The 5th
International Conference on Business Intelligence,
April 17 - 19, 2019, Beni Mellal, Morocco

BOOK ABSTRACT

Table des matières

Preface

On behalf of the organizing committee of the Fourth International Conference on Business Intelligence (CBI'19), we would like to welcome all guests and participants. This conference was held at Beni Mellal city, Morocco, in an effort that was jointly by the Faculty of Sciences and Techniques (FST), the laboratory of Information Processing and Decision Support (TIAD) and the Association of Business Intelligence (AMID).

We received more than 90 papers. These items have been sent to members of the program committe for rigourous evaluation. The topics of accepted papers include software engineering, datamining, signal and image processing, datawarehousing, telecommunications. After the review process, we were able to accept 35 as regular papers and 38 as posters.

For the colleagues coming from abroad, we hope they will enjoy their stay in Morocco. Hoping that by the end of the conference they will establish both professional and personal relationships.

We would like to thank the president of Sultan Moulay Slimane, the Dean of Faculty of Sciences and Technics for their support to the conference and everyone who contributed to the success of this conference.

We are highly thankful to keynotes speakers, authors for sumbitting their work for this conference and the IGI global for accepting to publish a special issue of bests accepted papers.

We would like also to thank our sponsors, USMS, FST and AMID for their support, it was not possible to organize conference without their support. Finally, we thank all volunteers, and reviewers who helped to success this event

Organizing committe Chairs

Mohamed FAKIR Mohamed BASLAM Rachid EL AYACHI

Keynote Speeches

Keynote Speech 1: Intelligent Systems on Paper Currency Recognition

Muhammad Sarfraz
V. Dean of Research & Graduate Studies
College of Computing Sciences & Engineering
Kuwait University

Biography—Muhammad Sarfraz is a Professor and V. Dean of Research and Graduate Studies in Kuwait University. He received his Ph.D. from Brunel University, UK, in 1990. His research interests include Computer Graphics, CAD/CAM, Pattern Recognition, Computer Vision, Image Processing, and Soft Computing. He is currently working on various projects related to academia and industry and has been keynote/invited speaker at various platforms around the globe. He has advised/supervised around 66 students for their MSc and PhD thesis. He has more than 330 publications in the form of various Books, Book Chapters, journal papers and conference papers. Prof. Sarfraz is member of various professional societies including IEEE, ACM, IVS, IACSIT, and ISOSS. He is a Chair, member of the International Advisory Committees and Organizing Committees of various international conferences, Symposiums and Workshops. He is the reviewer, for many international Journals, Conferences, meetings, and workshops around the world. He is Editor/Guest Editor of various International Conference Proceedings, Books, and Journals. He has achieved a variety of awards in education, research, and administrative services.

Keynote Speech 2: Ambiguity in Arabic text mining: challenges and solutions

Azzeddine Mazroui
Professor at the Faculty of Science of Mohammed First University,
Oujda, Morocco

Biography—Azzeddine Mazroui is a full Professor at the Faculty of Science of Mohammed First University, Oujda, Morocco. In 1993, he obtained his PHD in Statistics from Pierre & Marie Curie University, Paris 6, France. He also obtained in 2000 a 'Doctorat d'état' in Approximation from the Mohammed

First University, Oujda, Morocco. Since 2006, his research is oriented towards natural language processing. He is a member of the Research Laboratory in Computer Science at University Mohammed First and Director of the Natural Language Processing Team. He participated in the development of several open source tools for the Arabic Natural Language Processing (Alkhalil Morpho Sys - Alkhalil POS Tag - Alkhalil Lemmatizer - Alkhalil Stemmer - Alkhalil Diacritizer - Al-Mus'haf Corpus - ....). He also supervises several theses and is a member of several international research projects.

Keynote Speech 3: The Application of Forecasting Techniques in Telecommunications and Information Systems

A. Manuel de Oliveira Duarte
Dept. Electronics and Telecommunications, University of Aveiro
Aveiro, Portugal

Biography— Anibal Manuel de Oliveira Duarte is a full Professor at Department of Electronics and Telecommunications at Institut of Telecommunications, University of Aveiro.

He received his Master and PhD degrees from the University of Essex in 1981 and 1984 respectevely. His research areas focus on technique developments and approaches for: Very high speed wireless systems; Integration of wireless devices in multi-disciplinary platforms; efficient spectrum management and energy consumption reduction in wireless systems; Channel and devices physical modelling.

Keynote Speech 4: Decision-theoretic planning for multi-robot systems in public space

Abdelillah Mouaddib
Professor at Caen Basse-Normandie University
Caen, France

Abdelillah Mouaddib is a Professor, exceptional class, at the University Caen Basse-Normandie. He completed his secondary studies in Beni Mellal, and university in Nancy in France where he obtained his Bachelor, Master, DEA and PhD degrees in Computer Science. In 1995, he was appointed lecturer, then in 2001, Professor at the Caen Basse-Normandie University. He has participated

in several national and international projects with leading academics and industrialists such as Massachussette University, USA; "The sapienza" Italy; McGill, Canada; global research centers like NASA between 1999-2003, the DGA from 2003 to 2014, manufacturers like General Motors, USA, THALES, Dassault, Airbus, EADS. He has participated in the production of more than 150 publications, thesis and scientific reports.

Keynote Speech 5: Comment l'Intelligence Artificielle peut-elle améliorer la qualité de l'apprentissage?

Rachida Ajhoun
Professeur à l'ENSIAS
Université Mohammed V Rabat, Maroc

Biography—Rachida Ajhoun est professeur de l'enseignement Supérieur à l'ENSIAS (Ecole Nationale Supérieure d'Informatique et d'Analyse des Systèmes) Université Mohammed V Rabat, Maroc. Elle a obtenu son diplôme de doctorat d'état en sciences informatiques (adaptabilité des cours à distance) de l'Ecole Mohammadia d'Ingénieurs, Maroc en 2001. Elle est membre fondateur du e-Learning Center de l'Université Mohamed-V-Rabat. Elle a été nommée directrice de ce centre de 2011- 2015. Responsable de l'équipe de recherche LeRMA (Learning and Research of Mobile Age) à l'ENSIAS. Elle est responsable de plusieurs projets (recherche et formation) nationaux et internationaux en e-Learning. Pr. AJHOUN a participé à plusieurs projets de formation en e-Learning et MOOCs. Elle est responsable du projet « Production du premier MOOC marocain » soutenu par l'AUF en 2013. Conseillère technique au sein du Ministère de l'enseignement supérieur, de la recherche scientifique et de la formation des cadres et responsable du projet "Ressources Pédagogiques Numériques" du programme e-SUP durant 2013-2014. Elle est membre fondateur de l'association GUIDE (Global Universities in Distance Education) crée en 2005 et représentante de la région Afrique entre 2008-2012. Elle est membre senior de l'IEEE, membre du comité consultatif de la conférence EDUCON. Elle est aussi membre fondateur et présidente de l'association e-ngn ((e-Next Generation Networks) entre 2008 et 2013, siégé à l'ENSIAS, UM5-Rabat. Elle est l'auteur et co-auteur de plus de soixante articles et des communications et auteur d'un livre et de 3 chapitres de livres sur l'e-learning. Directeur de 14 thèses en digital Learning dont 7 soutenues entre 2009 et 2017.

Keynote Speech 6: An approach based on machine learning of latent semantics from textual (unstructured) data

Hammou FADILI
Professor at Conservatoire National des Arts et Métiers (CNAM)
Paris, France

Biography—Hammou FADILI is a researcher at Conservatoire National des Arts et Métiers (CNAM). He is a member of the information systems team, named Ingénierie des Systèmes d'Information et de Décision (ISID). Also, he is a technological manager and member of the scientific council of the France-Maghreb program. His research work concerns especially these areas: Semantic Web, WEB 3.0, Machine learning (supervised, unsupervised, etc.), Digital Humanities, Automatic Natural Language Processing (NLP), Language & Context Modeling, Detection and anonymisation of sensitive data, Semantic mining of structured and unstructured data, (Linked, Big, Smart) data. He is a member of the program committee and member of the organization committee for various conferences. He is also a reviewer for some journals. He is (or was) involved in many ANR or European research projects.

Keynote Speech 7: Research Methodology

Ebad Banissi
Professor in the Department of Informatics
London South Bank University

Biography— Professor Ebad Banissi is a full research professor in the Department of Informatics at London South Bank University. He joined the University in 1994 with a PhD in Computer Graphics from Brunel University. His lecturing and research interests lie in the area of Computer Graphics and Visualisation and Analytics. Ebad leads the Visualisation and Graphics Research Unit (VGRU) which currently has 9 doctoral research students and a number of Knowledge Transfer Partnership associates. He also coordinates the postgraduate degree dissertations within the Department of Informatics. He has been a college member of the EPSRC and is a member of the University's Research Degrees Sub-Committee, and co-chair of the Engineering, Science and Technology Sub-Committee. Ebad is one of the original members of the Information Visualisation (IV) Forum in Europe and the Computer Graphics, Imaging and Visualisation (CGIV) Forum in Asia, and he has chaired number of international conferences. He was the one of the founding members and chair

of the Information Visualisation Society. He set up the annual workshop on "PhD workshop on Computer Graphics and Visualisation". He is a member of both IEEE Computer Science and ACM SIGGRAPGH.

Keynote Speech 8: Learning Analytics

Pedro Teixeira Isaias
Professor at the University of Queensland
Brisbane, Australia

Biography— Pedro Teixeira Isaias is an associate professor at the University of Queensland, Brisbane, Australia. Previously he was associate professor at the Universidade Aberta (Portuguese Open University) in Lisbon, Portugal, responsible for several courses and director of the master degree program in Management / MBA. He was director of master degree program in Electronic Commerce and Internet for 10 years. He holds a PhD in Information Management (in the specialty of information and decision systems) from the New University of Lisbon. As an author of several books, book chapters, papers and research reports, all in the information systems area, he has headed several conferences and workshops within the mentioned area. He has also been responsible for the scientific coordination of several EU funded research projects. He is also member of the editorial board of several journals and program committee member of several conferences and workshops. At the moment he conducts research activity related to E-Commerce and E-Business, E-Learning, Information Systems in general, and WWW related areas.

Papers Abstracts

Session_01: Database and Web environment

Chair: Ebad BANISSI/Hicham ZOUGAGH

QoS-Aware Services composition using Genetic Algorithm and Skyline

Ayoub EL-ALAMI and Abdellatif HAIR
LMACS, FST Benimellal
Benimellal, Morocco
ayoubalami6@gmail.com, abd_hair@yahoo.com

Abstract—Service oriented architecture based on the concept of construction of new value-added services, named service composition, constructed by the selection and integration of existing web services. In the composition process, several web service with identical functionality can be considered as candidate services, but with different quality of services (QoS) attributes. Therefore, the QoS-award web Services composition problem aims to select a one service for each of the component Web services of the composition, in such a way the overall QoS of the constructed composition be optimal. However, in this work we propose an approach based on genetic algorithm using Pareto dominance and a QoS model to calculate its values, and define the fitness and mutation policy of genetic algorithm. The aim is to resolve this problem of composition more efficiently, by reduce the set of candidate services and consequently reduce the complexity of algorithm. Experimental results demonstrate the effectiveness of our improved genetic algorithm compared to the standard one.

Keywords—web service; genetic algorithm; QoS award composition.

Internet of Things and Big Data technologies for maritime container terminal management

Farah AL KADERI, Rim KOULAL and Mohamed RIDA
LIMSAD labs, Mathematics and Computing Department,
Faculty of sciences Ain Chock, Hassan II University,
Casablanca, Morocco
alkaderi.farah@gmail.com, rim.koulali@gmail.com, mhd.rida@gmail.com

Abstract— Due to the continuous growth of the world trade, transportation domain and logistics management are facing numerous challenges. The management of maritime containers happens to be a crucial task due to its major role in guaranteeing the quality of the goods transport service. Advances in Internet of Things and Big Data technologies have contributed to the creation of intelligent and powerful systems for various complex environments. In this paper, we give an overview of the container terminal activities management, for which we propose an online management and monitoring integrated system. The proposed system is based on a multi-layer architecture using up-to-date technologies of Internet of Things and Big Data. We will describe each layer of the system architecture and present detailed explanations about the functions and goals of each one.
Keywords—Internet of Things, Big Data, Maritime container terminal management, multi-layer architecture.

