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# *The Second International **Conference on Business Intelligence (CBI'15)***



*April 23-25, 2015, FST Beni Mellal, Morocco*  
**CBI'15**

**OFFICIEL PROGRAM  
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ABSTRACTS**

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## Welcome of the Organization Committee

After the great success of the third edition of **SITACAM organized at the Faculty of Science, Beni Mellal 2013 (SITACAM'13)**, the Conference of young computer scientists (CJCI'13) and the first edition of international conference on Business Intelligence (CBI'14) who had gathered more than 100 participants of different nationalities, the organization committee organizes the second edition of the international conference on Business Intelligence (CBI'15) on April 23-25, 2015 in the FST, Beni Mellal, under the theme:

### **Actuality of the Business Intelligence**

This scientific event is part of this framework, to bring together researchers to present and discuss their approaches, their achievements and results in the field of Business Intelligence.

This is an opportunity for various researchers to promote and to present an overview of advances in the Business Intelligence field.

Our thanks go to all the organizations that have supported the organization of this event.

Finally, we honor the Honorary Committee, the Organizing Committee and the Scientific Committee for their help and dedication.

Organization Committee

## **Welcome of the Scientific Committee**

The Scientific Committee is proud to present these acts, which we hope, be interested by the international scientific community in technology information processing, telecommunications and business intelligence.

We received more than sixty articles. These items-have-been sent to members of the program committee for rigorous evaluation. The topics of accepted papers include Pattern Recognition, software engineering, data mining, data warehousing, telecommunications, and signal & image processing.

We sincerely thank all the members of the Scientific Committee for their excellent work evaluation.

Our thanks to all members of the organizing committee and sponsors who contributed to the success of these events.

Scientific Committee

### Keynotes

#### **Decentralized decision-theoretic autonomous system in complex environments and in interaction with humans: robotic case study.**

*Abdel-illah Mouaddib, professeur, classe exceptionnelle,  
Université de Caen basse-normandie, France.*

**Abstract**—since last decade, a great interest has been devoted to the extension of decision process in multi-agent systems evolving in complex environment and in interaction with human. Stochastic games is strong mathematical tool to formalize such decision models and since 2000, decentralized partially observable Markov decision processes have been introduced considering a unique reward function for cooperative agents. The application of such models in real-world domains is very limited because of the high complexity. Many methods have been considered to solve DEC-POMDP under different assumption to improve their scalability. One of promising research direction is to consider interaction models and agents with which we interact to better solve such models in distributed way.

In this talk, I will present some models and algorithms to better solve DEC-POMDP and other sub-classes and present some robotics application mainly on multi-robot systems for exploration and mapping, human-robot interaction and assistant robots.

**Abdel-illahMouaddib**, professeur, classe exceptionnelle, à l'université de Caen-basse-normandie. Il a effectué ses études secondaires à Béni-Mellal et universitaires à Nancy en France où il a obtenu sa licence, Maîtrise, DEA et doctorat en informatique. En 1995, il a été nommé Maître de conférences, puis en 2001 professeur à l'université de Caen Basse-Normandie. Abdel-IllahMouaddib a participé à plusieurs projets nationaux et internationaux avec des académiques et industriels de premiers plans comme l'université de Massachussetts, USA ; « La sapienza » Italie ; McGill, Canada ; des centres de recherches mondiaux comme la NASA entre 1999-2003, la DGA de 2003-2014, des industriels comme General Motors, USA, THALES, Dassault, Airbus, EADS, .... Il a participé à la production de plus e 150 publications, des chapitres de thèses et des rapports scientifiques. Ila servi dans des commissions, européens, américaine (NSF), Canadienne (NSERC), française (ANR) mais aussi des comités scientifiques pour le CNES.

## Creating Competitive Advantage through Web Harvesting and Knowledge Discovery

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**Abstract**—The vast amount of freely available information over the Web enables organizations interested in competitive intelligence with the tools to gather information for current and future use. Such information and subsequently the knowledge derived from it can be used to create marketing strategies, design new and improved products and services, assess market needs and enable better informed decisions. Web harvesting or scraping involves the extraction of information from websites and internet pages through Web crawling tools and intelligent agents that able to delve deeper into documents and data made available on individual and organizational Websites. Intelligent agents are also designed to gather information about user's activities on the Web. Web users willingly or unwillingly leave behind trails of data and information about themselves when making business transactions or creating a presence on social media. Harvested data and from these sources over a long period of time enables organizations to apply data mining and knowledge discovery techniques for competitive advantage. In this presentation, we will talk about web harvesting and knowledge discovery from digital information. We will discuss the design, development, and testing of computational methods and tools to discover and exploit the knowledge available in large harvested repositories. We will also discuss different Web harvesting and data mining projects as case studies

**Dr. SulimanHawamdeh** is a Professor and Department Chair in the College of Information, University of North Texas. Prior to joining UNT in August 2010, he taught and coordinated the Master of Science in Knowledge Management in the School of Library and Information Studies at University of Oklahoma. He also founded and directed the first Master of Science in Knowledge Management in Asia in the College of Communication and Information at Nanyang Technological University in Singapore. Dr. Hawamdeh has extensive industrial experience, he was the Managing Director of ITC Information Technology Consultant Ltd, a company developed and marketed a line of products in imaging, document management, engineering drawing management, and library automation software. He worked as a consultant to several organizations including NEC, Institute of Southeast Asian Studies, Petronas, and Shell. Dr. Hawamdeh has authored and edited several books on knowledge management. He is the editor of a book series on Innovation and Knowledge Management published by World Scientific. He is also the founder and editor-in-chief of the Journal of Information & Knowledge Management, one of the first refereed journals in knowledge management.

## La vision 3D pour les robots et interaction avec l'environnement.

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*Laboratoire MIS- Modélisation, Information et Systèmes*

*Enseignant chercheur à l'Université de Picardie Jules Verne.*

**Résumé**— Augmenter l'autonomie des robots en améliorant leur capacité de percevoir (mesurer ... et voir) le monde. Plus particulièrement on s'intéresse à la vision 3D pour les robots, c'est à dire, à la manière de permettre aux robots de se déplacer, de se représenter et d'interagir avec l'environnement.



## Etude des algorithmes de l'intelligence artificielle : étude de cas prédiction des données réelles

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**Résumé :** ce travail consiste à analyser et étudier différents algorithmes de l'intelligence artificielle à savoir les réseaux de neurones et la logique floue en utilisant des modèles non linéaires. Le choix de ces algorithmes repose sur quelques propriétés propres aux systèmes utilisés. Des simulations basées sur les réseaux de neurones et la logique floue ont été effectuées pour prédire une série temporelle du trafic dans les réseaux internet.

**Mots clés :** logique floue, réseaux de neurones, modèles non linéaires

## Fuzzy Sliding Mode Control for Robotic manipulators

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**Abstract**—This paper proposes a robust fuzzy sliding mode control (RFSMC) for robotic manipulators to achieve the high precision position tracking. However, it is difficult to design a conformable model-based control scheme, for instance, external disturbances, friction forces and parameter variations. In order to deal with this problem, the sliding mode control (SMC) concept is combined with fuzzy logic strategy to can achieve desired performance and obtain satisfactory trajectory tracking. The adaptive law is designed and based on the Lyapunov method. The simulation of the RFSMC is given for a two-link robotic manipulator. The simulation results show the effectiveness of the proposed control.

**Keywords**—Fuzzy logic; sliding mode control; Robot.

## A Modified Value Iteration Algorithm for Discounted Markov Decision Processes

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**Abstract**—As many real applications need a large amount of states, the classical methods are intractable for solving large Markov Decision Processes. The decomposition technique based on the topology of each state in the associated graph and the parallelization technique are very useful methods to cope with this problem. In this paper, we propose a Modified Value Iteration algorithm, adding the parallelism technique. We test our implementation on artificial data using an Open MP that offers a significant speed-up.

**Keywords**—Markov Decision Processes; Value Iteration Algorithm; Discounted reward criterion; Parallelizing; Open MP.

## An Iterative Gradient Descent Approach for Blind Channel Identification

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**Abstract** — In blind channel identification with additive white Gaussian noise, used data are in frame length forms and vary depending on the case study. If the frame size is small, the additive noise is too far to follow the Gaussian distribution. Therefore, the approaches using higher order cumulants are insufficient. We propose a new approach that uses an iterative algorithm in the case of a minimum phase channel affected by noise with zero means. In this part of the research study, we intend to investigate the validity of this simulation theoretical approach for a noise-free channel.

