, land use, LANDSAT.

Arabic Text Summarization Using Aggregate Similarity
 Qasem A. Al-Radaideh, and Mohammad Afif
 Abstract: This paper proposes an Arabic text summarization approach based on an aggregate similarity method which is originally proposed for the Korean language text. The proposed approach depends mainly on nouns as indicators of the importance of the sentences. Hence, the noun extraction process is the main process in the proposed approach. To do summarization of a given document, the document is segmented into sentences and then the sentences are tokenized into words. The noun extraction process is performed using fourteen noun extraction rules that are used as indication for the distinction of nouns from other non noun words. In the next step the frequencies for each noun in each sentence and in the whole document are computed and the sentence similarity between the noun frequency in the sentence and the document is calculated using the Inner Product measure. The summation of all similarities of every sentence represents an Aggregate similarity; the sentences that have the highest value of similarity are selected as the summary where the number of sentences that are selected is determined by a user defined threshold value. To evaluate the proposed approach, a dataset of fifty documents is used and the performance of the approach is evaluated using the Recall and Precision measures. The results obtained were 62% for Precision, 70 % for Recall, and 14% for the compression rate. As a conclusion, the result is acceptable according to the nature of the Arabic language which has rich vocabulary and complex grammar rules. Keywords: Arabic Language Processing, Information Retrieval, Text Summarization, Aggregate Similarity.

A Novel Dynamic Virtual Infrastructure for Solving Localization in Wireless Sensor Networks
 Dyna Karima AKSA, Mohammed

BENMOHAMMED, and Azeddine BILAMI Abstract: The challenge of wireless sensor network can be summarized in a collection of hundreds or thousands of sensor nodes (10-10000 sensor nodes) which can gather useful information from the environment and communicate together to achieve an assigned task. Therefore; how do we design protocols and architectures to fully utilize the sensor networks potential? To answer this question we have proposed a dynamic virtual infrastructure that can be used to solve different problems that can be found in the sensor network field. The problem of localization is chosen to reveal the efficacy of the virtual infrastructure. **Keywords:** Wireless Sensor Network, virtual infrastructure, virtual coordinate system, position, localization.

A Neural Perceptive Model for the Recognition of A Large Canonical Arabic Word Vocabulary I. Ben Cheikh, A. Kacem, and A. Belaïd Abstract: This paper introduces a novel approach for the recognition of a wide vocabulary of Arabic words. Note that there is an essential difference between global and analytic approaches in pattern recognition. While the global approach is limited to reduced vocabulary, the analytic approach succeeds to recognize a wide vocabulary but meets the problems of word segmentation especially for Arabic. We have investigated the use of Arabic linguistic knowledge to improve the recognition of wide Arabic word lexicon. A neural-linguistic approach was proposed to mainly deal with canonical vocabulary of decomposable words derived from tri-consonant healthy roots. The basic idea is to factorize words by their roots and schemes. In this direction, we conceived two neural networks TNN_R and TNN_S to respectively recognize roots and schemes from structural primitives of words. The proposal approach achieved promising results. Enlarging the vocabulary from 1000 to 1700 by 100 words, again confirmed the results without altering the networks stability. **Keywords:** Arabic Writing Recognition, Wide Canonical Vocabulary, Neural Networks, Structural Primitives, Linguistic Knowledge Integration

Comparison of Genetic Algorithm and Quantum Genetic Algorithm through the Knapsack Problem Zakaria Laboudi, and Salim Chikhi Abstract: Evolving solutions rather than computing them certainly represents a promising programming approach. Evolutionary computation has already been known in computer science since more than 4 decades. More recently, another alternative of evolutionary algorithms was invented: quantum genetic algorithms (QGA). In this paper, we outline the approach of QGA by giving a comparison with conventional genetic algorithm (CGA). Our results have shown that QGA can be a very promising tool for exploring search spaces. **Keywords:** Genetic Algorithm, Knapsack Problem, Quantum Genetic Algorithm, Quantum Computing.

Approach of Edge Detector with Multi Agents-System KHOLLADI Nadjoua Houda, and KAZAR Okba Abstract: The detection of edges of a digital image is a very delicate treatment, although there are a large number of detectors according to the classical approaches. Each detector has different performance characteristics depending on the image. Some sensors are very effective for one type of images, while other sensors are also very well suited to another type of images that these early types (depending on the choice of filter parameters: noise, lighting, blur image .. etc), so lets say that traditional approaches proved these shortcomings that is why the segmentation of the image remains an open problem. The objective of using an edge detection based on MAS (s) to reduce the disadvantages of classical methods, and also to exploit the maximum possible services offered by such an agent: autonomy, the intelligence, the emergence, the various interactions between agents, etc, for all that at the end of this stage of the good results and it helps us to take decision in the phase of the interpretation of objects and Recognition In this paper, we propose a MAS which contains a reactive agents and has a three states, the first state is pretreatment which gives the primary primitives to be input in the second state. In it we create the agent by the edges which are obtained in the first state, then many cooperation protocols are defined between these agents in order to join the disconnected contours, finally when we don't have another linking between the agents, our system pass into the third state which is responsible to make all state of the agents in a passive state. **Keywords:** (MAS): Multi Agent-system, Edge Detection, Interpretation of objects Recognition, Segmentation and Digital Image.