On-Demand Reporting Webservices Using Resilient Distributed Datasets

FIKRI Noussair, RIDA Mohamed, ABGHOUR Noreddine, MOUSSAID Khalid and ELOMRI Amina
Faculty of sciences Ain Chock, Hassan II University,
Casablanca, Morocco
noussair.fikri@gmail.com, Mohamed_ridama@yahoo.fr,
nabghour@gmail.com, khmoussaid@gmail.com and lomri.am@gmail.com

Abstract—In this paper we are proposing a reporting approach based on dynamic data delivery using, RDD (resilient distributed datasets) and web services concept. This architecture has the same properties of an Extract-Transform-Load based system, except one different property, our architecture is an Extract-Transform-Deliver based system. A data warehouse is a container of a large amount of data. Using Big data approach helps us to build a fast and real time processing system in order to produce an up-to-date system. Delivered data are in the form of light http response. This approach is served as a solution for lack of performance and memory consumption problems in ETL based systems.
Keywords—ETL, RDD, real-time, discretized, big data, spark.

Contribution to the improvement of evaluation approaches in MOOC platforms

Younes-aziz BACHIRI and Hicham MOUNCIF
Laboratory of innovation in mathematics, applications and information technologies. Sultan Moulay Slimane University, Morocco
bachirix@gmail.com, h.mouncif@usms.ma

Abstract— Abstract— With the fast-growing Massive Open Online Courses (MOOC) community and the increase in the number of Learning Management Systems (LMSs) available online, the amount of collaboration and information-sharing is still overwhelming due to the massive number of participants and the limited range of collaborative tools. Notwithstanding their potential to support learning and education, MOOCs have a major concern related to attrition rates and course drop out. Even though the number of learners who enroll in the courses tends to be in the thousands range, only a very small portion of the enrolled learners complete the course. Gamification with NLP techniques is the ultimate solution, our goal is to create an automated system that can take as input a text and produce as output questions for assessing a reader's knowledge. the game (Quiz bowl) rises the challenge between at least two teams, usually consisting of four or five players each. Learners see questions and try to score points for their team by buzzing first and responding with the correct answer.

Keywords—MOOC; LMS; NLP; natural language processing; generating WH questions; e-assessment; gamification; Moodle; EDX.

Exploiting Blockchains to improve Data Upload and Storage in the Cloud

Yassine El Khanboubi and Mostafa Hanoune
Faculty of sciences Ben M'Sik, Hassan II University, Casablanca, Morocco
elkhanboubi.yassine@gmail.com, mhanoune@gmail.com

Abstract— Cloud computing is an information technology that enables different users to access a shared pools of confi-gurable system resources and different services that can be rapidly provisioned with minimal management effort, the cloud platforms faces numerous challenges including Data deduplica-tion, Data Integrity, Bandwidth consumption…, in this paper we've adopted the Blockchains technology - which is a relative-ly new technology -

that emerged for the first time as the cryp-tocurrency Bitcoin and showed its effectiveness in securing data and assuring data integrity; tree of the major challenges in the cloud which are Data Deduplication, Storage and Bandwidth usage.

Keywords—Bandwidth; Blockchain; Chunking; Cloud Com-puting; CSP; Execution Time; Genesis Block; Hash; Merkle Tree; Storage space.

A Recommender approach for an e-learning platform based on social network analysis and collaborative filtering

Youness MADANI, Mohammed ERITALI and Jamaa BENGOURRAM
Sultan Moulay Slimane University
Faculty of Sciences and Techniques
younesmadani9@gmail.com, m.erritali@usms.ma, bengoram@yahoo.fr

Abstract—In recent years, learning online using the e-learning platforms becomes indispensable in the teaching process. Companies and scientific researchers try to find new optimal methods and approaches that can improve education online. In this paper, we propose a new recommendation approach for recommending relevant courses to learners. Our method is based on social filtering and collaborative filtering for defining the best way in which the learner must learn, and recommend courses which better much the learner's profile and social content.

Keywords— E-learning, Collaborative filtering, Social Filtering, Sentiment, Analysis, Social Network

An e-Control Automated Adminstrative Information System for Kuwait High Schools

Muhammad Sarfraz, Nouf Mejwal and Alya Almutairi
Department of Information Science, College of Computing Sciences and Engineering, Kuwait University
prof.m.sarfraz@gmail.com, nouf.mejwal@grad.ku.edu.kw, alya.almutairi@grad.ku.edu.kw

Abstract— Automation in school systems is an important aspect to deal with the speed and accuracy of the day-to-day activities. Traditional paper-based systems are neither effective on one side and nor error-prone on the other side. This work contributes to develop an efficient and effective information system for administering the grading system in Schools. Initially, the system

has been designed, analyzed and implemented for high schools in Kuwait. However, it can be enabled to orient to the environment in other countries too after collecting the necessary requirements. In Kuwait high schools, the Control Department is the most important department which is associated primarily with student's grades. Currently, the Control Departments deal with traditional systems which are slow, un-automated, error-prone and fallible. Such systems are causing complicated problems to the schools including making mistakes and delaying to deliver the grades. To overcome these problems, we develop e-Control system to simplify the work mechanism of Control Departments and provide agile and reliable features. The proposed system will be able to reduce the use of paper, save time and efforts, ensure the confidentiality, integrity and availability, and guarantee the accuracy of data and the system. It is a web-based database system which administers and ensures excellent performance for all Control Department tasks. This paper provides all steps required, starting from collecting requirements, analysis, construction of the system and the impact of implementing e-control system at school control department. The proposed system is secure, robust, accurate and efficient. It is accessible through web from anywhere and anytime to the authorized personals.

Keywords—Information system, e-control, database, management, education

Session_02: Natural Language Processing

Chair: Hammou FADILI/Rachid EL AYACHI

A new Approach of Natural Language Processing to correct the Result of an OCR

MAAROUF Otman, EL AYACHI Rachid and BINIZ Mohamed
Department of Computer Science Faculty of Science and Technology
Sultan Moulay Slimane University
maarouf.otman94@gmail.com, rachid.elayachi@usms.ma,
mohamedbiniz@gmail.com

Abstract—Optical Character Recognition (OCR) is a recognition system used to identify the contents of a scanned image. Sometimes, this system gives erroneous results, which necessitates a post-treatment, called Natural Language Processing (NLP), for the sentences correction. In this paper, we propose a new method for syntactic and semantic correction of sentences; it is based on the frequency of two correct words in the sentence and a recursive

technique. This approach starts with the frequency calculation of each two words Successive in the corpora, the words that have the greatest frequency build a correction center.

Keywords—OCR, NLP, sentences correction, recursive technique, correction center.

A new approach for Arabic handwritten text lines segmentation

Elkhayati Mohsin, Elkettani Youssfi and Mourchid Mohammed
Faculty of science, Ibn Tofail University
Kenitra, Morocco
mohsinelkhayati@gmail.com, yousfi.elkettani@uit.ac.ma,
mourchidm@hotmail.com

Abstract— In a character recognition system, the segmentation phase is critical since the accuracy of the recognition depend strongly on it. In the case of the handwriting without constraint, the writing fluctuates can present an important slant with regard to the horizontal; two adjacent lines can overlap, giving back the delicate separation. In general, there are three classes of methods for the segmentation of text lines: either through searching for separating locations between lines, or by searching for physical units such as Connected Components (CC) constituting a line, the third class looks for the baseline of each word and groups together those who participate in the same line. After an overview of lines segmentation approaches, we have introduced our method emphasizing its simplicity, speed and originality. The proposed approach detects the starts components of lines in the first stage. In second stage it define à number of agents who start the process of segmentation between begin of lines, every agent have a goal to reach the edge of the document by passing through the correct path, the algorithm used by agents is based on morphological process, Arabic handwritten text characteristics and a communication system between agents. Experimental results on a data set of Arabic handwritten documents show that this approach is a promising solution for extracting handwritten curved text lines.

Keywords— Text line segmentation; Handwritten Arabic Document; Multi agent system

Documents Indexing and Summarization

R. KHALLOUFI, R EL AYACHI and M. BINIZ and M. FAKIR

Department of Computer Science Faculty of Science and Technology
Sultan Moulay Slimane University
rida.khalloufi@gmail.com, rachid.elayachi@usms.ma,
mohamedbiniz@gmail.com, fakfad@yahoo.fr

Abstract— Document indexing is one of techniques whose facilitate access to a set of documents (corpus), and allows a user to find the contents which matches with the information needs of the user (query). Without indexing, the search engine would scan every document in the corpus, which would require considerable time and computing power. A corpus contains a large number of documents and every document contains a hundreds or a thousands of words. The big Idea of this search is minimizing this huge number of words, with preservation the meaning of documents, so in order to index the corpus.
Keywords: Indexing, Document, Summarizing, Corpus, Inverted indexing.

English Spoken Digits Database under noise conditions for research: SDDN

A. OUISAADANE[1], S. SAFI[1] and M. FRIKEL[2]
[1] Department of Mathematics and Computer Science
Polydisciplinary Faculty Sultan Moulay Slimane University
Benimellal ,Morocco
[2] GREYC Laboratory, ENSICAEN School, LAC Laboratory
Caen-Normandie University
Caen, France
Abdelkbir.wiss@gmail.com, safi.said@gmail.com, miloud.frikel@ensicaen.fr

Abstract— In this paper, we introduce a modified database for English spoken digits under all types of noise conditions (SDDN). This database was designed for use in scientific research, especially in the field of speech enhancement, nois robustness, background noise, speech recognition, noise reduction, signal processing. It was synthesized by a set of open source spoken numbers of the public on the network, in particular from Speech Commands Dataset v0.02 released by Google's TensorFlow and AIYteams. Various types of real and artificial noise were added for a SNR from 10 dB to -10 dB to make them more suitable for reality. The AURORA, CHiME3 and NOISEX-92 databases were used to select noise types. The aurora, chimie3 and colors noise databases were used to select noise types and other artificial types.
Keywords—SDDN, SNR, Speech Commands Dataset, noise.

Search for information in text files

El Hassani Mouhcine, Falih Noureddine and Bouikhalene Belaid
Laboratory of Mathematics Innovation and Information Technology (LIMATI)
Sultan Moulay Slimane University
Beni Mellal, Morocco
elhassanimouhcine@hotmail.com, nourfald@yahoo.fr, b.bouikhalene@usms.ma

Abstract—Many information becomes increasingly abundant and accessible on the Web, the researchers do not have needs to go to excavate in the books and the libraries, these require a knowledge extraction system from the text (KEST). Our goal is to identify the needs of a person to do, a search in a text, which can be unstructured and to retrieve the terms of information related to the subject of research then structure them into classes of useful information. These may subsequently identify the general architecture of an information retrieval system from text documents in order to develop it and finally identify the parameters to evaluate its performance and the results retrieved.

Keywords—Text mining; Data mining; data warehouse; Extraction of knowledge;

Session_03: Signal, Image and Video Processing

Chair: Muhammad SARFRAZ/Cherki DAOUI

The quantitatively and qualitatively Conservation of the Informations existing in Myopathy And Neuropathy Signals

[1]A. Dliou listi, [1]S.Elouaham, [1]R.latif, [1]M. Laaboubi and [2]H. Zougagh
[1]ENSA Agadir, Morocco
[2]FST Beni Mellal
dliou.azzedine@yahoo.fr, elouaham-samir@hotmail.com, latif_rachid@yahoo.fr, laaboubi@gmail.com, hzm_1979@yahoo.fr

Abstract— The electromyogram (EMG) is an important measurement to assess the health of muscles and the nerve cells that control them. The main objective of this paper relates to the treatment and analysis of non- stationary EMG signals. In this area of information processing, we propose denoising techniques that can reduce noise affecting the EMG signals. These techniques are the Ensemble Empirical Mode Decompositions (EEMD) and the Empirical

Mode Decomposition (EMD). The obtained results (quantitatively and qualitatively) illustrate the effectiveness the EEMD that permits of reducing noise that interferes with normal and abnormal EMG signals with higher resolution than other techniques used. This work shows utility of the combination of the EEMD techniques in analyzing the noised EMG signals
Keywords— EMD, EEMD, MAUPs EMG.