**Keywords**— *Transmission Channel, Telecommunication systems, Blind identification, Higher order cumulant, Transmission channel with Gaussian noise, RLS equalisation, LMS equalisation .*

## Competitive intelligence: leaven of a new managerial device for decision support

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**Abstract**— In an environment marked by mutation, uncertainty and complexity, the major challenge for companies is to have the right information at the right time, to interpret it, exploit it and transform it into useful knowledge for strategy formulation and decision making. Nowadays, several management practices have been designed and developed to cope with the complexity that exists in the business environment. The ability of a company to remain competitive in the market depends on its ability to take advantage of the information flowing in the environment and their transformation into strategic practices for the benefit of the company. Competitive intelligence (CI) is one of the innovative practices in strategic management and that aims to research, treat and analyse the relevant information in order to facilitate decision making. This article falls under a research task that was not confronted yet with the test of the terrain survey. It attempts to define the notion of CI and present an overview of the evolution of CI and of its fundamental concepts.

**Keywords**— Competitive Intelligence, information, decision making, support decision, business intelligence.

## Isolated Handwritten Eastern Arabic Numerals Recognition Using Support Vectors Machines

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**Abstract**—In this paper, we present a comparison between the different variations of virtual retina (grid size) in features extraction with the support vectors machines classifier for isolated handwritten Eastern Arabic numerals recognition. For this purpose, we have used for pre-processing each numeral image the median filter, the thresholding, normalization and the centering techniques. Furthermore, the obtained experiments results demonstrate that the most powerful method is that virtual retina size is equal 20 X 20 pixels. This work has achieved approximately 85% of success rate for Eastern Arabic numerals database identification.

**Keywords**— Isolated handwritten Eastern Arabic Numerals, Median filter, Thresholding, Centering, Normalization, Retinal Coding Method, Support Vectors Machines.

### **Phonemes recognition using the spectrum signal**

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**Abstract**—In this work, we present an automatic speech recognition system for the Tamazight phonemes. We based on the spectrum presentation of the speech signal to model these phonemes. We have used an oral database of Tamazight phonemes. To test the system's performances, we calculate the recognition rate. The obtained results are satisfactory in comparison with the reference database and the quality of speech files. This work has achieved approximately 70 % of success rate for Tamazight phonemes database classification.

**Keywords**— Phonemes, Speech Recognition, Acoustic vectors, Tamazight, Spectrum signal.

### **Method Interactive et Audio-visuelle de l'Apprentissage de la Prononciation de Tamazight à des non Amazighophones**

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**Résumé**—Nous proposons dans notre travail de présenter une méthode interactive et audio-visuelle de l'apprentissage de la prononciation de tamazight à des non amazighophones (non-natifs). Il s'agit d'une méthode qui prend en charge l'articulation des sons de tamaziyt (kabyle) avec leurs insertions dans des unités significatives, accompagnées d'images illustratives ainsi que de fichiers sons correspondants.

Des exercices de pratique et d'entraînement auditif et articulatoire, afin de distinguer les sons de la langue étrangère et les sons de la langue maternelle, sont proposés à l'apprenant. On entraîne aussi l'apprenant à la transcription phonétique, on lui propose un entraînement auditif comme la dictée, un entraînement articulatoire avec des exercices des organes de la parole, la production orale avec un rythme et une intonation correcte.

**Mots-clés**— Tamazight, production orale, images illustratifs, apprentissage

## Improving the Data Delivery in DTN Networks with Model BLER

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**Abstract**—The delay tolerant networks (DTN), which form the mobile and wireless ad hoc networks, are characterized by intermittent connectivity, asymmetric flow, high error rate and long and variable delivery time, especially when the destination is not in the same area as the source. This paper is to compare two categories based on two-pronged strategy, mainly the replication strategy which refers to the following protocols: Epidemic, Spray and Wait (S& W) and that of the expedition associated with the following protocols: Prophet and MaxProp. In addition, our contribution is based on a combination of routing protocols DTNs and the model of Bundle Layer End-to-end Retransmission (BLER) to improve routing in DTN networks and operating nodes that allow the distribution of information between the shared networks. This study is performed on our simulator (programmed in java) based on Opportunistic Network Environment (ONE) simulator in order to evaluate the performance of routing protocols DTNs. The results of the evaluation show that the performance of different protocols can benefit from optimizing the performance of DTNs in terms of the delivery probability, average latency and overhead rates, etc. Finally, these results suggest that the routing protocol is more appropriate in some scenarios.

**Keywords**—Delay Tolerant Networks DTN, Epidemic, Spray and Wait, Prophet, MaxProp, Bundle Layer End-to-end Retransmission (BLER), ONE (Opportunistic Network Environment).

## Rectangular Microstrip Patch Antenna Broadband at 2.5 GHz for Object Localization Using RFID Applications.

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**Abstract** —This paper discusses the design of rectangular patch microstrip antenna for Radio Frequency Identification (RFID) tags application in the microwave band [1]. Rectangular

microstrip patch antenna is designed with feed line, used for electric current feed. The dimensions of microstrip antenna are obtained through computation, and then simulations are performed. The modeling of microstrip antenna uses fiberglass epoxy material -FR-4 with dielectric constant  $[(\epsilon_r) = 4.3]$ . Based on simulation results, the antenna shows the maximum performance at 2.5 GHz with return loss  $< -10$  dB and VSWR  $< 2$ . Return loss and the gain value is 4.81 dBi with 2.5 GHz of bandwidth is -10dB: 2.48 GHZ and 2.49GHZ (BW = 0.40%). The shape of the radiation pattern of the antenna is directional. Antenna has many practical applications suitable for the localization domain of the vehicle, mobile communication, satellite communication and WPAN, WLANetc. The design of the shield is simulated in a flexible software CST Microwave Studio. the result shows satisfactory performance[2].

**Key words**—RFID, Microstrip, Patch Antenna, Microwave Broadband, Localization, CST Microwave Studio.

### **A comparison between the performances of several hybrid methods of features extraction for isolated handwritten Arabic numerals recognition**

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**Abstract**—In this paper, we present two comparisons in isolated handwritten Eastern Arabic numerals recognition, in fact the first comparison is between four hybrid methods exploited in features extraction which are the retinal coding combined with the Hu then with Legendre then with Zernike invariant moments, finally with these tree moments at the same time ; in contrast the second comparison is performed in order to deduce what is the most powerful between both kernel functions used in the support vectors machines classifier. For this purpose we have used for pre-processing each numeral image the median filter, the thresholding, the centering and the skeletonization techniques.

Furthermore, the experiments results that we have obtained demonstrates really that the most power full hybrid method is that combines between retinal coding and all tree invariant moments concerning features extraction while the Gaussian kernel is more performing than that polynomial concerning classification.

**Keywords**—Isolated handwritten Eastern Arabic numerals, median filter, thresholding, centering, Skeletonization, retinal coding method, Hu, Legendre, Zernike invariant moments, the support vectors machines.

### **The effectiveness of the Intelligence E-CRM Application in enhancing positive customer relationships**

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**Abstract**—The advent of internet has led to the application of electronic services in enhancing the customer relationship management. E-CRM integrates IT in internal organization in executing the marketing strategies. The current issue facing the E-CRM is determining the number of customers that are responsive to the e-commerce application. Furthermore, a huge number of customers are continuously becoming frustrated when using the E-CRM application. The application, thus becomes redundant making it difficult in meeting the set targets of customer service. The purposive study thus seeks to understand the customer responsiveness to e-CRM. The intelligence of online shopping using E-CRM cannot be underestimated. The research study made use of both qualitative and quantitative methodologies in coming up with the necessary data. Qualitative approach examined the overall effectiveness of E-CRM in influencing positive customer relationships.

**Keywords**—E-CRM, Intelligence, quantitative and qualitative methodologies, technology

### **New method of content Based Image Retrieval based on 2-D ESPRIT Method and the Gabor Filters**

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**Abstract**—We propose, in this paper, a new method for Content Based Image Retrieval by exploiting the digital image content. Our method is based on the representation of the digital image content by a vector of characteristics of the indexed image. Indeed, we have exploited the image texture to extract its characteristics and for constructing a new descriptor vector by combining the Bidimensional High Resolution Spectral Analysis methods especially the 2-D ESPRIT method and Gabor filters. To evaluate the performance, we tested our approach on different image databases. The results show that the representation of the digital image content proves significant in research of imaging information.