Translation Validation Framework For Embedded Software Design Malek Haroud Abstract: This article addresses the validation of the translation of an SDL specification (Platform independent model) into a concrete implementation model (Platform specific model). We propose a tool with which SDL developers can verify the translation of an abstract reference model with respect to its target code counterpart (cf. figure 1). Without loss of generality, we treated the case where SDL is the source language and C the target implementation language. In order to enable equivalence checking, both abstract and concrete programs need first to be translated into an intermediate form. Once both programs are translated into the intermediate representation, correspondence links are setup between the abstract and the concrete programs thanks to the concept of cutpoints. These correspondence links allow us to subdivide the verification problem into smaller sub-problems. Proofobligations are generated automatically and are discharged using the ICS tool [1] (i.e.; Integrated Canonizer and Solver ICS). Our equivalence checking method was motivated by pragmatics. We insisted therefore to achieve a fully automatic method to check the equivalence systematically at each run of the compiler. **Keywords:** Formal verification methods, Translation validation, Code-generators verification

Heuristic Lemmatization for Arabic Texts Indexation and Classification Faten Khalfallah Hammouda, and Abdelsalam Abdelhamid Almarimi Abstract: This paper proposes a system based on a heuristic lemmatization for Arabic text indexation and classification. This system is not related to any linguistic rule. The proposed method is limited to five different domains: sports, medicine, politics, economics, and agriculture. The main idea is collecting different texts that related to the chosen domains and studying them by extracting the pertinent terms. Every entered text will have the formatting stage in which we can remove some words and letters that do not have any importance for the meaning. After that, the frequencies' average is calculated to classify the text and its related domain. **Keywords:** Natural Language Processing, Indexation, and Classification.

Building Ontology from Knowledge Base Systems: An Evaluation Phase Faten Kharbat, and Haya El-Ghalayini Abstract: From the fact that ontologies play an important role in sharing knowledge in different domains, we have developed an algorithm that utilities the extracted rules, which are generated from the original dataset, in developing ontology elements. In this paper, the developed algorithm is critically evaluated via set of metrics that have been adopted. In addition, this paper focuses on evaluating the quality of the generated ontology that has been developed using to a well known dataset in the breast cancer domain. The results of

this evaluation indicate that the generated domain ontology provides a high degree of accuracy in identifying the substantial domain concepts. The overall conclusion encourages and supports the potential role that this approach can play in providing a suitable starting point for ontology development.

Optimized Parallel Framework for Hill Shading
Hewayda M.S. Lotfy, Fayed F. Ghaleb, Ahmed A.A. Kaboudan, and Ghada A. K. Gad
Abstract: Digital Elevation Models (DEMs) may be generated either using contours or remote sensing techniques such as RADAR interferometric techniques and SPOT stereopairs interferometer. The output DEM is stored as an image with real values in order to preserve parameters' accuracy. In order to regenerate the view instantly with different parameters, a quick and optimized method is required. A computation reduction method is proposed to obtain an optimized framework for calculating shadows from DEM. This reduction is made by minimizing the calculations of normal vectors at each image pixel. Furthermore, these calculations are made independent of other calculations. This process leads naturally to the parallel model. Using GPU, the numerical outcome of the framework showed promising results. By using a 2D-mapping for 3D visualization, a time-optimized shading is produced which also improves topographic information. Keywords: Sensing Image Processing, Shading Algorithms, Parallel Computing Processing, Graphical Processing Unit

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Digital Watermarking Using Discrete Pascal Transform
Naseebah Maqtary, Hajar Jahaf, and Adnan Alsaqqaf
Abstract: Digital Watermarking has attracted researchers' attention because of its useful applications, and over the past two decades, great efforts have been made to develop digital watermarking techniques and algorithms. Most researches use different transform techniques to enhance the robustness and quality of extracted watermark. This paper introduces the digital watermarking with Discrete Pascal Transform (DPT) which gives good results with experiments against various attacks. The attacks that are examined are noise, compression and rotation. Keywords: Discrete Pascal Transform (DPT), image watermarking, watermarking embedding, watermarking extraction.

Towards A Universal Requirements Engineering Process
Mohammed Odeh
Abstract: This paper introduces new a vision for a universal requirements engineering process, namely the TUREP process model with emphasis on the engineering dimension, but as well being business process driven, architecture centric, role driven, and relating to the activities of quality management, configuration management, system and software cost estimation, project management, and thus integrating with the overall software development process. In addition to other research projects that have been contributing to the evolution of the TUREP, this model is being evolved to establish a universal and integrated framework for the process of requirements engineering. Keywords: requirements engineering, TUREP, architectural framework, business process modelling, requirements elicitation, analysis, specification, validation, cost estimation, project management, configuration management, quality management