Line Area Monitoring using Structural Similarity Index Implementation for supervising Car Reverse Test in driving license exam

Abderrahman AZI, Abderrahim SALHI and Mostafa JOURHMANE
Information Processing and Decision Laboratory
Sultan Moulay Slimane University
Beni Mellal - Morocco
Abderrahman.azi@gmail.com, ab.salhi@gmail.com, m.jourhmane@usms.ma

Abstract— Real-time motion detection in specific area is considered the most important task in every video surveil-lance system. In this paper, a novel real time motion detection algorithm introduced to process Line zones called Line Monitoring Algorithm (LMA). The algorithm integrates Bresenham's Algorithm and Structural Similarity Index (SSI) methods to achieve the better performance. Bresenham's Algorithm is used to collect Line Pixels from two given points. Then, the SSI is used for real-time calculation of similarity for Line motion detection. The most attractive side of using the LMA is that the algorithm does not need to compare all pixels of the whole images or regions for line areas monitoring. The algorithm has high capability, treatment speed and efficiency for motion detection and also demands less compilation time for the Hardware performance. The main objective of this paper is to use a video surveillance system implementing LMA to supervise the Car Reverse Test for driving license exam in morocco. The evaluation of experiment results implementing the proposed algorithm is reported in this paper.
Keywords—Bresenham's Algorithm, Structural Similarity Index, SSI, Motion detection, Line Monitoring Algorithm, LMA, OpenCV, Surveillance, Camera, video Surveillance System;

The diagnosis of neurologic disease by using the treatement of signal by applying the Mel Frequency Cepstral Coefficient (MFCC) method

[1]ZAYRIT Soumaya, [1]BELHOUSSINE DRISSI Taoufiq, [2]NSIRI Benayad and [1]AMMOUMOU Abdelkrim
[1]Laboratory Industrial Engineering, Information Processing and Logistics. Faculty of Science Ain Chok. University Hassan II - Casablanca, Morocco.
[2]Research Center STIS, M2CS, Higher School of Technical Education of Rabat, Mohammed V University in Rabat, Morocco.
zayritsoumaya@gmail.com, taoufiq_belhoussine_drissi@yahoo.fr, nsiri2000@yahoo.fr, ammoumou@gmail.com

Abstract— Parkinson disease is the second most common neurological syndrome after Alzheimer disease. This disease has a lot of symptoms such as trembling, rigidity, slowness of movement, difficulty with walking, communication, and the dysophonia.....al. In this paper we will see how the treatment of signal has been used to determine the diagnosis of this disease by applying the mel frequency cepstral coefficient MFCC method and the classifier support vector machines (SVM) or K Nearest Neighbor (KNN). This treatment is also used in determining the diagnosis of other diseases to which we will refer in this paper.

Keywords—Parkinson disease; Wavelet; MFCC, SVM

Semantic Annotation and Automatic Analysis of Video: Application to the Detection of Acts of violence in a Video Sequence

Rahil. I, Bouarifi. W and Oujaoura. M
Mathematical Team and InformationProcessing
National school of applied sciences ,
Safi, Morocco
imane.rahil@uca.ac.ma, w.bouarifi@uca.ac.ma, oujaouram@yahoo.fr

Abstract—The availability of visual information in the form of video does not cease to evolve exponentially, making manual processing very difficult and expensive. In order to facilitate efficient and fast automatic operation of fairly rich information contained in a sequence video, semantic annotation and automatic video analysis is now becoming a tool inevitable or even very useful to automatically and quickly detect certain acts of violence in public places. The purpose of this research topic is to realize an automatic system annotation

and semantic analysis of the visual content of the video. This system will generally include several phases: preprocessing the video, segmenting the content of the video, extracting the descriptors and characteristics of the video content, and finally the classification and recognition concepts contained in the video in order to extract and recognize the situations of acts of violence, current surveillance and control systems still require human supervision and intervention. This work presents a novel automatic violence detection system in videos appropriate for both, surveillance and control purposes.We reformulate this detection problem into the problem of analyzing and detecting objects and moves by building the key training data set guided by the results of a deep convolutional neural networks classifier,then assessing the best classification model.

Keywords—Classification, Deep learning, object detection

Predicting global solar radiation using Autoregressive Bayesian Regularization Artificial Neural Network

Mohammed Ali JALLAL[1]; Abdessalam EL YASSINI [1]; Samira CHABAA[1,2] ; Abdelouhab ZEROUAL [1] ; Saida IBNYAICH[1]

[1]Department of physics, Cadi Ayyad University Faculty of Sciences, Semlalia Marrakesh, Morocco

[1,2] Industrial Engineering Department, National School of Applied Sciences, Ibn Zohr University, Agadir, Morocco

mohammedali.jallal@edu.uca.ac.ma, abdessalam.elyassini@edu.uca.ac.ma, s.chabaa@uiz.ac.ma, zeroual@uca.ac.ma, ibnyaichsaida@gmail.com*

Abstract—In this investigation, we developed an intelligent model based on Autoregressive Bayesian Regularization Artificial Neural Networks (ABRANNs) to predict the global solar radiation parameter on a half hour scale in the region of Marrakech, Morocco, that consists of 35040 half hours of this parameter measurements recorded during two years (2013, 2014). The first year 2013 is used for training the model, and the second year (2014) is used for testing the robustness and the precision of the developed model. The obtained results demonstrate the efficiency and the accuracy of ABRANNs model to predict the global solar radiation time series. Moreover this model is very fast due to a fewer number of neurons in the hidden layer which diminish the computing load.

Keywords—Artificial Neural Networks; Bayesian Regularization Algorithm; Global Solar Radiation; Autoregressive model; Prediction.

Segmentation and Classification of Breast cancer

Ichrak KHOULQI, Najlae Idrissi
Laboratory of Information Processing and Decision Support
Faculty of Sciences and Technics
Sultan Moulay Slimane University
BeniMellal, Morrocco.
ichrak.khoulqi@gmail.com, n.idrissi@usms.ma.

Abstract— Breast cancer is the most frequent cancer in morocco with 36,1%[1],it is the second leading cause of death for women all over the world.The effective way to diagnose and treat breast cancer is the early detection because it increase the success of treatment and the chances to survive.Digitized Mammographic images is the one of the frequently used diagnosis tools to detect and classify the breast cancer at the early stage.To improve the diagnosis accuracy , computer aided diagnosis systems(CAD) is beneficial for detection and also it can reduce the rate among women with breast cancer.Generally,a CAD systems consists of four stages:Pretreatement,Segmentation,Features Extraction and Classification.In this paper we present some works in the development of CAD and our proposed approaches used in these stages cited above, in order to segment a breast tumor(microcalcifications) on mammographic images and classify it by choosing the algorithm that they give us a good rate using a technique of a vote.

Keywords—Breast Cancer, Segmentation, Classification, vote.

SmartiWash: Differentiate Fabric Types to Facitilitate Washing Clothes

Muhammad Sarfraz, Abdullah Ben-Nakhi and Abdulatif Alnsseem
Department of Information Science, College of Computing Sciences and Engineering, Kuwait University
prof.m.sarfraz@gmail.com, bennakhi1@gmail.com, abdltef_@hotmail.com

Abstract—Usually, washing clothes is a tedious process people deal with on daily basis. Many people have difficulties understanding how to do their laundry properly. In most case they end up putting red socks in with white

dress shirts. Some might even think that it is fine to put their suit jacket in with their jeans. These kinds of practices lead to waste of time and money. For example, the most common laundry problems are clothes shrinkage or color bleeding. SmartiWash system reduces clothing casualties in the washing process by creating a system that identifies the type of fabric which help the user to follow the proper washing instructions. The system determines the fabric type depending on the weave pattern of the textile using machine learning model. Based on TensorFlow platform which is an open source software library produced by Google engineers and researchers that support machine learning and deep learning. TensorFlow provides easy to read code written using Python language. TensorFlow runs on deep convolutional neural network model called Inception-V3. Inception-V3 image classification reaches accuracy 98% in some cases and error rate as low as 3.46%. The system trained using different weave patterns of microscopic captured images as an input. The more the images used in the training the higher the accuracy results. In this case each fabric type has a unique feature to be identified by the system and yields higher accuracy result.

Keywords—Image processing, pattern recognition, machine learning, artificial intelligence, image classification

Session_04: Telecommunications & Signal

Chair: A. Manuel DE OLIVEIRA DUARTE/Mourad NACHAOUI

Satellite Imagery Noising with Generative Adversarial Networks

Mohamed Akram Zaytar and Chaker El Amrani
Faculty of Sciences and Technology,
Tangier, Morocco
MedAkramZaytar@gmail.com, celamrani@gmail.com

Abstract—Using Satellite Imagery for Supervised Learning Problems can be quite challenging when we don't have complete information due to natural phenomena (Clouds, Fog, Haze, ..). Solving this problem will improve the way we annotate remote sensing data and make use of it in a world where satellite imagery can be a great resource to have in your big data pipeline. In this Paper, we present a Generative Adversarial Network (GANs) Model that can generate natural atmospheric noise that serves as input to Supervised Machine Learning Algorithms.

Keywords—Remote Sensing, Satellite Imagery, Deep Learning, Generative Adversarial Networks

Generalized serially concatenated codes: construction and iterative decoding

[1]E.AZOUGAGHE, [1]A.FARCHANE, [2]M.Belkasmiy and [1]Said SAFI
[1]Department of Mathematics and Informatics Polydisciplinary Faculty, Sultan Moulay Slimane University Beni Mellal, Morocco
[2]Department of Communication Technology, Mohammed V University, National School of Computer Science and Systems Analysis (ENSIAS) Rabat, Morocco
{essaidinfo, a.farchane ,safi.said}@gmail.com, Belkasmi@ensias.ma

Adresse mails

Abstract—Abstract—A generalized serially concatenated block (GSCB) codes with an interleaver consists of the cascade of an outer code, an interleaver permuting the outer codewords bits, and an inner code whose input words are the permuted outer codewords. The construction can be generalized to h cascaded codes separated by h-1 interleavers. We introduce a new construction and decoding of serially concatenated block (GSCB) codes having high code rate. The mean idea behind his construction is using shortening code. In the simulation step, our study is based on BCH family. The SISO decoder used is Chase-Pyndiah algorithm. The effects of various component codes, the number of iterations, interleaver size and structure are investigated using computer simulations. Comparisons with parallel concatenated block (PCB) codes are performed, showing that serially concatenated block codes offer superior performance.

Keywords—RS codes, Chase decoding, Chase-Pyndiah decoder, iterative decoding, serially concatenated codes.

Wideband Millimeter -wave Antenna Array for 5G Wireless Applications

KHABBA Asma, IBNYAICH Saida, and HASSANI Moha M'Rabet
Instrumentation Signals and Physical Systems (ISPS) Laboratory, Faculty of Science Semlalia, Cadi Ayyad University, Marrakech, Morocco
asma.khabba@edu.uca.ac.ma, s.ibnyaich@uca.ma, hassani@ucam.ac.ma

Abstract—This manuscript studied a compact wideband millimeter-wave antenna to be used for 5G wireless communications. The proposed antenna consists of a microstrip patch antenna printed on the top layer of Rogers RT5880 substrate, and the bottom layer of substrate consists of the partial ground plane to operate at the frequency band of 24.5-32GHz which is a prospective frequency band for future 5G mobile applications. The linear phased array antenna used ten antennas printed on the top layer of the substrate Rogers RT5880 to achieve high gain property. The fundamental properties (in terms of S-parameters, gain, efficiency, beam-steering) have been investigated in this paper.