**Keywords**—Indexing, Search Images by Content, High Resolution, Spectral Analysis, 2-D ESPRIT, Gabor Filter.

### **Image Compressing using Haar Wavelet**

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**Abstract** —Recently, the information processing approaches are increased. These methods can be used for several purposes: compressing, restoring and information encoding. The raw data are less presented and are gradually replaced by others formats in terms of space or speed of access. This paper is a study of the compression, precisely, the image compression using the Haar wavelet. The subject is to present the Haar wavelet approach and the improvements made.

**Keywords** —Image compression, Haar wavelet.

**Automatic Localization of the Optic Disc Center in Retinal Images Based on corner detection in curvature scale space**

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**Abstract**—Digital photography of the retina is widely used for screening of patients suffering from sight threatening diseases such as Diabetic retinopathy and Glaucoma. Localizing the optic disc center is the first and necessary step identification and segmentation of anatomical structures and in pathological retinal images. From the center of the optic disc radiates the major blood vessels of the retina. Therefore, by considering the high number of vessels and the high number of the corners resulted from the vessels crossing, we propose a new method based on the number of corners in the vicinity of optic disc for localization of the center of optic disc. In the first step, we use the curvature scale space (CSS) for corner detection. In the next step, we move a window about the size of optic disc to count the number of corners. In the final step, we use the center of windows which has the most number of corners for localizing the optic disc center. The proposed method is evaluated on publicly available databases such as DRIVE, DIARETDB1 and STARE. The success rate was 100, 98.8, and 96.3%, respectively. The average distance between the estimated and the manually identified OD centers was 9 pixels.

**Keywords**—Optic Disc, CSS corner detection, Retinal image.

## Study of Wavelet Image Compression: JPEG2000 standard

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**Abstract** —If you have an image or a video and want to transmit it over a network, you will need to compress it to reduce the weight of the file in kilobytes. Many studies have focused on image compression techniques. In this paper, we only present the division based on wavelet compression that has recently become a highly debated research topic. The objective of this article is to study the main characteristics of wavelets that affect the image compression by using the discrete wavelet transform and lead to an image data compression while preserving the essential quality of the original image. This implies a good compromise between the image compression ratio and the PSNR (Peak Signal Noise Ratio).

**Keywords**—compression, wavelet transform, Haar, Coiflet, Daubechies, PSNR(Peak Signal Noise Ratio).

## Semantic Indexing Approach Of a Corpora Based On Ontology

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**Abstract**—This paper presents a new semantic indexing approach of a documentary corpus. The indexing process starts first by a term weighting phase to determine the importance of these terms in the documents. Then we will use a thesaurus like Wordnet to move to the conceptual level. Each candidate concept is evaluated by determining its level of representation of the document, that is to say, the importance of the concept in relation to other concepts of the document. Finally, the actual semantic index is constructed by attaching to each concept of the ontology, the documents of the corpus in which these concepts are found.



**Keywords**—semantic, indexing, corpora, WordNet, ontology.

## Analysis and development of an online virtual learning environment for embedded systems

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**Abstract**—in recent years with the development of applications and online platforms in several areas, the demand for the integration of new information technologies and communication ICT in education is becoming wider. This paper aims to present the development of a virtual environment of learning for science teaching that takes advantages of the advancement in microcomputer technologies. This approach is represented by integrating the Arduino Ethernet board as it is a popular, high-documented, low-cost and open source single-board microcontroller, connected to inexpensive sensors to measure physical or chemical variables.

**Keywords**—Arduino; E-Learning; Machine; Sensor; UML; Physique; Embedded system; laboratory;

## Robust Real-time Face Detection using Davinci's technology based on Communication inter-processor DSP/ARM

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**Abstract**—Face detection and recognition (FDR) technology is one of the biometric techniques used to identify an individual. In modern FDR, the conventional pipeline consists of four stages: detect, align, represent and classify. This paper describes the study and implementation of Viola Jones [1] face Detection Framework using OpenCV on Devkit8500. The Devkit8500 is a low power, open source single-board computer produced by Texas Instruments (TI). It uses a TI'OMAP3530 processor based on DSP and ARM which can realize the face image acquisition, detection, data storage and input/output control. The ARM is used as a host to communicate with peripherals. The DSP performs the multi-face image acquisition and detection. Open Source Computer Vision (OpenCV) is a library of programming functions mainly aimed at real time computer vision. Experimental results show that the Face Detection based on dual-core ARM/DSP has greater storage capacity and higher interactive ability.

**Keywords**—Face Detection; Viola-Jones algorithm; integral images; Haar-Like Rectangular Features; OpenCV; OMAP3530; boosting.

## Detecting a moving object

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**Abstract**—This final project study presents the implementation of a tracking system for a moving target using a fixed camera. The objective of this work is the ability to detect a moving object and locate their positions. In picture processing and computer vision, tracking moving objects in a known or unknown environment is commonly studied. It is based on invariance properties of objects of interest. The invariance can affect the geometry of the scene or objects, the appearance of objects (that is to say photometry or color) or kinematic. The objective of this project is the detection and location of a deformable object motion from a sequence of images, we seek to determine, efficiently and accurately as possible, its position in each image and thus determine its movement or its apparent motion in a picture to another. Finally, a large part of this project is devoted to the study of system performance. Many experiments in real conditions have been fulfilling to assess robustness. The accuracy could be measured by comparing the location calculated by the algorithm developed in this project with other methods.

**Keywords**—localization, detection, moving target, moving object, movement speed, segmentation, characteristic point, optical flow, interest points, background modeling.

## The IEEE 802.15.4 standard and its integration Under OPNET Modeler

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**Abstract**—The IEEE 802.15.4 protocol has recently been adopted as a communication standard for low-rate wireless personal area networks (LR-WPANs) due to its low data rate, low power consumption and low cost of construction of Wireless Personal Area Networks. This protocol is sufficiently flexible to be used in many applications by properly adjusting its parameters. The protocol also provides real-time guarantees by using the Guaranteed Time Slot (GTS) mechanism. Indeed, the GTS mechanism is quite attractive for Wireless Sensor Network (WSN) applications. In this paper we present a detailed description of IEEE 802.15.4 standard with its simulation model and its installation steps under OPNET Modeler 14.5.

**Keywords**—IEEE 802.15.4; LR-WPAN; WSN; GTS; simulation model; OPNET Modeler 14.5.

## Classification d'eaux minérales en vue de leur authentification

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**Résumé**—La qualité des eaux minérales de boisson ne cesse d'intéresser de plus en plus aussi bien les scientifiques que les diététiciens et les praticiens. Le grand choix de sortes d'eaux minérales dans le monde laisse le consommateur et le contrôleur de la qualité devant une décision délicate. La falsification est, également, un risque présent dans un tel aliment vital très consommé dans le monde. Ceci nous a poussés à mener le présent travail de classification, voire discrimination, entre une diversité d'eaux minérales issues de différents pays.

Certaines espèces chimiques, notamment le calcium et le magnésium sont décrits par plusieurs travaux antérieurs comme paramètres liés à des maladies telles que la lithiase rénale pour la teneur en calcium et la tension artérielle pour le sodium. Ainsi, une base de données chimiques a été établie sur 240 échantillons, par des méthodes physicochimiques analytiques appropriées des éléments majeurs concernés, Na<sup>+</sup>, K<sup>+</sup>, Mg<sup>2+</sup> et Ca<sup>2+</sup> comme cations et HCO<sub>3</sub><sup>-</sup>, Cl<sup>-</sup>, NO<sub>3</sub><sup>-</sup>, SO<sub>4</sub><sup>2-</sup> comme anions.

L'objectif principal du présent travail afin est de pouvoir classer de ces eaux minérales de boissons, à leur authentification et à la traçabilité de leurs échantillons. Pour cela, des algorithmes tels que : ACP, CHA, K-means et réseaux de neurones ont été appliqués sur la base de données chimiques des 240 échantillons d'eaux minérales de différentes marques et de différents pays.

Les traitements de ces données selon la qualité chimique des eaux d'une part et selon sa provenance géographique d'autre part ont montré qu'une classification serait un outil efficace pour le contrôle de la qualité chimique et nutritionnelle des ses eaux, leur traçabilité et leur authentification.

**Mots-clés**— eau minérale, authentification, classification, ACP, CHA, K-means, réseau de neurones

## ATR-FTIR spectroscopy coupled with chemometric tools for qualitative characterization and authenticity of Moroccan olive

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**Abstract**—The goal of this study was to attempt classification of moroccan olives according to their botanical and geographical origin based on the endocarp analysis by infrared spectroscopy and find the markers of their authenticity. This study was focused on the olive samples of two varieties and picked in three zones. The classification models were developed by principal component analysis (PCA) and support vector machines (SVM). On the basis of a PCA, six distincts clusters were recognized. The SVM procedure was then elaborated. The model resulted able to separate the six classes and classify new samples into the appropriate defined classes with a percentage prediction of 95%. This Result show the capability of ATR-FTIR and the important role of chemometric tools in developing accurate models to identify rapidly olives origin (variety and geography). All computations and chemometric analysis were carried out using the software Unscrambler version 10.2 from CAMO (Computer Aided Modeling, Trondheim, Norway).