Keywords—5G, Millimeter-wave, Wideband, Microstrip Patch antenna, Wireless communication, Linear Phased Array

Design of Array Antenna for RFID Technology Applications

Abdessalam EL YASSINI[1]; Mohammed Ali JALLAL[1]; Saida IBNYAICH[1]; Abdelouhab ZEROUAL[1]; Samira CHABAA[1,2]*

[1]Department of physics, Cadi Ayyad University Faculty of Sciences, Semlalia Marrakesh, Morocco

[1,2]Industrial Engineering Department, National School of Applied Sciences, Ibn Zohr University, Agadir, Morocco

abdessalam.elyassini@edu.uca.ac.ma, mohammedali.jallal@edu.uca.ac.ma, ibnyaichsaida@gmail.com, zeroual@uca.ac.ma, s.chabaa@uiz.ac.ma

Abstract— This paper present an array Reader antenna for RFID system having high directivity and gain, Such antenna structure consists of two main radiation patches circular connected in parallel with an impedance of 50 ohms, this patch is designed on a FR4 substrate with dielectric constant (εr) of 4.3 and loss tangent of 0.02. It operates in ISM (Industrial, Scientific and Medical) band with resonant frequency of 2.45 GHz. The gain of the proposed antenna is 4.12 dBi and the directivity of 8.48 dBi with a reflection coefficient (S11) of -27.78 dB. The proposed antenna is designed and simulated in the HFSS and CST Microwave Studio.

Keywords—RFID ; Array Antenna; Patch Antenna

3-D Multipolarized antenna arrays in Massive-MIMO system for 5G Wireless Communications

Abdelhamid RIADI[1], Mohamed BOULOUIRD[1;2], and Moha M'Rabet HASSANI[1]

[1] *Instrumentation, Signals and Physical Systems (I2SP) Group, Faculty of Sciences, Semlalia, Cadi Ayyad University, Marrakesh, Morocco*
[2] *National School of Applied Sciences of Marrakesh (ENSA-M), Cadi Ayyad University, Marrakesh, Morocco*
abdelhamid.riadi@edu.uca.ac.ma, m.boulouird@uca.ac.ma, hassani@ucam.ac.ma

Abstract— Massive Multiple-Input-Multiple-Output (MIMO), is a new technology that potentially can offer large antennas arrays, where the Base Stations (BS) are equipped with a large number of antennas (i.e., ten, hundred or more) simultaneously serving multiple single-antenna users. In this paper, the multipolarized antennas in Massive MIMO sys-tems is used to decrease the channel orthogonality. The 3-D multipolarized uniform linear array massive-MIMO system transmission scenario is established. Simulation result shows that the multipolarized Massive MIMO provide a low channel orthogonality (i.e., favorable propagation) compared to unipolarized Massive MIMO system. The multipolarized antennas is the best choice for the new technology massive MIMO.
Keywords—3-D multipolarized antenna, MIMO, Base Stations, 5G Wireless Communications,

Robust Control of three phase Grid Connected PV System

Salma Zouga, Mohamed Benchagra and Ailane Abdallah
ISERT Laboratory
ENSA -Khouribga
Khouribga, Morocco
zouga.selma@gmail.com, m.benchagra@gmail.com, abd_ailane@yahoo.fr

Abstract—This paper presents the control of current injected by a photovoltaic system connected to the grid and the regulation of the voltage at the point of common coupling. The proposed control model ensures the maximum extraction of the power from PV system through Incrementation of Conductance control. And for the grid side control it consists, on the one hand, to regulate DC bus voltage, to control the injection of active and reactive powers into the grid. And on the other hand the control allows a voltage regulation at the common coupling point(PCC). The principle of the adopted model uses the current and voltage cascade regulation loops based on conventional controllers type PI in rotating d-q synchronous reference frame.

In order to evaluate the performance of the proposed control, a series of simulations have been made under the MATLAB/SIMULINK environment.

Keywords—Grid-connected, PV System, current controller, Voltage controller, Grid, cascade regulation loops.

An Efficient Electronic Medical Record System

Muhammad Sarfraz, Anwar Al-Hussainan, Farah Mohammad and Hanouf Al-Azmi
Department of Information Science, College of Computing Sciences and Engineering, Kuwait University
prof.m.sarfraz@gmail.com, Cfw.alhusainan@hotmail.com, Farah.Mohammad@grad.ku.edu.kw, Bluekodachi@gmail.com

Abstract—Patients may find difficulties with finding their medical results and tracking their health history. They may also face some problems with setting an appointment with a doctor just to read their test results; it is very time consuming and it may take several days or even weeks to find the most convenient appointment with the doctor to only view your test results. Another problem we are currently facing is seeking for a blood donator when in need. It is a very complex process to find the right person to get blood from. Some seekers may find it very difficult to search for donators because there is no specific system that may help them to seek for blood. Most successful businesses are those that are great with their services. During a patient's life, patients usually struggle to find their medical results ready and combined in one place. An Electronic Medical Records (EMR) system would surely assist patients to look for their results and have them all saved in their profile. This paper proposes, designs, analyzes and develops a new efficient and novel EMR system. This system is specifically meant for Kuwait and is called as Kuwait Electronic Medical Records (KEMR) system. However, it can be oriented to the needs of other countries too by making some changes in the requirements. The KEMR offers several of services that help patient through their journey. It manages their appointments and medical records as well as sending tests through emails to different hospitals and medical labs in Kuwait. It also helps the hospitals to use this system in order to extend, improve and control their daily activities to incorporate it into a new automated interface. This actually saves time and effort for all patients, hospitals and medical labs. Providing such a system which will facilize the patients' ability to access their test results from

their home or anywhere else in anytime as well as sharing their results easily with an expert. The proposed system is a web based system. It doesn't only use patient's data to utilize them by clinicians to promote the overall quality, but also helps any citizens who need it in the blood notification features. The system plays a vital role in the blood bank as blood is the necessity of everyone. The system is more efficient that patients can seek and search for blood donors easily. Implementing this system makes patients life easier in so many ways. The proposed system is secure, robust, accurate and efficient.

Keywords—Automation, management system, database, Electronic Medical Records, e-services

Session_05: Telecommunications & Networking

Chair: Abdelouhab ZEROUAL /Najlae IDRISSI

Optimization of the Energy Management of « LEACH » Protocol in WSN

Mariam Belghzal, Fatima Es-sabery, Abderrahim Salhi, Abdellatif Hair
Information Processing and Decision Laboratory Faculty of Sciences and Technology Sultan Moulay Slimane University
Beni Mellal, Morocco.
belghzal.mariam@gmail.com ; fatima.essabery@gmail.com ; ab.salhi@gmail.com ; abd_hair@yahoo.com

Abstract— The Wireless Sensor Network (WSN) is an emerging technology that has delivered innovative capabilities. However, the energy capacity of wireless sensors is very limited because of the reduced size of their batteries, which is why today many studies focus on the management of the energy consumed by these sensors. In the vision of energy optimization of WSN, we contributed with an improvement of the hierarchical routing algorithm LEACH" in order to reinforce its efficiency, its capacity to preserve the energy of the WSN in large areas, and low density of nodes. The protocol "LEACH" presents in its planning results, transmissions at very long distances, these transmissions force the sensors of the network, to use an additional energy for powering the amplification circuits, to be able to transmit data. Indeed, the amplification exhausts the energy of the sensors and condemns them to death rapidly. So, our approach consists of modifying the routes calculated by "LEACH" in order to eliminate the transmissions that needs too much energy, by loading intermediate nodes (sensors) in the WSN, to relay these transmissions. This

technique has shown its great ability to preserve, for a long time, the energy and the number of nodes in WSNs of large areas, and low density of nodes. These results are confirmed by some different tests performed on a set of networks of different parameters.
Keywords—WSN; Hierarchical Routing; LEACH; PEGASIS; Optimization of Energy; MOD-LEACH.

Toward exhaustive and scalable look-up service Middleware for resource constrained IoT devices.

R. zoubairi, R. El Ayachi and H. Zougagh
Computer Sciences Department,
Faculty of Sciences and Techniques
Sultan Moulay Slimane University
Béni-Mellal, Morocco
rida.zoubairi@gmail.com, rachid.elayachi@usms.ma,
fst.zougagh@gmail.com

Abstract— Many efforts have been deployed to connect things into the digital world and making them available on the networks, to interact and integrate them into existing applications. The abstraction of IoT entities as a service following the Service-Oriented Paradigm is widely used to mask their communication heterogeneity and decoupling interacting services from hardware and/or software encoding specifications. As machine interpretable Semantic Web technologies permit hiding syntactic-level heterogeneity and modeling IoT automated service discovery, invocation, composition and orchestration, there not suitable for large scale smart buildings due to the over cost of semantic reasoning, while the computational resources of IoT objects are constrained. In this paper, the proposed IoT-semantic-service-discovery middleware is focused on considering exhaustive and scalable look-up service research in smart buildings dealing with service mobility and resource-limited devices requirements.
Keywords—IoT service discovery, Scalable middleware, Resource-limited things, and Smart buildings.

A Game Theory Approach for UAV-based Flying Access Networks

Hamid GARMANI, Driss Ait Omar, Mohamed El Amrani, Mohamed BASLAM and Mostafa JOURHMANE

Information Processing and Decision Support Laboratory,
Faculty of Sciences and Technics, Sultan Moulay Slimane University,
Beni Mellal, Morocco
garmani.hamid@gmail.com, aitomard@gmail.com,
med.el.amran@gmail.com, baslam.med@gmail.com, jourhmane@gmail.com

Abstract—Wireless communications with unmanned aerial vehicles (UAVs) offer a promising solution to expand wireless communication coverage on demand. In recent years, the area of wireless communications for UAV system has been receiving enormous attention from the research community. However, there are still existing challenges that are far from solved. To cope with those challenges, researchers have been exploring the applicability of gametheoretic approaches. In this paper, we devloped a new framework to define the availability, the access price and quality of service in UAV empowered flying access networks to opportunistically cover a target geographical area. A full analysis of the game outcome, in terms of equilibrium pricing, equilibrium QoS and equilibrium availability, is derived. More precisely, we showed existence and uniqueness of the Nash equilibrium under some conditions. Furthermore, we implement a learning scheme using best-response dynamics that allows operators to learn their joint pricing-availability strategies in a fast, accurate and distributed fashion. Finally, numerical investigations offer promising insights on how the game parameters should be chosen to efficiently control the game.

Keywords—UAV, game theory, QoS, price, Nash equlibrium.

A Pricing Model to Optimize Transmission Strategies for Mobile Devices

EL AMRANI Mohamed, GARMANI Hamid, AIT OMAR Driss, BASLAM Mohamed and MINAOUI Brahim
TIAD Laboratory, Sultan Moulay Slimane University,
Beni Mellal, Morocco,
{med.el.amran, garmani.hamid, aitomard, baslam.med}@gmail.com
minaoui.b@usms.ma

Abstract— Normally, a single connection does not allow full use of the network, especially when the quality of the network is not good. On the other hand, the simultaneous multiple data transmission can improve the use of the network. Unlike existing solutions in the literature, in this paper, we propose a

solution to the network resource allocation problem under the selfish behavior of mobile device with multiple connections to a several available network interfaces simultaneously, to resolve the conflict of interest in network. We analyze the impact of interactions between users based on two conflicting factors (i.e., throughput and monetary cost). Also, a diverse set of user's service types is taken into consideration, which makes the proposed approach suitable for an integrated service network. Analytical and Numerical results demonstrate the validity of the proposed approach, which show that the non-cooperative game has an equilibrium point which depends on all parameters of the system; and we show that this situation between mobile devices is much more beneficial in terms of the performance of mobiles, cost and the data transfer rate.

Keywords—Multiple connections, Network resource allocation, Nash Equilibrium, Price.

A Survey on latest privacy attacks and defences

Saadia Nemmaoui, Mohamed Baslam and Belaid Bouikhalene
TIAD Laboratory, Sultan Moulay Slimane University,
Beni Mellal, Morocco,
nem.saadia@gmail.com, baslam.med@gmail.com,
B.BOUIKHALENE@usms.ma

Abstract— Nowadays, technology has become one of the most important things of life, if we take a look around us we will absolutely find at least one connected device (a smartphone, a smart TV, a computer, a smart watch…) these little devices have slowly taken an essential part of our life, in order to benefit from these little smart machines we are obliged to share an important quantity of sensible data; however, trusting too much in the new technology may cause an important loss of sensible information, many methods are adopted by attackers to steal user's data, in some cases the user -himself- may put his sensible information, unconsciously, in danger while in other cases the attacker may use some tools and methods to get sensible data from users. In this article we aim to give a general idea about the most popular methods adopted by attackers to access sensible data and the methods created by researchers to defend these attacks, by the end of this article we aim to present solutions that take into consideration previous solutions' vulnerabilities and offer the user a total control of his sensible data, our

solutions will be based on many mathematical methods among them the game theory and graph theory.
Keywords—Privacy, sensible information, attacks, sharing sensible data, game theory, graph theory

Bounded Rationality and Policy Impact in Emerging ISP-CP Relationships

Driss AIT OMAR, Hamid GARMANI, Mohamed EL AMRANI, M'Hamed OUTANOUTE, Mohamed BASLAM and Mohamed FAKIR
Information Processing and Decision Support Laboratory,
Sultan Moulay Slimane University
Beni Mellal, Morocco
{aitomard, garmani.hamid, med.el.amran, mhamed.outanoute, baslam.med}@gmail.com, fakfad@yahoo.fr

Abstract— This paper develops network economic model that includes customer with bounded rationality concept, Internet service providers (ISP) and content providers (CP). We study CP obtains revenue from both end users. We examine the ways of regulating the side payment between CPs and ISPs in presence of customers' confusion parameter . Each ISP and CP seeks to maximize its own profit by determining its policies. We formulate the interactions between the ISPs and between the CPs as a noncooperative game. We prove through a detailed analysis uniqueness of pure Nash Equilibrium (NE). Furthermore, a fully distributed algorithm to converge to the NE point is presented. In order to quantify how efficient is the NE point, a detailed analysis of the Price of Anarchy (PoA) is adopted to ensure the performance of the system at equilibrium.
Keywords—Bounded Rationality, Customer Confusion,CP-ISP, Non-cooperative Game, Nash Equilibrium.

Session_06: Optimization and Decision

Chair: M. M'rabet HASSANI/ Abdellatif HAIR

An economic optimization modeling for sustainable water resources management in agriculture: a case study in the Tadla sub-Basin, Morocco

[1]Lionboui Hayat, [2]Hasib Aziz, [1]Hadria Rachid, [1]Benabdelouahab Tarik, [2]Elame Fouad and Boulli Abdelali

[1]*Department of Economy and Rural Sociology*
National Institute of Agronomic Research
Rabat, Morocco
[2]*Laboratory of Environment Valorization of Agro-Resources*
Sultan Moulay Slimane University
Beni Mellal, Morocco
lionbouihayat@gmail.com, tarik.benabdelouahab@gmail.com,
azhasib@yahoo.fr, fouad.elame@yahoo.fr, r.hadria@gmail.com,
a.boulli@usms.ma

Abstract—Water resource has become increasingly scarce. This situation will become acute in the future years in Morocco and in other countries of the world. Furthermore, non-rational use of irrigation water resources constitutes a major constraint on agricultural development in Morocco's watersheds, including Tadla sub-basin. Thus, it is essential to have effective instruments to manage and optimize the control and allocation of water resources and ensure their protection and conservation. In this context, the aim of this work is to analyze water resources sustainability in the current context of agricultural policies with estimating the likely changes in water management parameters and in the sensitivity of the agricultural sector to possible external shocks. Given the multidimensional nature of water management, this research presents an integrated economic, agronomic and hydrological optimization model for the Tadla sub-basin in Morocco, which classifies agricultural areas according to different sources of irrigation water. The model developed is a nonlinear programming economic optimization model where, given a certain number of constraints, it maximizes an objective function reflecting a social utility, in our case the global value added generated at the Tadla sub-basin level. The characterization of the agro-economic system was followed by a modeling of this system and then by an analysis of water management in the study area. The proposed model is disaggregated by territorial unit, agricultural areas, water irrigation sources and by crops. This tool allows decision-makers to predict the interannual variations of selected socio-economic indicators of water management according to different scenarios. To test the sensitivity of water valuation to external shocks, we first simulated the impact of an increase in the selling price of irrigation water applied to surface water in the irrigated perimeter of Tadla. Another type of exogenous shocks related to climate change was tested and we examined their potential

impacts on the long-term agricultural water management in the region. Overall, this research provides a viable modeling framework for sustainable water resources management in order to help decision-makers to improve irrigation water management and mitigate the exogenous shocks effects on the system sustainability in arid and semi-arid areas.
Keywords— Water Management; economic optimization model, system sustainability; climate change; water shadow price.

Maximum likelihood estimator for SIS epidemic parameters model

J.I AKIMANA and H. El Maroufy
Laboratory of Mathematic and Applications
Faculty of Sciences and Technics,
Beni Mellal, Morocco
ajanirne@yahoo.com, h_elmaroufy@hotmail.com

Abstract—
In this work, we consider an epidemiological model of SIS (Susceptible-Infected) type. We approximate the discrete model by stochastic diffusion processes. The stochastic differential equation obtained is of the following form:

$$dX_t = \mu(X_t, \theta)dt + \sigma(X_t, \theta)dW_t, \text{ and } X_0 = x_0.$$

The likelihood function is obtained via Girsanov's theorem. The objective is to estimate three parameters using the Maximum Likelihood method. The numerical results show that the estimates are of good quality; the estimators are consistent and verify the normal asymptotic property. However this work is only a sketch and being finished.
Keywords—SIS epidemic model; Stochastic processes; Girsanov's theorem; Likelihood function; Maximum likelihood method

The optimal management of the water resources in Morocco: Application of regional economic Models

Boudhar Abdeslam
Laboratory of Study and Research in Economic Sciences and Management
Polydisciplinary Faculty Beni Mella
aboudhar240@yahoo.fr

Abstract—Several approaches have been used to represent the regional macroeconomy interactions among sectors and, hence, the analysis of impacts

of alternative policies. The regional economic models approach is one of the main decision-making support systems (DMSS). It can be used in several other fields in order to give perfect analysis.
The regional economic models approach is very replied in the field of water resources management. It is used to quantitatively assessing the relationships established between economic sectors and water use.
This paper aims to present the methods that were used to develop decision-making support systems that apply regional economic models approach in the field of water resources management. This approach can be considered as a basic model in order to study the optimal management of the water resources in Morocco.
Keywords— Regional economic Models, optimal management, water resources

Solving Finite-Horizon Markov Decision Processes with decomposition technique

B. El Akraoui, C.Daoui and A.Larach
Laboratory of Information Processing and Decision Support,
Sultan Moulay Slimane University,
Beni-Mellal, Morocco.
mbouchra2@gmail.com,daouic@yahoo.com,larachabdelhadi@gmail.com

Abstract—Classical methods for solving Markov Decision Processes MDPs become computationally intractable for models with multi-dimensional state and action spaces. This paper is concerned with modeling planning problems involving uncertainty as discrete time finite state stochastic is reduced to computing policies for Markov Decision Processes,the authors present a new method for solving Finite-Horizon large MDPs.Using a predefined partition of the MDP, a directed graph is built to decompose the global MDP into small local MDP named restricted MDPs witch are independently solved .This restricted MDPs allows to improve a Hierarchical solutions in discounted Finite-Horizon MDPs using Hierarchical Discounted Backward-Induction algorithm HDBI based on Backward-Induction algorithm.Our approach has been tested on a robotic motion-planning example is presented to illustrate the benefit of the proposed decomposition algorithm.
Keywords—Terms—Markov Decision Process, Dynamic Programming, Decomposition technique, Tarjan's algorithm, Backward Induction.

Management du Système d'Information Ressources Humaines appliqué au processus de recrutement dans les organisations publiques : Cas de l'ERP Oddo au profit de la Faculté Polydisciplinaire de Béni Mellal

[1]M. J. ELADNANI, [1]F. TOUHAMI, [1]S. CHERBOUB and [2]B. BOUIKHALENE
[1]Laboratoire de Recherche en Sciences Economiques et Sociales,
[2]Laboratoire LIMATI,
Faculté Polydisciplinaire, Université Sultan Moulay Slimane
eladnani2000@yahoo.fr, f.touhami@yahoo.fr,
sondous.cherboub@gmail.com and b.bouikhalene@usms.ma

Abstract— L'organisation peut se définir comme un système de flux (matériels ou de services, monétaire et financiers), mais aussi un ensemble de flux d'information circulant à l'intérieur de son périmètre, vers l'extérieur, et en provenance de son environnement. Les Nouvelles Technologies de l'Information et de la Communication (NTIC) ont permis donc, le développement de cette manière de circulation de l'information qui est le vecteur de toute activité de toute organisation (entreprise, administration…) qu'elle soit stratégique, opérationnelle ou même administrative.

Dans notre contribution on s'intéresse à la modernisation de la fonction RH par un Système d'Information de Ressources Humaines SIRH, lié à une fonction importante dans les opérations de développement de ressources humaines. Il s'agit du processus de recrutement. Notre ambition est de montrer les modalités de création des applications liées au recrutement des compétences dans une administration publique – cas de la Faculté Polydisciplinaire de Béni-Mellal- via un progiciel intégré l'ERP (Entreprise Ressource Planning) ODOO.

Keywords—NTIC, SIRH, ERP, Processus de Recrutement, administration publique, organisation.

Finding the Addressing Modes Using Backus-Naur Form

[1]Diane Mamadi, [2]Mustapha Machkour and [3]Brahim Erraha
[1]Polytechnic school of Agadir Universiapolis Laboratory of Sustainable Innovation and Applied Research Agadir, Maroc
[2]Ibn Zohr University Faculty of Sciences Laboratory of Computer Systems and Vision Agadir, Maroc
[3]Ibn Zohr University School of Applied Sciences Agadir, Maroc
mamadidiane31@gmail.com, m.machkour@uiz.ac.ma, b.erraha@uiz.ac.ma

Abstract—In computer science, people concerned about addressing modes are mainly those who program in assembly and authors of compilers. They are considered to be an aspect of the architecture of processors and their sets of instructions that are defined in an architecture. The way machine language instructions identify their operands. The purpose of this work is threefold: Checks the addressing mode during programming, provides a higher level of understanding about each type of them and shows the different assembly instructions with the parse tree. The proposed system consists of three stages. The first stage former is used to verify addressing modes by generating a Backus-Naur Form (BNF). For each type, BNF gives an exact, easy-to-understand syntactical requirement, addressing modes and provides a mean of detecting an error. The second stage is (BNF) to do the left-most derivation and the right-most derivation of the addressing modes for top-down analysis. The third stage is the creation of an analysis tree for each addressing mode in order to show how an axiom is derived in a sentence or language string and used to check if a chain conforms to the grammar already defined.

Keywords—Backus-Naur Form, Addressing Modes, parse tree, leftmost derivation, rightmost derivation.