**Keywords**—Olives; Endocarp; FTIR-ATR; Authenticity; PCA; SVM.

### **Towards a new approach of integration of the multi- user virtual worlds and the LMS**

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**Abstract** —The Learning Management Systems (LMS) became very important in the various educational levels, seen the features offered by the latter, however, do not meet all the needs of educators as regards the practical activities. Several projects were launched to answer this limit by integrating LMS with Multi Users Virtual Environnement (MUVE) to know Sloodle, Nucleo and many others.

The present article reveals a new approach of integration of the MUVE with the LMS by using an independent communication interface adaptive to any LMS.

**Keywords**—Pratical activities, Learning Management System; Multi-User Virtual Environnement; Sloodle; Nucleo; Second Life

### **The Intelligence of E-CRM Applications and Approaches on Online Shopping Industry**

**Abstract**— The advent of internet has led to the application of electronic services in enhancing the customer relationship management. E-CRM integrates IT in internal

organization in executing the marketing strategies. The current issue facing the E-CRM is determining the number of customers that are responsive to the e-commerce application. Furthermore, a huge number of customers are continuously becoming frustrated when using the E-CRM application. The application thus becomes redundant making it difficult in meeting the set targets of customer service. The purposive study thus seeks to understand the customer responsiveness to e-CRM. The intelligence of online shopping using E-CRM cannot be underestimated. The research study made use of both qualitative and quantitative methodologies in coming up with the necessary data. Qualitative approach examined the overall effectiveness of E-CRM in influencing positive customer relationships.

**Keywords**—E-CRM, Intelligence, quantitative and qualitative methodologies, technologie

### Spectral Graph matching and Harris Corner Detector for Printed Tifinagh Character Recognition

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**Abstract**—writing is one of the most essential medium to communicate with people. This is why we created character recognition systems to facilitate man-machine interaction. Most methods of character recognition existing require lot of pre-processing. Based on the idea that any form is apprehended by the human perception, we present a structural approach, which is graph theory in our case, based on spectral method to recognize Tifinagh characters (alphabet used by the Amazigh, mainly Tuareg). After using pre-processing techniques, we use Harris method for singular points detection, which gives us a better graph model representation for characters. This representation allows extracting the basic form of an independent letter and recognizes it. The proposed approach shows its effectiveness against problems such as size and orientation resulting performance gain, also in term of its speed.

**Keywords**—character recognition, graphs representation, Tifinagh characters, structural approach, recognition system

### Minimisation conjointe d'énergie de mission et de communication dans un réseau de capteurs sans fil

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**Abstract**—In recent years, many approaches and techniques have been explored for the optimization of energy usage in Wireless Sensor Networks (WSN). In this paper, we study a problem of placement of nodes within a network of mobile sensors. More precisely, we consider a critical network in each sensor satisfying its own missions and depending on its locations. In addition to fulfill their mission, the sensor tries to maintain a good neighboring nodes quality. We will determine the location of a node by using two criteria: the cost and the quality of communication. The aim of this work is to develop a genetic algorithm so as to solve the complicated non-convex-optimization posed in this case.

**Keywords**—Wireless sensor networks, energy, genetic algorithm

## Measuring Security Risk for Enterprise Networks Using Attack Countermeasure Tree Model

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**Abstract**—Today's information systems face sophisticated attackers who combine multiple vulnerabilities to penetrate networks with devastating impact. The overall security of a network cannot be determined by simply counting the number of vulnerabilities. To more accurately assess the security of networked systems, one must understand how vulnerabilities can be combined and exploited to stage an attack that can be modeled by using an attack tree paradigm called attack countermeasure tree (ACT) which avoids the generation and solution of a state space model and takes into account attack as well as countermeasures (in the form of detection and mitigation events).

In order to maximize the security of network systems, we compute the risk to the system by presenting a probabilistic analysis of this model that evaluate and strengthen the overall security of enterprise networks, and assess the relation between cost and benefit from implementing countermeasure by analyzing return on investment.

**Keywords**—Attack trees, Vulnerability, Security risk assessment, Attack countermeasure tree.

## Security Risk Analysis of Computer Systems and Comparative Study of Risk Management Methods

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**Abstract**—The security of software-based systems is one of the most difficult issues when accessing the suitability of systems to most application scenarios. However, security is very

hard to evaluate and quantify, and there are no standard methods to benchmark the security of software systems. In this work, we propose a methodology that uses the risk analysis in a quantifiable way to measure the security risk of computer systems. As discipline of identifying and evaluating the risks to a given system in order to mitigate or eliminate threats and vulnerabilities, risk analysis use security protocols and risk management methods. In this paper, we also study and compare risk analysis methods based on qualitative and quantitative approach. Furthermore some criteria such as the steps that are used by these methods to conduct the risk assessment and the contents and supplementary documents provided with them.

**Keywords**—Information Security, Benchmarking, Risk Analysis, Vulnerability, Risk Assessment Methods.

## **Security for Mobile Agents: Trust estimate for Platforms.**

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**Abstract**—The mobile agents' technology has been shown efficient to diverse computer networks applications due to its autonomy and capacity of adaptation. However, it also brings significant security concerns. The protection of Mobile agents is one of the most difficult problems in the area of mobile agents' security. There is not a single, comprehensive solution that provides complete protection of agents against malicious hosts. The protection of mobile agents is considered as one of the greatest challenges of security, because the platform of execution has access to all the components of the mobile agent. In this paper, we present a new architecture paradigm of mobile agents, which allows the separation of the implementation tasks of the agent and its security mechanisms. Our approach is based on using two strategies of adaptation to adapt the mobile agent security at runtime, depending on the sensitivity of the services required to perform the duties of the agent and the degree of confidence of the visited platforms.

**Keywords**—Mobile agent, Security, Cryptography, Software components, Static adaptation, Dynamic adaptation.

## **Analysis of ITIL Implementation Approaches**

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**Abstract**— Viewed as a cost center, information technology (IT) departments want to give another image. A conscious image of their contribution in the creation of business value, IT

departments therefore must manage resources of information system (IS) more effectively, to ensure better alignment of IS with business strategy and better assess the performance of IS. This can be achieved through several approaches that recommend best practices for improving IT service quality, including information technology infrastructure library (ITIL). The objective of this article is to analyze approaches of ITIL implementation in order to highlight the strong and weak points of each approach.

**Keywords**—*ITIL; ITIL implementation; IT service management; IT service quality*

## **Competitive intelligence: leaven of a new managerial device for decision support**

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**Abstract** — In an environment marked by mutation, uncertainty and complexity, the major challenge for companies is to have the right information at the right time, to interpret it, exploit it and transform it into useful knowledge for strategy formulation and decision making. Nowadays, several management practices have been designed and developed to cope with the complexity that exists in the business environment. The ability of a company to remain competitive in the market depends on its ability to take advantage of the information flowing in the environment and their transformation into strategic practices for the benefit of the company. Competitive intelligence (CI) is one of the innovative practices in strategic management and that aims to research, treat and analyze the relevant information in order to facilitate decision making. This article falls under a research task that was not confronted yet with the test of the terrain survey. It attempts to define the notion of CI and present an overview of the evolution of CI and of its fundamental concepts.

**Keywords**—competitive Intelligence, information, decisionmaking, support decision, business intelligence

## **Estimation of 3-D Frequencies in a Colored Gaussian Noise**

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**Abstract**— Estimation of model parameters (3-D frequencies), based on the high resolution spectral analysis methods known by their performances and their precision such as 3-D ESPRIT, remains a problem which is essential in the modeling of the signals by a sum of 3-D complexes exponential (3-D SCE model) embedded in an additive gaussian noise. Indeed, good results are obtained when the noise is white and by using the Second Order Statistics (autocorrelations), but if it becomes colored, the results are degraded which forces us to remedy this problem, to think about the Higher Order Statistics (cumulants).



**Keywords**—Spectral Analysis, High Resolution, 3-D ESPRIT, Second Order Statistics, Higher Order Statistics, Fourth Order Cumulant.