An Automated Management System for Student Services

Afrah AlBathali, Dalal Alsoraya, Ohoud Al-Mayyas and Muhammad Sarfraz
Department of Information Science, College of Computing Sciences and Engineering, Kuwait University
aa311289@gmail.com, Desizner.q8@gmail.com, Ohoudalmayyas@gmail.com, prof.m.sarfraz@gmail.com

Abstract—This paper proposes and develops an automated management system for student services in an educational institution environment. In the proposed system, students can share various services including sharing of study materials, requesting and signing up for a course, requesting a locker, uploading portfolio documents, searching for finished capstone projects and joining internship programs. This work builds and designs a database and transforms a current mechanism from their paper-based system into an efficient computerized one so as to ease and automate the process of services activities. We initiated the goal of building a database by surveying the requirements needed to design the system. This is followed by subsequent phases of planning, analyzing, and designing the system in a comprehensive

manner. We evaluate various technologies for implementation of the proposed system and decide upon the most advantageous option to build the proposed system. As a case study, Kuwait University of Kuwait is taken as an environment. However, the build system can be implemented in any other environment with some specific orientations according to required needs. The proposed system is secure, robust, accurate and efficient. It is accessible through web from anywhere and anytime.

Keywords—Automation, management system, e-Services, education, database

Posters Abstracts

PS_01: Optimization and Decision

Chair: Cherki DAOUI

A New Multi-Agent System Based On Distributed Data Mining Algorithms To Detect Breast Cancer

Imane Chakour, Yousef El mourabit , Mohamed Baslam
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
Beni Mellal, Morocco
ichakour12@gmail.com, elmourabitsef@gmail.com, baslam.med@gmail.com

Abstract— Recently, Data mining and intelligent agents haveissued as two domains with tremendous potential for research. Each intelligent agent is self-governing, proceeding independently within its boundary while collaborating with other agents to perform the assigned task efficiently. The capacity of agents to learn from their experience complements the data mining process. Agent mining helps to beat the challenges faced by data mining in a distributed heterogeneous environment. Here we studied a system that aims to give more autonomy and initiative to the different software modules specialized in the medical diagnosis and that can dialogue to share their knowledge as human experts. To enable robust, reliable medical diagnostic support, multi-agent systems (MAS) can be a powerful tool for distributed diagnostics. In this paper, we created a new multi-agent system based on performant algorithms of Data Mining ANN, SVM, and logistic regression applied to Breast Cancer Database (WBCD), then integrated these with a Controller Agent (MAS) to increase classification accuracy. The results obtained from the classification are very promising.

Keywords—Agent, Multi-Agent Systems, Data mining, Multi-Agent Data Mining

Realization of an intelligent evaluation system

MAAROUF Otman, EL AYACHI Rachid and BINIZ Mohamed
Department of Computer Science, Faculty of Science and Technology
Sultan Moulay Slimane University
maarouf.otman94@gmail.com, rachid.elayachi@usms.ma and mohamedbiniz@gmail.com

Abstract— A number of benefits have been reported for computer-based assessments over traditional paper-based exams, both in terms of IT support for question development, reduced distribution and test administration costs, and automated support. Possible for the ranking. However, existing computerized assessment systems do not provide all kinds of questions, namely open questions that require writing solutions. To overcome the challenges of the existing, the objective of this work is to achieve an intelligent evaluation system (IES) responding to the problems identified, and which adapts to the different types of questions, especially openended questions of which the answer requires sentence writing or programming.
Keywords—IES, Syntactical Similarity, semantic similarity, open questions, programming questions.

Design and implementation of a web content mining application

Salim Khalil and Mohamed FAKIR
Sultan Moulay Slimane University
Faculty of Sciences and Techniques
Beni Mellal Morocco
khalilsalim1@gmail.com, fakfad@yahoo.fr

Abstract—In recent years World Wide Web has become the richest source of information, web content mining In order to extract and mine useful knowledge from the web content. Applications require web crawler to collect information, there are many counter intuitive challenges associated with crawling the web to discover and collect content for web content mining use. In fact Web crawling for data mining has its own unique set of problems related to accuracy and coverage. In this paper our focus is on Web content mining, we present a design of a web content mining application 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 content mining, text mining online, press analysis.

Ontological approach for the management of competences

Bouzekri MOUSTAID and Mohamed Fakir
Sultan Moulay Slimane University
Faculty of Sciences and Techniques
Beni Mellal Morocco

boumousta@gmail.com, fakfad@yahoo.fr

Abstract— With the advent of the movement of the immaterial economy which leads us towards an economy and a company of knowledge, the importance is given to the concepts of knowledge and competences for better immaterial capital developement. Consequently, the management of the "human capital" became both a necessary and a complex matter for the Human Resources professionals who must be concerned about employee's intellectual capitals (knowledge management) all along with their competences). The management of competence is a topic that has always interested several research teams and was the object of several publications of scientific work. The research of qualified staff is one of the most important axes of this work. It lies the scope of the decision-making aid for the selection of one person starting from a group of candidates, in order to achieve the ogoals of an employment with well defined characteristics. In this context we will present the various approaches referring to a competence, to its definitions, its characterizations and its methods of treatment. Our first contribution will be directed towards the proposal of a typology and a characterization of a job and competences and a system of evaluation of the level of these competences. This contribution will be in conformity with the recommendations of the Ministry of the Public Modernization of the Sector in Morocco. This knowledge will be represented in the form of ontology that will be treated with the external resource WordNet, in order to guide the research of having candidates with the qualified skills to occupy a given job. We chose the algorithm of k-nearest neighbor algorithm, or quite simply k-NN. Languages R and SPARQL are used for the implementation of this contribution.
Keywords—Human Resources, competences, knowledge, ontology, KNN, Language R , Language SPARQL

Air Traffic Scheduling in the Ground

Dabachine Yassine, Biniz Mohamed, Bouikhalene Belaid and Balouki Abdessamad
Laboratory of Mathematics Innovation and Information
Faculty of Sciences and Technology
Sultan Moulay Slimane University
Beni Mellal, Morocco

yassine.dabachine@gmail.com, mohamedbiniz@gmail.com,
b.bouikhalene@usms.ma, ballouki@gmail.com

Abstract—Air traffic management (ATM) has been studied in several areas to optimise an air traffic management system. Today it is easy to observe the phenomenon of air traffic congestion due to an increase in demand in the field of air transport. This article presents a solution for optimising air traffic management according to different aspects. The objective here is to control and determine the sequence of an approaching aircraft and to study the behaviour in the terminal control area. This article focuses on scheduling algorithms using a variable. The problem for effective air traffic management is operational constraints such as space, separation, overtaking on the same route, fusion point. To perform the calculation in real time, the algorithms presented here are based on heuristic dispatching. This allows rules to be integrated that are able to assign tasks in a short period of time with an efficient result. This is possible with an appropriate and realistic scheduling algorithm. This article proposes a real simulation to show that the proposed algorithm is valid and applicable. Each planning rule is analysed according to the same static and dynamic scenario of air traffic flows with Monte-Carlo simulation. By providing air traffic controllers with training opportunities prior to such accidents and incidents, they will be able to respond quickly and accurately in emergency situations. Therefore, the International Civil Aviation Organization (ICAO) recommends that the training of air traffic controller simulators be expanded to prevent air traffic accidents through pre-training, accident prevention and adaptability in the event of an accident. In advanced countries in the airport sector, an aerodrome traffic control (ATC) simulator is implemented and periodic training is conducted to improve the controller's ability to deal quickly with normal and abnormal situations.

Keywords—Air traffic controller, aircraft scheduling, air traffic management, path optimization

A review of Students orientation systems

O.Farouk, E.Mohamed and J.Mostapha
Department of Computers Sciences
Faculty of Sciences and Technology, Sultan Moulay Slimane University
Beni Mellal, Morocco
Farouk.ouatike@gmail.com, m.erritali@usms.ma, jourhman@hotmail.com

Abstract—Nowadays, the student's orientation knows many problems that affect negatively the future of students, which due to a lot of causes such as decision making at the right moment. In recent years, researchers start using machine learning and artificial intelligence algorithms for improving the results of orientation which can help students in their orientation and study. In this paper, we propose a new method for orienting students based on their contents in their schools, in their social networks account and some machine learning algorithms (neural network, c4.5). Our work will be done in a Big Data system for avoiding the problems related to the analysis of a large amount of student's data.

Keywords—Student's orientation; Social networks; Machine learning; Big data.

Determination of Particle Energy Spectra at the exit of the lateral channels of a reactor

A. Khanouchi, L. Oufni, E. Siher and A. Jehouani
Faculty of Sciences and Technics BeniMellal Sultan Moulay Slimane University
Beni Mellal, Morocco
kabd70@gmail.com, l.oufni@usms.ma, e.siher@usms.ma
a,.jehouani@ucam.ma

Abstract—Generally, nuclear reactors used for research and for energy production are characterized by lateral channels that pass through their enclosure. The objective of this work is the study of energy transfer of radiation and particles transmitted, by leakage through the walls of these channels, to the external environment which is an unavoidable phenomenon. For this purpose, we considered the case of a channel in the form of a hollow cylindrical tube and a uniform source of particles such as neutrons, placed on the inner surface of this tube of internal radius equal to 1 cm and outer radius of 6cm. We have thus been able to determine the energy spectra of the neutrons transmitted at the exit of the cylinder, for different initial energies from birth to the source. Our mathematical tool used is the Monté Carlo simulation method for sampling the history of particles from birth to absorption or transfer to the external environment. Also for three types of materials composing the channel such as iron, ordinary concrete and limonite concrete, we applied two different methods, that of the natural choice of the nucleus and the other relative to the model of the equivalent nucleus, to determine the different energy spectra of neutrons. The results obtained make

it possible to notice a concordance of these two methods, which allowed us also to confirm the application of the equivalent nucleus model in the protection domain. This study also allowed us to optimize the choice of protection material, which is therefore ordinary concrete, which is less expensive and meets the standards of safety and environmental protection.
Keywords—Visualization, Simulation, Modelisation, Neutron, Energy Spectra, Transmission, Reactor Channels, Protection Screen,.

Analysis and design process of a decision-making system for the Moroccan university

Abdellah AMINE, Faiha AIT YACINE, Rachid AIT DAOUD and Belaid BOUIKHALENE
Sultan Moulay Slimane University
Beni Mellal, Morocco
a.amine@usms.ma, f.aityacine@usms.ma, daoud.rachid@gmail.com, b.bouikhalene@usms.ma

Abstract—A university shelters various actors who resort to systems of documentary resources, systems of information production, and systems of information research. The importance that we give to the building of a data warehouse and to the associated business databases allows us to develop an information system into a strategic information system. The theme dealt with in this thesis consists in developing a decision-making information system, which is linked to the digital environment of University work. We suggest modeling the data in the university to transform an information system into a decision-making information system, which is based on actor-oriented business databases. Decisionmaking information is a system that allows university decisionmakers to have powerful and relevant information analysis tools to help them make the right decision at the right time.
Keywords—Strategic Information Systems, Decisional data, Data Warehouse, Data Mining, multidimensional model, User Classification Model, Visual Studio, Power BI.

PS_02: Signal, Image and Video Processing

Chair: Youssef EL MOURABET

Traffic signal control based on the Markov Decision Process

Elhoucine OUASSAM, Cherki Daoui and Mohamed BASLAM

Computer science Department, Faculty of sciences and technics
Sultan Moulay Slimane University
Béni Mellal, Morocco
ouassamm@gmail.com, daouic@gmail.com, Balsam.med@gmail.com

Abstract—Red lights play an important role in the management of traffic in urban areas: first, they ensure the safety of vehicles and pedestrians by sharing over time the use of the same space between conflicting flows. But by the choice of the durations of each color (green, red) and by the synchronization of the fires between them, they also make it possible to manage the flow of the demand. Different methods and a multitude of tools exist to ensure this management by fire. It is in this context that this article is written in which we present the application of Markov decision-making processes to the management of urban traffic lights. This article proposes a Markov state transition model for an isolated intersection in urban traffic and formulates the traffic signal control problem in the form of a Markov decision process. To solve the PDM, the sensitivity-based value iteration algorithm (IP) is introduced. The proposed model varies with the variation of the traffic around the intersection, and the state transition matrices and cost matrices are updated so that a new optimal policy can be sought by the VI algorithm. . The proposed model can be extended easily from an isolated intersection to a traffic network based on the traffic flow distribution time-space characteristic. The numerical experiments of a small traffic network shows that this approach is able to reduce significantly the number of vehicles compared to fixed-time control especially for high traffic demand, while being informally efficient.
Keywords—Markov state transition model; Traffic signal control; Policy iteration algorithm; Value iteration algorithm; Markov decision process; urban traffic

Secure transmission of medical data via the virtual bio-instrument

Nassiri Boujemaa and El Mourabit Yousef
Computer science Department, Faculty of sciences and technics
Sultan Moulay Slimane University
boujemaa.nassiri@e-polytechnique.ma, y.elmourabit@usms.ma

Abstract—The evolution of techniques of treatment, sharing and communication of medical information is accompanied by a change in risks. However, it is the consequences related to the occurrence of these risks that

introduce the need for protection of medical information. There are no ideal solutions for computer security in general. In this work, we will seek and propose solutions for the transmission of medical data based on the virtual bio-instrument, as well as the security of the exchanges of these data. The implementation of security protocols at the scale of virtual bio-instrumentation presents the main contribution of this communication.
Keywords—ECG, Medical Image, Security Virtual Bio-Instrumentation, Transmission.

Classification of eye based on fuzzy logic

[1]Hicham Hatimi, [1]Mohamed CHABI and [2]Mohamed Fakir
[1]Laboratory of Mathematics and Applications,
[2]Laboratory of Information Processing and Decision Support (TIAD),
Faculty of Sciences and Technics
University Sultan Moulay Slimane
Beni Mellal, Morocco
h.hatimi@usms.ma, chabi@fstbm.ac.ma, fakfad@yahoo.fr

Abstract—The systems of eye classification in an image are indispensable technical in several domains. To better find the class of membership of the eye in a minimal time, the classic methods of detection being inadequate. Fuzzy logic is considered to be an effective technique for solving an eye classification problem. This article proposes a fuzzy approach for eye classification. The tasks of classification are realized in two steps. In the first step, the characteristic points of the image are extracted in order to locate the eye. These characteristic points allow generating a representative model of the eye. In the second step, the detected eyes have to pass by a fuzzy controller containing several parts: Fuzzification, inference rules, and defuzzification. Finally, our system gives the degree of membership of the detected eyes to each class in the database.
Keywords—Eye classification; Eye detection; Fuzzy logic; Eye segmentation; Fuzzy controller.

Classification and Design of Islamic Geometric Patterns Using Computer Graphics

Ahmad M. Aljamali and Mohamed FAKIR
Computer science Department, Faculty of sciences and technics

Sultan Moulay Slimane University
aljamali@yahoo.com, fakfad@yahoo.fr

Abstract—This paper presents an innovative method to classify and design Islamic Geometric Patterns (IGPs) using computer software. The researcher traced the existing systems associated with the classification of Islamic Geometric Patterns i.e. 7- frieze patterns [Gla99] and 17-wallpaper patterns theories [Lee98]. Also researcher traced the conventional design methodologies that are based on principles of classical gridding systems, which are hierarchical in nature. The researcher found out to distinguish between classification of a pattern (collection of unit designs) and classification of a design (collection of geometry and grids). Classification of a pattern involves repeating the unit-design by isometry formulas (translation, mirroring, rotation and glide reflections) to generate a pattern that can be classified as 7-freize patterns or the 17-wallpaper patterns. Classification of a design involves the normalization of their geometries and grids. In this paper the researcher presented an argument those pattern theories are purely base models. A refined classification with specific focus on the girding system of the star/rosette of IGPs was required. The task of presenting a new method of classification rightly demanded a geometrically and scientifically validated method. Researcher has been successful in developing such a method and presenting it in user-friendly software. Researcher generated software that draws the geometries and grids of any particular star/rosette design and displays its classification instantly. This approach resulted in a measurable method of classification for any given Islamic geometric designs. The software is facilitated to identify the star/rosette sub-motif-grid from its griding system of classification which will allow the user to explore a verity of designs on the sub-motif- grid generating the sub-motif-design, motif-design, unit-design and finally the pattern-design in x-y direction.

Keywords—Classification; design; igps; pattern theories; normalisation; motif; software.

A Hybrid the DWT and Enhancement Filter: Application on Road Images for Crack Detection

Khaddouj Taifi, Naima Taifi, Mohammed Fakir and Said Safi
Computer science Department, Faculty of sciences and technics
Sultan Moulay Slimane University

k.taifi@usms.ma, taifi.naima@yahoo.fr, m.fakir@usms.ma, said.safi@gmail.com

Abstract—This work concerns the detection of road cracks. Automatic detection of cracks in road surface is very much important for the diagnosis and the treatment of different cracks including Transversal, Longitudinal, Oblique and various. The proposed method consists of three main steps. The first step is pre-processing of Road Surface image to improve the cracks images by enhancement techniques. In the second step, we have proposed an effective detection algorithm using two dimensional discrete wavelet transform(2DDWT) based multiresolution analysis with 'db8' and two level subband decomposition. Finally the Jerman Enhancement Filter is usually used with different parameter the control response uniformity 'D' to enhance for cracks detection. This paper presents a comparative study in road surface image enhancement based on three different algorithms: watershed (LPE), Frangi filter and our proposed methods. This latter uses a hybrid method Combining DWT and Jerman Enhancement Filter. Experimental results show that the proposed method improves the visibility of cracks in Road Surface.The quantitative assessment consists on computing the true positive (TP) (good detection), false positive (FP) (false alarm), and false negative (FN) and calculating the DICE index that is the harmonic mean of precision and sensitivity

Keywords—Image processing, cracks, road, detection.

Generation of frequent closed patterns by Close, Closet, Max-miner, and KDCI algorithms

Hind BAOUAHI and Karima EL BACHA
Computer science Department, Faculty of sciences and technics
Sultan Moulay Slimane University
baouahihind@gmail.com, elbachakarima@gmail.com

Abstract—The effectiveness of association rules is an important area of knowledge discovery in databases. The Apriori algorithm is a classic algorithm in mining association rules. In this context, a number of algorithms inspired by the Apriori algorithm, based on the extraction of frequent itemsets were present in this report. We propose to make a state of the art on Close and Closet algorithms allowing the generation of frequent closed patterns to approach the existing difference between these two algorithms. Next, we

review the algorithm based on the discovery of maximal frequent itemsets, introducing the Max-miner algorithm, and then the algorithm for extracting frequent itemsets from large KDCI databases. Finally, we will make a comparative study based on the performances of these algorithms.
Keywords—Close, closet, max-miner, kdci, closed frequents itemsets, maximum frequent patterns.

Comparative Study of Three Phase Grid Connected Photovoltaic system Using PI, PR and Fuzzy Logic PI Controller with harmonic analysis

Soukaina Essaghir, Mohamed Benchagra and EL Barbri Noureddine
ISERT Laboratory, ENSA-Khouribga,
Univ.Sultan Moulay Slimane,
Khouribga, Morocco
essaghirsoukaina@gmail.com, m.benchagra@gmail.fr,
elbarbri.noureddine@yahoo.fr

Abstract—This paper presents a three phase grid connected photovoltaic system with a comparison between three different control strategies; the conventional PI controller, the proportional resonant (PR) controller and the Fuzzy Proportional Integral controller. The Maximum Power Point Technique (MPPT) called Perturb and Observe is used for tracking the maximum from the PV panel. The three phase inverter is controlled by the Pulse Width Modulation (PWM) technique. PI, PR and Fuzzy logic controller are used as a current controller for regulating the current and finally a comparison of Total Harmonic Distortion (THD) is made between the different types of controllers. In order to examine the effectiveness of the suggested control, a simulation using the Matlab/Simulink software has been done and the simulation results show the effectiveness and the good performances of the proposed designed system especially with variation load which ensure a better energy transport to grid with fewer harmonics.
Keywords—Fuzzy logic controller, PR controller, PI controller, PV inverter, Grid, THD.

Conformable fractional derivative in image processing

Bouaouid Mohamed
Faculty of sciences and technics

Sultan Moulay Slimane University
Beni Mellal, Morocco
bouaouidfst@gmail.com

Abstract—The fractional derivative efficiently describes many phenomena arising in Engineering, Physics, Economy, and Science. For example the fractional derivative in Caputo or Riemann-Liouville sense has attracted the attention of several authors in image processing. The fractional conformable derivative is a recent fractional derivative which has good properties. For this raison, in this work, we investigate effects of this new fractional derivative in image processing.

Keywords—Fractional differential equations, Conformable fractional derivative, Image processing

PS_03: Telecommunications and Networking

Chair: Brahim MINAOUI

Toward Energy-Efficient in Wireless Sensor Networks

Abdelkarim AIT TEMGHART, Mohammed ERRITALI and Mohamed BASLAM
Faculty of sciences and technics
Sultan Moulay Slimane University
Beni Mellal, Morocco
Karim.smi2014@gmail.com, m.erritali@usms.ma, baslam.med@gmail.com

Abstract—Wireless Sensor Networks (WSNs) is a system for collecting, processing and distributing data. This technology is used in various real-time applications for remote monitoring and controlling purposes. There are many other areas where IOT might be used, such as in the fields of military surveillance, healthcare domain and industries. However, the deployment of WSNs brings about many challenges due to small memory, scarce energy resources, and limited processing power. For power consumption, we need to develop more efficient ways to use this scarce resource, so that we can extend battery lifetime and improve network reliability. The study presented in this paper was focused, first, on studying different existing energy-ware protocols for choosing the most appropriate algorithm for WSN Platform. Accordingly, we propose Energy Efficient Sleep Awake Aware (EESAA) to enhance energy efficiency and significantly increase the lifetime of sensors. The results of the simulation indicate that the suggested energy-aware routing protocol is the

appropriate solution that allows data collection and communication while conserving energy.

Keywords—WSN networks, energy-efficient, EESAA

An Efficient Online Cache Replacement Algorithm for Content Dilevery Networks

Driss Ait Omar, Mohamed El Amrani, Hamid Garmani, Mohamed Baslam and Mohamed Fakir
Faculty of sciences and technics
Sultan Moulay Slimane University
Beni Mellal, Morocco
aitomard@gmail.com, med.el.amran@gmail.com,
garmani.hamid@gmail.com, baslam.med@gmail.com, fakfad@yahoo.fr

Abstract—Recently, file retrieval applications such as video-on-demand and media sharing dominate Internet traffic. Using physical or virtual content replication servers with an optimal cache strategy is a promising solution to reduce the backhaul traffic loading and the file-access latency. In this paper, we present an optimal cache replacement algorithm by modeling and predicting Popularity Dynamics via Reinforced Poisson Processes. Simulation results indicate that this algorithm can improve the cache hit ratio compared with widely-used replacement schemes.

Keywords—Cache replacement, Dynamic, Popularity integer linear program, Cost Optimization, Poisson Processes.