## **Electoral decision support system implemented in cloud computing infrastructure**

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**Abstract**—In the context of an electoral process, the ability to make an effective and satisfactory decision is a complex processes in general, this for the political parties, the candidates, or for the voters. Integrate a support decision system in this important process, can become a solution of great importance, to improve the electoral decisions. In particular, when it comes to implement an electoral decision support system, by exploiting the benefits of service-oriented architecture (SOA), and the cloud computing. In this context, the present architectural conception proposes the definition of four levels of decision, oriented toward the voters, the political parties and their candidates. These levels take into account the maximum of factors, which can influence the success of the electoral decision making. Through the significant acceleration of the development and the adoption of support decision systems, by the exploitation of the cloud computing. Each level is composed of a set of SOA services, implemented in community cloud infrastructure.

**Keywords**— electoral process; cloud computing; service oriented architecture; support decision system.

## **Alignement des ontologies en utilisant le dictionnaire WordNet et les algorithmes de désambiguïsation**

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**Résumé**—L'alignement d'ontologies est une discipline qui désigne deux choses: la première, le processus de découverte des correspondances entre deux ontologies  $O_1$  et  $O_2$  différentes, et la deuxième le résultat de ce processus, c'est-à-dire l'expression des correspondances (e.g., le concept appelé "Student" de l'ontologie  $O_1$  est équivalent au concept appelé "Scholar" dans l'ontologie  $O_2$ ). Cette discipline devient une tâche cruciale pour résoudre les problèmes de fusionnement et l'évolution des ontologies hétérogènes dans les applications du web sémantique. Ce domaine impose plusieurs défis. Parmi eux, la sélection de mesures de similarité appropriées afin de découvrir les correspondances. En effet, dans cet article, on s'intéresse à étudier des algorithmes qui calculent les similarités sémantiques (Algorithme AdaptedLesk, Algorithme Wu & Palmer, Algorithme Resnik et Algorithme Jiang and Conrath) entre  $O_1, O_2$  et WordNet comme ontologie de référence  $O_3$ ,

on les met en œuvre, et on les compare expérimentalement. Dans l'ensemble, les méthodes les plus performantes sont Wu & Palmer et AdaptedLesk, qui sont largement utilisées pour la *désambiguïsation* sémantique des *mots* dans le domaine de Traitement Automatique de Langues Naturelles (TALN).

**Mots clés** —TALN, alignement des ontologies, OWL, Web Sémantique, similarité sémantique, WSD, ontologie, WordNet, similarité.

## Organisation statique des systèmes d'informations

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**Résumé** —Lors de l'utilisation du système d'information pour une première fois, il est en total désarroi n'ayant aucune information sur quoi se basé pour son organisation on fait l'attribution de manière aléatoire. La communication dans un système d'information se fait à l'aide de certains émissaires de message mais on ne peut pas interconnecter tous les nœuds entre eux pour qu'il y ait une communication directe entre eux et ça par défaut de ressource et d'espace. La solution qu'on a proposée est de faire en sorte que la construction du système d'information ne soit pas hasardeuse. Pour nous on a utilisé la classification 'clustering'. Pour la bonne utilisation des méthodes de classification on aura besoin de paramètres sur quoi se basée et c'est là ou a utiliser le cycle de vie de l'information pour dégager ce genre d'attributs

**Mots clés**—classification, cycle de vie

## JADE multi-agent middleware applied to e-learning platform.

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**Abstract**—In this article, we used the middleware JADE (Java Agent DEvelopment Framework) specialized in multi-agent systems to contribute online tutoring in an e-learning platform. A web agent is an autonomous entity that has the ability to learn, to migrate and react etc. JADE middleware was used to deploy the various agents used in this study namely the learning agent, tutor agent, teacher agent. In addition, it cited the architecture of JADE and the life cycle of a web agent: the creation, deployment, allocation behavior, receiving and sending messages ACL.

**Keywords**—SMA, Web Agent, JADE, E-learning, virtual tutoring.

## Automatic diagnosis of brain magnetic resonance images based on Riemannian Geometry

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**Abstract**—In this paper, we present an automatic diagnosis of brain magnetic resonance image. The goal is to prepare the image of the human brain to locate the existence of abnormal tissues in multiple brains MRI. We start from the image acquisition, reduce information, brain extraction, and then brain region diagnosis. Brain extraction is the most important preprocessing step for automatic brain image analysis. We consider the image as residing in a Riemannian space and we based on Riemannian manifold to develop an algorithm to extract brain regions, these regions used in other algorithm to brain tumor detection, segmentation and classification. Riemannian Manifolds show the efficient results to brain extraction and brain analysis for multimodal resonance magnetic images (T1, T2, and PD)

**Key-words**—brain magnetic resonance image, Riemannian manifold, brain extraction

### **Contribution to the security of the information system**

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**Abstract-** Security of information systems has become a critical problem of companies. In this paper, we begin by citing the principles of security and the description of some attacks that threatening the information system. After we describe the use of the techniques of cryptography, digital signature to ensure the confidentiality, integrity and authentication of data, we describe some security protocol such as SSH, SSL, IPSEC, in order to ensure the security of connection resources. Finally we present the intrusion detection system from a theoretical point of view (IDS). We conclude this work by implementing a free IDS "SNORT"

**Keywords-** principle of security attacks, symmetric encryption, asymmetric encryption, digital signature, MAC, SSH, SSL / TLS, IPSEC, IDS

### **Prediction in OLAP data cubes**

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**Abstract**—Online analytical processing (OLAP) provides tools to explore data cubes in order to extract the interesting information, it refers to techniques used to query, visualize and synthesize the multidimensional data. Nevertheless OLAP is limited on visualization, structuring and exploring manually the data cubes. In the other side, data mining allows algorithms that offer automatics knowledge extraction, such as classification, explanation and

prediction algorithms. However, OLAP is not capable to explain and predict events from existing facts; therefore, it is possible to make a more efficient online analysis by coupling data mining and OLAP to allow the user to assist in this new task of knowledge extraction. In this paper we will carry on within works achieved in this theme and we suggest extending OLAP to the abilities of predicting.(enhancing the OLAP abilities and techniques by introducing a predictive model based on a data mining algorithms). Our approach is based on regression trees and neural networks; it consists to predict facts having a missed measures value in the data cubes.

**Keywords**—online analysis OLAP, data mining, multidimensional data cube, prediction, regression tree, Neural Network.

## A Complete System for Robust Face Recognition

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**Abstract**—Face recognition has been a long standing problem in computer vision. Recently, Gabor wavelets have proven to be an effective descriptor for face recognition. In this paper, we propose a novel face recognition approach which we call Skin-Gabor-SVM. In this paper, a new face detection algorithm is proposed. This speedy and robust solution developed, on the one hand is based on the segmentation of the color image to skin regions using a new approach to detect the pixels of the skin and the watershed segmentation method. On the other hand, using Gabor filters, combined with a proposed model of face, skin regions are classified into two classes: face and non-face. This new algorithm is based on a combination of Gabor wavelets representation of face images and Improved Supervised Locality Preserving Projections for face recognition. The proposed face recognition framework is assessed in a series of face verification and identification experiments performed on the AT&T and FERET databases. The results of the assessment suggest that the proposed technique clearly outperforms state-of-the-art face recognition techniques from the literature and that its performance is almost unaffected by the presence of partial occlusions of the facial area, changes in facial expression, severe illumination changes, or pose-invariant.

**Keywords**—face recognition, Skin-Gabor-SVM, face detection, AT&T and FERET databases

## Recognition of a face in a text document

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**Abstract**—Face recognition is the theme of great interest in the domaine of research for several applications such as biometry identification, surveillance, and human-machine interaction... This paper exposes a system of face recognition. This system exploits an image document text embedding a color human face image. Initially, the system, in its phase of extraction, in exploiting the horizontal and vertical histogram of the document, detects the image which contains the human face.

The second task of the system consists of detecting the included face in other to determine, with the help of invariants moments, the characteristics of the face.

The third and last task of the system is to determine, via the same invariants moments, the characteristics of each face stored in a database in order to compare them by means of a classification tool (Neural Networks and K nearest neighbors) with the one determined in the second task for the purpose of taking the decision of identification in that database, of the most similar face to the one detected in the input image.

**Keywords**—Histogram, Hu Moments, Legendre Moments, Nearest Neighbor, Neural Networks.

## **A distributed web crawler design for Web content mining**

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**Abstract**— In recent years World Wide Web has become the richest source of information, billions of web pages are published every second. With this phenomenal growth of on line information, there is a need to develop new methods in order to extract and mine useful knowledge from the web. But due to the variety of web page's structure and the huge amount of information, retrieving targeted contents and mining it is a difficult task. Web mining is the field of study that deals with these issues. In this paper our focus is on Web content mining, we present a design of a distributed web crawler that collect effectively data from the web and prepare it for further analysis like Web opinion mining, Web search, Web document representation, and topic extraction.

**Keywords**— web mining, topic extraction, document representation

## **Genetic Algorithm Learning and Nash Equilibrium Application on Price-QoS Competition in Telecommunications Market**

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**Abstract**— To select or change their service provider, the customers use the best compromise between price and quality of service (QoS). In this work, we formulate a game theoretic framework for the dynamical behaviors of Service Providers (SPs). They share the same market and are competing to attract more customers to gain more profit. Due to the divergence of SPs interests, we believe that this situation is a non-cooperative game of price and QoS. The game converges to an equilibrium position known Nash Equilibrium. Using Genetic Algorithms (GA), we find strategies which produce the most favorable profile for a player. Genetic Algorithms have shown their great power in the learning area. Using these meta heuristics, we find the price and QoS that maximize the profit for each SP and

illustrate the corresponding strategy in Nash Equilibrium (NE). We also show the influence of some parameters of the problem on this equilibrium.

**Keywords**— Pricing; QoS; Market share game; Genetic algorithms; Nash equilibrium; Learning.

## **Déploiement d'un entrepôt de données à la gestion des ressources humaines**

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**Résumé**— Le présent travail consiste à concevoir et déployer un entrepôt de données (Data Warehouse ) de gestion des ressources humaines qui a pour vocation d'intégrer toutes les données RH, d'en garantir la qualité et l'accessibilité et aider les responsables de s'assurer que les ressources sont utilisées avec efficacité et efficacité. Les principaux champs d'analyse visés sont la gestion des effectifs et des affectations, la gestion de la masse salariale et des rémunérations, la gestion des compétences et la gestion des recrutements.

La démarche adoptée a été inspirée du cycle de vie de Ralph Kimball qui décrit la succession des tâches nécessaires à la conception, au développement et au déploiement d'entrepôts de données. Le choix d'outils pour la mise en œuvre de ce système décisionnel a porté essentiellement sur la solution Business intelligence de Microsoft.

**Mots clés**—entrepôts de données, gestion masse salariale, gestion des recrutements

## **Applying RFM Model and clustering techniques in Customer Value Analysis of a company selling online.**

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**Abstract**—With this increase in the number of e-commerce sites the number of competitors has become very important. This forces each company to take adequate to meet the requirements of their customers by examining their behavior on its e-commerce site decisions. Market segmentation is the process of identifying key groups within the general market that share specific characteristics and consumer habits and then to provide the management to customize the products or services to fulfill the needs. The purpose of this paper is customer segmentation using RFM technique and clustering algorithms (Ward's minimum variance method (SOM) and k-means) based on customer's value, to achieve better market segmentation and examine distinct characteristics of each cluster in order to determine and retain profitable and loyal customers. The customers are segmented into similar cluster according to their RFM variables.

**Keywords**—Customer value, RFM model, Cluster analysis, Ward’s minimum variance method, Kmeans algorithm, loyalty.

## **Recognition of 3D objects from 2D views features**

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**Abstract**—This paper focuses on the recognition of 3D objects using 2D attributes. In order to increase the recognition rate, we present an hybridization of three approaches to calculate the attributes of color image, this hybridization based on the combination of Zernike moments, Gist descriptors and color descriptor (statistical moments). In the classification phase, three methods are adopted: Neural Network (NN), Support Vector Machine (SVM) and k-nearest neighbor (KNN).The database COIL-100 is used in the experimental results.

**Keywords**—Recognition system, Zernike moments, Gist descriptors, color descriptor, NN, SVM, KNN.

## **Comparative study of 2D face recognition algorithms using texture analysis and using descriptive statistical**

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**Abstract**—In this paper we present a comparative analysis of two categories of algorithms for image representation with application to recognition of 2D face. The aim of this paper is to present an independent comparative study of two most popular categories of face recognition, algorithms using descriptive statistical and using descriptive texture; we did a study on recognition rate results probability of some algorithms (namely, ICA, PCA, LDA and LBP, FPLBP, TPLBP). Our results on ORL face database available currently, demonstrate that the algorithms based a texture analysis has promising performance. Finally classification with different classifiers will be performed.

**Keywords**—face recognition, ICA, PCA, LDA, LBP, FPLBP, and TPLBP algorithms

# **A Comparative study of methods for plagiarism detection in across less related languages (English-Arabic)**

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**Abstract**—Plagiarism is the reuse of someone else's ideas, results, or words without acknowledging the original source. The Plagiarism does not confess linguistic boundaries. Cross-Language (CL-Plagiarism) or multilingual plagiarism occurs if an excerpt written in a different language is translated and no reference of original source is given. Ranging from translating and changing texts into semantically equivalent to adopting ideas, without giving credit to its originator, CL-Plagiarism can be of many different natures.

In this paper we compare three recently proposed cross-language plagiarism detection methods CL-CNG, based on language syntax, CL-ASA based on statistical translation, and (T + MA) based on machine translation and monolingual similarity analysis.

Detecting plagiarism in Arabic documents is particularly a challenging task because of the complex linguistic structure of Arabic language. In this paper we are studying these three different models, in nature and required resources, for less related languages such as English-Arabic.

**Keywords**—Cross-Language plagiarism detection, method CL-CNG, method CL-ASA, translationmachine.

## **Recognition of 3D objects from 2D views features**

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**Abstract**—This paper focuses on the recognition of 3D objects using 2D attributes. In order to increase the recognition rate, we present an hybridization of three approaches to calculate the attributes of color image, this hybridization based on the combination of Zernike moments, Gist descriptors and color descriptor (statistical moments). In the classification phase, three methods are adopted: Neural Network (NN), Support Vector Machine (SVM) and k-nearest neighbor (KNN).The database COIL-100 is used in the experimental results.

**Keywords**—Recognition system, Zernike moments, Gist descriptors, color descriptor, NN, SVM, KNN.

## **Enhancement Mammograms with Non subsampled Contourlet Transformation and Feature Extraction for Classification**

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**Abstract**—Mammogram is important for early breast cancer detection. But due to the low contrast of micro calcifications ( $\mu c$ ) and same properties as noise, it is difficult to detect ( $\mu c$ ). In This paper presents methods using Non Subsampled Contourlet Transform (NSCT) were tested with the referents mammography Base data MiniMIAS. Experimental results show that the proposed method improves the visibility of ( $\mu c$ ).

**Keywords**—Micro calcification; Contourlet; enhancement; homomorphic filtering.

## **A New Hybrid Method Combining Contourlet Transform and homomorphic filtering for Enhancing Mammograms**

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**Abstract**—Mammogram is important for early breast cancer detection. But due to the low contrast of micro calcifications and same properties as noise, it is difficult to detect micro calcification. In This paper presents a comparative study in digital mammography image enhancement based on three different algorithms: homomorphic filtering, unsharp masking and proposed methods using a hybrid method Combining contourlet and homomorphic filtering. Performance of the given technique has been measured in terms of distribution separation measure (DSM), target to background enhancement measure based on standard deviation (TBEs) and target-to-background enhancement measure based on entropy (TBEe).The proposed methods were tested with the referents mammography Base data MiniMIAS. Experimental results show that the proposed method improves the visibility of microcalcification.

**Keywords**—Microcalcification Contourlet Enhancement homomorphic filtering.

## **Channel Identification and Equalization For MC-CDMA systems Using Kernel Methods**

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**Abstract**—The channel impulse response plays an important part in estimation of the transmitted symbol where the used techniques for linear system identification are focused on classical estimation coming from mathematical statistics. The kernels-based algorithms have shown superior performance in generalization ability in many problems in which have drawn a lot of interest as it allows obtaining a linear algorithm (i.e. an algorithm which works in a vector space). In this paper we develops the channel identification and equalization for multicarrier code division multiple (MC-CDMA) system to identify the impulse response of two practical selective frequency fading channels called broadband radio access network (BRAN A and BRAN B) normalized for MC-CDMA systems. We have based on the positive definite kernels to build the proposed algorithm. Computer simulations show that the proposed method confirms the good performance of this

procedure in SNR conditions. In part of equalization, we perform the algorithm by using zero forcing and minimum mean square error equalizers.

**Keywords**—Channel, Identification, Equalization, Kernel methods, MC-CDMA systems.

## Real-time detection of road signs

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**Abstract**— For the identification of road signs, most methods for processing video streams consist of three steps: the detection of signs in the road scene, the recognition of their type, and target tracking. The Identification systems for road signs are usually evaluated globally; This approach unfortunately doesn't allow to finely analyzing the performance of each step. It is difficult to know if the detection step or the recognition step needs to be improved in order to obtain a more efficient system. We focus here on the fast and efficient real-time detection of road signs, because detection is often a more difficult task than recognition. Furthermore, the quality of the detection is a condition for the quality of recognition results. This work presents a study for the design, implementation and testing of a method for a real-time detection of road signs, based on computer vision, the implanted system contains two modules, the first is a pre-processing module based on video stream processing technics, and the second based on the polygonal approximation digital contours, to identify areas that may contain road signs, using the particularity of their colors and contours. All algorithms implemented in this work, are developed under the programming language C / C ++ using OpenCV library, and the tests are performed on real videos of the road scene, and they show the performance of the technics used in this step detection.

**Keywords** — Real time detection ; Video ;Road signs ;Processing stream ;Computer vision ;Colors ;Contours .

## Optimal placement of sensors and the base station in mission-specific mobile sensor networks by considering jointly the cost of mission and the quality of communication

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**Abstract**—In recent years, many approaches and techniques have been explored for the optimization of energy usage in Wireless Sensor Networks (WSN). In this paper, we study a problem of placement of nodes within a network of mobile sensors. More precisely, we consider a critical network in each sensor satisfying its own missions and depending on its locations. In addition to fulfill their mission, the sensor tries to maintain a good neighboring nodes quality. We will determine the location of a node by using two criteria: the cost and the quality of communication. The aim of this work is to develop a genetic algorithm so as to solve the complicated non-convex-optimization posed in this case.

**Keywords**—mobile sensor network, node placement, controllable mobility, energy, genetic algorithms

## **Word and Sub-Word Arabic Font Size and Style Recognition Using Majority-Vote of different Classifiers**

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**Abstract--** Arabic font recognition is a model intermediate to transform multifont system into mono-font system. Segmentation and recognition techniques of Arabic printed script change from font to other i.e. each font has particular properties calligraphic and structural which differ than other. Majority of segmentation system suffer in segmentation of word or sub word into character because they consider one algorithm to segment all kind of Arabic printed font, style and size.

The goal of this work is to prepare a system of word or sub word optical font recognition (AOFR) to recognize font, size and style, in order to integrate this system in global Arabic optical character recognition (AOCR) to choose preferred segmentation algorithm of word or sub word into characters. APTI database was used to prepare a sub database of Arabic character; AOFR was based on this sub database and using an algorithm to extract some features related on Orientation, Histogram.

KNN and SVM classifiers based on Majority-Vote were adopted to measure proposed system performance.

**Keyword**— AOFR, word or sub-word, characters, APTI, sub database, Orientation, Histogram, KNN, SVM, Majority Vote.

## **Sudy of adaptive filtering algorithms and the equalization of radio mobile channel**

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**Abstract**—This paper presented a study of three algorithms, the equalization algorithm to equalize the transmission channel with Zero Forcing (ZF) and Minimum Mean Square Error (MMSE) criteria, application of channel Bran A [3], and adaptive filtering algorithms Least Mean Square (LMS) and Recursive Least Square (RLS) [6] to estimate the parameters of the equalizer filter, i.e. move to the channel estimation and therefore reflect the temporal variations of the channel [11], and reduce the error in the transmitted signal. So far the performance of the algorithm equalizer with ZF and MMSE criteria both in the case without noise, a comparison of performance of the LMS and RLS algorithm.

**Keyword**—Adaptive Filtering Second Equalizer, LMS, RLS Bran A, Proakis (B) MMSE, ZF

# Designing an ontology of observations and measurements in managing Organizational change

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**Abstract**—Driving organizational change is more difficult because the extent of its success can not be established with certainty. In terms of human resources management, we try to define the different ontologies needed for recording observations and measurements of human characteristics during all stages of organizational change. The overall objective is to benefit from the experience feedback in this area. Semantic features of our approach are based on the use and adaptation of several ontologies: GCS (General Competency Schema), DOLCE (*Descriptive Ontology for Linguistic and Cognitive Engineering*), etc.

**Keywords**— Ontology, GCS, DOLCE,

## Relative Neighbors Graph Algorithm

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**Abstract**— In Computational geometries, the relative neighborhood graph (RNG) is an Undirected graph defined on a set of points in the Euclidean plane by connecting two points  $p$  and  $q$  by an edge whenever there does not exist a third point  $r$  that is closer to both  $p$  and  $q$  than they are to each other.

Our study is built on these terms to show how to construct a graph of relative neighbors by a powerful algorithm, and what this type of graph and its usefulness for decision-making.

**Keywords**— relative neighborhood graphs, clustering, Decision.

## Comparison of some data mining algorithms: Apriori, AprioriTid, AIS, and STEM algorithms

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**Abstract**—This paper presents a comparison between some algorithms used in association mining rules such as AIS, SETEM, Apriori, and AprioriTid. AprioriTid is performant than Apriori because it use the database just in the first step but it take a memory while storing support of items. AIS algorithm make multiple passes over the database, further more it generate and count too many candidate item sets that turn out to be small, which requires more space. STEM algorithm has the same disadvantages of the AIS algorithm. An hybrid

algorithm (combination between Apriori and AprioriTid), can be designed that uses Apriori in the initial passes and switches to AprioriTid when it expects that the set will fit in memory.

**Keywords**—Assaociation rules, AIS, SETEM, Apriori, AprioriTid.

## **Performance Comparison of Fuzzy K-NN SVM and ANN Combined with N-gram Language Model for Handwritten Tifinagh Character Recognition**

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**Abstract**—In this work we present an application of Fuzzy k-Nearest Neighbour, Artificial Neural Networks and Support Vector Machines combined to language model for Tifinagh character recognition. In order to make this combination, The output of each classification algorithm is transformed to a probability. Experements show that best results are obtained by the combination ofthe fuzzy k-Nearest Neighbour and the bigram language.

**Keywords**— Fuzzy k-Nearest Neighbour, Artificial Neural Networks, Support Vector Machine, Tifinagh character

## **Comparison of two algorithms for Extracting Frequent patterns.**

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**Abstract**—Traditional databases or data warehouses hide a number of relevant and useful information for decision support. Extracting frequent patterns is one of the information that finds application in the analysis of receipts to assist in inventory optimization and the reorganization of the sales area. For that, many data mining algorithm for frequent set counting are developed.

We present in this paper two algorithms: SAM (Split And Merge) and ECLAT (Equivalence CLAss Transformation). We will present their performances and their limits.

To improve the performance of the ECLAT algorithm, we propose here the K-ECLAT algorithm based on the properties of the key patterns to optimize the execution time by reducing the cost of intersections generated by the ECLAT algorithm.

**Keywords**— SAM, ECLAT, K-ECLAT algorithms

## **Tow-Dimensional Face Recognition Methods Comparing with a Riemannian Analysis of IsoGeodesic Curves**

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**Abstract**— In this paper, we performed a comparative study of two-dimensional face recognition methods. This study was based on existing methods (PCA, LDA, 2DPCA, 2DLDA, SVM,...) 2D face surface analysis using a Riemannian geometry. The last system uses the representation of the image at gray level as a 2D surface in a 3D space where the third coordinate represent the intensity values of the pixels. Our approach is to represent the human face as a collection of closed curves, called facial curves, and apply tools from the analysis of the shape of curves using the Riemannian geometry. Our application has been tested on two well known databases of face images ORL and YaleB. ORL data base was used to evaluate the performance of our method when the pose and sample size are varied, and the database YaleB was used to examine the performance of the system when the facial expressions and lighting are varied.

**Index Terms**— Facial surfaces, Riemannian geometry, Facial curves, Geodesic path, ORL database, YaleB database.

## **Application of regional input–output model for water consumption: A case study for Tadla-Azilal region**

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**Abstract**—Input-output is a model which can be used in several fields in order to give perfect analysis. Throughout this model, we can make a regional analysis for the relations between the sectors of national economy and between the national economy and the rest of the world in terms of water consumption.

The water input-output model allows to determinate the economic and social effects on water resources that the new agricultural strategy have in Morocco. Moreover, it can be considered as a basic model in order to study the initial allowance of water in the economy.

The water input-output model allows simulating the impact of the water consumption variation on the structure of production. It can give the effect of a change in the request for a productive sector on the water resources.

This paper aims to present a water input-output model of Tadla-Azilal region. This model can be considered as an application of macro-econometric input-output model for regional analysis of the impacts of the new agricultural strategy in Tadla-Azilal region on water resources.

This study has as an ambition to create and apply a water input-output model to the water resources management in Tadla-Azilal region.

**Keywords**—input-output model, water consumption, regional social accounting matrix, agricultural strategy, Tadla-Azilal region.

## **3D Objects Retrieval using Geodesic Distance based on Eikonal equation**

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**Abstract** - Recently, shape-based matching and retrieval of 3D polygonal models (example of .off files) has become one of the most fundamental problems in computer vision. Dealing with families of objects instead of a single one may impose further challenges on regular geometric algorithms in this paper we focus on the classification of 3D objects based on their geodesic distance calculated on a mesh using an iterative algorithm for solving the Eikonal equation. The efficiency of geodesic curve to identify or represent a 3D object was widely proven. In this work we try to determine the minimal number of curve needed to categorize a family of 3D objects. For the classification process, we use Multiclass SVM classifier, K-nearest neighbors, decision trees and neural networks to evaluate our descriptors. We illustrate the potential of extracted characteristics to two 3D benchmarks. The excellent recognition rates achieved in all experiments show that a small number of curve between 9 and 12 can correctly categorize a family of 3D objects.

**Keywords** — Shape retrieval, geometric matching, Eikonal equation; Multiclass support vector machine (M-SVM); KNN; Geodesic distance.

## **Toward an Effective Combination of multiple Visual Features for Semantic Image Annotation**

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**Abstract**—In this paper we study the problem of combining low-level visual features for semantic image annotation. The problem is tackled with a two different approaches that combines texture, color and shape features via a Bayesian network classifier. In first approach, vector concatenation has been applied to combine the three low-level visual features. All three descriptors are normalized and merged into a unique vector used with single classifier. In the second approach, the three types of visual features are combined in parallel scheme via three classifiers. Each type of descriptors is used separately with single classifier. The experimental results show that the semantic image annotation accuracy is higher when the second approach is used.

**Keywords**—Combining; Fusion; Features; Image ; annotation, Semantic; Bayesian networksc; classifier.

## **Clustering and extraction of items frequents**

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**Abstract**--The amounts of data collected in various application areas of computer science, become increasingly important. These quantities have caused the need for analysis and interpretation in order to extract useful knowledge. This project focuses on the clustering technique based on the algorithm CALARA 1 and CLARA 2 in the first section. Then we spent the second part to the PASCAL algorithm that can extract common reasons for

classifying units according to a particular aspect (objects that contain them) and use the first patterns found in a class to infer Support all others, without accessing the database. And the last part to the technique for extracting frequent patterns closed; a new approach to data mining to address the problems with the method of extraction of frequent patterns (the cost of extraction of these reasons, the generation of a large number of association rules). For this, we used an algorithm called TITANIC for the generation of frequent closed patterns from the formal database we built.

**Key words**--Data mining, Classification, closed frequent itemsets, TITANIC, frequent patterns, association rules, association, PAM, CLARA 1, CLARA 2, and PASCAL.

## **Algorithms for classification rules generation**

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**Abstract**—Datamining is the process of extracting knowledge from large data. There are several techniques and algorithms are used for extracting information's and finding the relationships between them. In this study we have compared OneR, ZeroR, M5, C4.5 and Part algorithms. M5-Rules build full trees instead of partially explored trees. In ZeroR classifier the class with the highest frequency among training data is assumed as the output value for all the data. The OneR algorithm creates one rule for each attribute in the training data. To create a rule for an attribute, the most frequent class for each attribute value must be determined. PART allows us to infer the rules by the iterative generation of partial decision trees by combining two major paradigms: decision trees and learning technique rules «divide and conquer». M5 rules work as follows: a tree learner is applied to the full training dataset and a pruned tree is learned. Then the best branch is made into a rule and the tree is discarded. The process is applied recursively to remaining instances until all instances are covered by one or more rules. From the experimental results it is concluded that in the case of time factor and number of rules generation, Part algorithm seems better than the others algorithms.

**Keywords**—Datamining, classification rules, OneR, ZeroR, C4.5, Part,

## **Sequential pattern mining by GSP and MFS algorithms**

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**Abstract**—this works present two algorithms of extraction sequential patterns specifically the GSP and MFS. These algorithms are increasingly used in the world of data mining (in the field of medicine for the extraction diseases, in the web, in the economic field: a study of customer behavior).

Performance level both algorithms give the same results and the same frequent sequences, but in performance we see that MFS generates sequences faster than GSP which leads a number of passes of optimization based on data, because GSP can generate a large number of candidates in large databases, Since the candidates generated are formed from the concatenation of the bootstrap, many of these Candidates will not end up in the database, representing a loss of time. So we can say that MFS is a correction of the GSP gaps.



**Keywords**—sequential pattern mining, GSP algorithm, MFS algorithm.

## **Towards a solution for the “man in the middle” attack**

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**Abstract**—The proposed work falls within the context of improving data security for m-commerce systems that doesn't consist only on analyzing security risks due to vulnerabilities in these systems, but also on trying to provide preventive and corrective solutions against fraud from misuse of data related to electronic payments. In this context we have placed under the light some flaws encountered in HTTPS which is the most used m-commerce protocol, particularly the “man in the middle” attack shortly MITM. This paper proposes a solution to fix those flaws based on the upgrading of HSTS standard using the DNSSEC standard.

**Keywords**—M-Commerce, HTTPS, HSTS, DNSSEC, “man in the middle” attack.

## **Management decision system for the documentary archives of a public Moroccan institution: Case USMS of Beni Mellal**

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**Abstract**—This article deals the problem of the management documentary resources of the library Moroccan public, case USMS of Beni Mellal, which due to the evolution of new technologies of information, communication and internet, and increasing numbers of documents, readers and orientation of the country towards the digital Morocco, to measure its success factors that achieve the concept of science library, the desire to promote and share the results of their scientific research (institutional archives). In a first time, we present the set up of the online catalog of the institutional repository of the USMS on the web portal accessible on the internet. Secondly, we present the décisionnelle framework implemented using new technologies BI in the library, the webmining and the semantic web for better management.

**Keywords**—web portal, semantic web,

## **Maturité du Management des Systèmes d'Information et son Impact sur les Entreprises Marocaines**

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**Abstract**—According to several studies, researchers have found that the only use of a dashboard and a system of indicators is not sufficient to allow the pilot project to achieve its objectives. Indeed, they proposed to take into account the notion of maturity management information systems as a means of process improvement. This concept has become a major performance boost the effectiveness and efficiency of information systems. In contrast, our study will focus mainly on the study of maturity and models to show its impact on the operations of a business. This impact will be explored through a case study with several Moroccan companies.

**Keywords**—Maturity, SI Management, Process, Performance.

## Use of algorithms PCA and PLS in the classification and discrimination of vegetable oils

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**Abstract**—The edible vegetable oils such as virgin olive oil (VOO), argan oil (ArO ) and almond oil (AIO) have a high nutritional and therapeutic value. In fact, they contain fatty acids, triglycerides and very important minor compounds such as anti -oxidants and vitamins.

In this work we collected 40 samples of oils (13 VOO, 14 AIO and 13 ArO). A chemical characterization of these samples was carried out by determining acid-, peroxide- and iodine indices according to the AFT method indices, Ref. 60.204, Dec.1985. In informal markets, these oils undergo adulteration for the purpose of material gain while Moroccan companies use these oils as finished products or first raw. So, in this work we have established a cost-effective method to control the quality of these oils presenting high added value.

It is in this context that we have involved a chemometric treatment using algorithms as PCA, PLS and K-means on data from middle-infrared spectroscopy between 600 and 4000 cm<sup>-1</sup>. This has allowed us to detect small differences between these oils. So, such a coupling between chemical analysis methods on the one hand and chemometric statistical treatment on the other hand, would be a fast, accurate and less expensive tool to control the quality of edible oils in the food industry.

**Keywords**—edible oils, acidity, peroxide, FT- SMIR, Chemometrics, food industry

## Recognition of 3D Objects using Heat Diffusion Equations and Random Forests

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**Abstract** —3D object recognition is an area that attracts the intention of many researchers, this recognition is performed using a system containing a set of steps. In the attribute extraction step, the heat diffusion equations have been used to calculate the object characteristics. Random forests are adopted in the classification stage; this approach is a set of classifiers used to make a decision with reference to votes. Improving the recognition rate is the purpose of this work.

**Keywords**— 3D object recognition, heat diffusion equations, random forests, recognition rate.