A game theoretic analysis for competition over popularity in social networks

K. Touya, M. Baslam, R. El Ayachi and M. Jourhmane
Faculty of sciences and technics
Sultan Moulay Slimane University
Beni Mellal, Morocco
k.touya@usms.ma, baslam.med@gmail.com, rachid.elayachi@usms.ma,
jourhman@hotmail.com

Abstract—Over the years, people became more dependent on online social Networks where they constitute various sorts of relationships. Furthermore, such areas present spaces of interactions among users; they send more messages and posts showing domains they are interested in to guarantee the

level of their popularity. This popularity depends on its rate, the number of comments the send topic gets but also on the cost a user has to pay to accomplish his task on this network. However, the selfishness of those subscribers is the main cause of a competition over popularity. In this paper, we consider this competition as a non cooperative game. We propose an efficient game theoretic model leading to solve this competition and find a situation of equilibrium for the said game.
Keywords—Social networks, game theory, popularity, utility function,

Industry 4.0 to Predictive Maintenance: Predictive Model of Hard Disk Failures based on Operational Data

Mohamed OURIHA, Yousef el MOURABIT and Mohamed BASLAM
Faculty of sciences and technics
Sultan Moulay Slimane University
Beni Mellal, Morocco
Moha.ouriha@gmail.com, elmourabitsef@gmail.com,
baslam.med@gmail.com

Abstract—The increase in data available in almost all areas raises the need for algorithms for automated data analysis. This need is highlighted in predictive maintenance, where the objective is to predict system failures by continuously observing their status, in order to plan maintenance actions in advance. The main challenge of predictive maintenance is the analysis of observation history in order to develop predictive models. In this sense, machine learning has become ubiquitous as it provides the means to extract knowledge from a wide variety of data sources with minimal human intervention. Hard drives are an essential component of modern data storage. In order to reduce the risk of data loss, hard drive failure prediction methods using the Self-Monitoring, Analysis and Reporting Technology attributes have been proposed. In this paper, we consider the Backblaze public dataset, a recent operational We observe that existing predictive models no longer perform sufficiently well on this dataset. We therefore selected machine learning classification methods able to deal with a very unbalanced training set, namely SVM, RN and NB, and adapted them to the specific constraints of hard drive failure prediction. Our results reach over 70% precision a on real-world public dataset.
Keywords—Predictive maintenance, predictive model, machine learning, hard disks

The Bro and Suricata intrusion detection performance in the high-speed connection

A. BEN CHARKE1, M. FAKIR, M. BASLAM, M. CHABI
Faculty of sciences and technics
Sultan Moulay Slimane University
Beni Mellal, Morocco
a.bencharke@usms.ma, fakfad@yahoo.fr, baslam.med@gmail.com, m.chabi@usms.ma

Abstract—Today, attackers use more sinister penetration methods based on more advanced computing technology. The cyber threats have become some of the major concerns for the very existence of the businesses. Consequently, the security measures to be implemented need to go beyond a simple presence of a firewall and anti-virus anti-malware. In this paper we will study the performance of two open source intrusion detection systems, namely, the architecture of Bro and Suricata IDS engines.

Keywords—IDS, Bro, Suricata, threads, security

A comparison between some methods used to identify influential nodes in complex networks

K. AIT RAI, T. AGOUTI, I. QAFFOU, M. MACHKOUR, J. ANTARI
Laboratoire Systèmes Informatique et Vision, Département d'Informatique
Faculté des Sciences d'Agadir, Université Ibn Zohr- Agadir
khaoula.rai@gmail.com, antarijilali@yahoo.fr

Abstract—The propagation of data in a complex network is accelerated by particular nodes called influential nodes.The knowledge and the identification of these nodes in such networks, constitute an important part of interest for researchers in the field of complex network.

For this purpose, methods such as AHP (analytic hierarchic process)as a multiple attribute decision making and a special hierarchical measure called k-shell (HKS) which is an index for determining the spreading capability of each node.Each method has its own particularities as well as its strong points of application.This article proposes a comparative study between these two methods. The advantages, limitations and experimental contributions of each method will be presented and discussed.

Keywords—Complex network, influential nodes, AHP, HKS, spreading capability.

A comparative study of routing protocols in Wireless Sensor Networks based on IR-UWB

Mohamed Salim, Hicham Moncif and Anouar Darif
Sultan Moulay Slimane University
Polydiscipliny Faculty
Béni Mellal, Morocco
sa.mohamed.rt@gmail.com, h.mouncif@usms.ma, anouar.darif@gmail.com

Abstract— WSN (Wireless Sensor Networks) have found their way into numerous fields and applications. They are networks of specialized sensor devices used to monitor environmental conditions, and then transmit the collected data to a base station or sink. However, sensor nodes rely on limited energy resources and sometimes deployed in harsh environments. Thus IR-UWB technique was introduced in WSN field due to its various advantages such as low complexity and low power consumption, robustness and little interference with other radio systems. Nevertheless, the major challenge now in WSN is routing protocols design which is different than routing in traditional networks, due to many factors such as energy efficiency, self-organization, data aggregation, heterogeneity and scalability. In This work we aim to investigate the impact of routing protocols in WSN based IR-UWB. The study will focus on energy consumption and network lifetime as well as various quality of service parameters using OMNET++ simulator and the INET framework.

Keywords—WSN, IR-UWB, Routing Protocols, Energy Consumption, Lifetime, OMNET++

Comparing the performance of AODV and DSDV in VANETs

MEKKAOUI Nassim, ZOUGAGH Hicham
Faculty of sciences and technics
Sultan Moulay Slimane University
Beni Mellal, Morocco
Mek.nassim94@gmail.com, hzm_1979@yahoo.fr

Abstract—In the recent years communication technology and services have advanced. Mobility has become very important, as people want to communicate anytime from and to anywhere. In the areas where there is little or no infrastructure is available or the existing wireless infrastructure is expensive and inconvenient to use, Mobile Ad hoc NETworks, called MANETs,

are becoming useful. They are going to become integral part of next generation mobile services. A MANET is a collection of wireless nodes that can dynamically form a network to exchange information without using any pre-existing fixed network infrastructure. The special features of MANET bring this technology great opportunities together with severe challenges. The military tactical and other security-sensitive operations are still the main applications of ad hoc networks, although there is a trend to adopt ad hoc networks for commercial uses due to their unique properties. Vehicular Ad hoc Networks (VANET) are a special kind of Mobile Ad-Hoc Networks (MANET) adapted to the communications between vehicles. Several specific protocols to VANETs have been developed to improve performances and satisfy vehicular application needs

Keywords—Ad hoc, MANET, VANET

PS_04: Master Students.Session

Chair: Mohamed ERRITALI

Algoriothms: Apriori, FP-Growth, Eclat, Titanic

Chama EL SAILI, Soufiane TAOUIL
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
chamaa.elsaili@gmail.com, taouil.soufiane1997@gmail.com

Abstract—In this paper we present a reminder on the association rules, before going on to our subject which is the algorithms of the generation of frequent item-sets and closed frequent item-sets. We will study four algorithms Apriori, Fp-growth, Eclat and Titanic, then we will do a comparative study between them or between the algorithms of the same family.

Keywords—Apriori, Fp-growth, Eclat, Titanic, itemsets, association rule

Comparative Study of Algorithms for Association Rule Mining

LHOU Steh and OUZNINI Abdessamad
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
hous95@gmail.com

Abstract—We live in a world where each day tons and tons of data is generated from millions of sources. Companies and organizations thrive for this data in

order to acquire valuable information that helps them understanding their customer needs and demands. In Data Mining finding the frequent patterns (information on needs and demands) from large database is being a great task and many researches is being undergone continuously. In this paper, a comparative study is made between classical frequent pattern mining algorithms that use candidate set generation and test (Apriori algorithm) and the algorithm without candidate set generation using an FP-tree structure (FP growth algorithm). Pascal an improved algorithm for mining closed and frequent sets , it introduce the notion of key pattern and show that other frequent patterns can be inferred from the key without access to the database. Charm an efficient algorithm for enumerating the set of all frequent closed itemsets, it explores both the item set space and transaction space over a novel IT-tree search space unlike the other algorithms that explores only item space.

Keywords—Apriori, FP-growth, Charm, Pascal, FP-tree structure, IT-tree, Support, Confidence.

Comparison of some supervised and unsupersived classification algorithms

Yacine Toufiki
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
yacine.toufiki@gmail.com

Abstract—Classification is building a collection of similar objects within the same group and dissimilar when they belong to different groups. There is a very wide family of methods dedicated to unsupervised classification and supervised classification Our goal in this report is to establish a comparison between four algorithms two belongs to the family of the unsupervised classification (Dynamic Clouds and k-means fuzzy) and the others belongs to the supervising classification family (ID3, C4.5).

Keywords—Classification, Dynamic, Clouds, k-means, fuzzy, ID3, C4.5

The extraction of frequent itemset (closed) and advanced data structure.

NASSIR RACHID

Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
rachidnassir4@gmail.com

Abstract—The homogeneous data collected hides a number of knowledge, dependencies or correlations, which are implicit and useful, and are just waiting to be explored. In this context, a number of algorithms are proposed but the problem of these algorithms is that they generate an exorbitant number of rules making their exploitation almost impossible by experts. In this article, we propose to make a state of the art on the extraction algorithms of associative rules based on the extraction of closed itemset is exposed their advantage and their type and make a comparison in the sense of complexity.
Keywords—Association rules, closed frequent itemsets, Cast Tree, FP-Tree, Dense datasets, Sparse datasets.

Comparison of Classification techniques (J48, ID3, Random tree, Random Forest)

ABBASSI OUSSAMA
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
oussama.abbassi.95@gmail.com

Abstract—In data mining, classification is one of the significant techniques with applications in fraud detection, Artificial intelligence, Medical Diagnosis and many other fields. Classification of objects based on their features into pre-defined categories is a widely studied problem. Decision trees are very much useful to diagnose problem. Decision tree classifiers are used extensively for diagnosis of breast tumour in ultrasonic images, ovarian cancer and heart sound diagnosis. In this paper, performance of decision tree induction classifiers on various data sets in terms of accuracy and time complexity are analysed.
Keywords—Data Mining, Classification, J48, ID3,Random forest, Random tree

Comparative Study of some Algorithms for Association Rule Mining

ZOUHIR Assia and OUADIF Latifa
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
assiazouhir94@gmail.com, latifa1ouadif@gmail.com

Abstract—We live in a world where each day tons and tons of data is generated from millions of sources. Companies and organizations thrive for this data in order to acquire valuable information that helps them understanding their customer needs and demands. This valuable insight collaborates in improving the services and products – thus enhancing the overall business and profits. Filtering out such significant information thus requires employing some data mining algorithms. Data mining is an analytical tool which allows users to analyse data, categories it and summaries the relationships among the data. It discovers the useful information from large amount of relational databases. Data mining can perform these various activities using its technique like clustering, classification, prediction, association learning etc. This paper presents an overview of association rule mining algorithms(Pascal, Close, Closet, A-Close). Algorithms are discussed with proper example and compared based on some performance factors like accuracy, data support, execution speed, etc.

Keywords—Data mining, Association rules, frequent itemset, Close, Closet, A-Close, Pascal.

Comparison of Data Mining Algorithms C4.5, NB, Appriori and EM

Omar.FIKRI
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
carriereprof2015@gmail.com

Abstract—Data Mining is a multidisciplinary field allowing, from a very large amount of raw data, to extract hidden, relevant and previously unknown information for industrial or operational use of this knowledge. The purpose of this Article is to present algorithms used in the context of supervised data mining, for which we will make a comparison between two algorithms C4.5 and Naive Bayes. For the unsupervised Datamining we will present the algorithm EM (Expectation- Maximization) which a Clustering algorithm, then the algorithm Apriori which is a classical algorithm of search for association rules.

Keywords—Classification, Algorithm apriori, association rules.

Classification of Medical Datasets using Decision Tree Algorithms

Mohamed BOUSSAKSSOU

Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
boussakssoumohamed@gmail.com

Abstract—In data mining, classification is one of the significant techniques with applications in fraud detection, Artificial intelligence, Medical Diagnosis and many other fields. Classification of objects based on their features into pre-defined categories is a widely studied problem. Decision trees are very much useful to diagnose a patient problem by the physicians. Decision tree classifiers are used extensively for diagnosis of breast tumour in ultrasonic images, ovarian cancer and heart sound diagnosis. In this paper, performance of decision tree induction classifiers on various medical data sets in terms of accuracy and time complexity are analysed.
Keywords—Data Mining, Classification, Decision TreeInduction, Medical Datasets.

Extraction of frequent itemsets

CHAOURA Chaimaa and ECHCHAOUI Hamza
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
Chaimaa.chaoura.96@gmail.com,hamzaechchaoui96@gmail.com

Abstract—Data is important property for everyone. Large amount of data is available in the world. Data mining is a technique to process data, select it, integrate it and retrieve some useful information. It discovers the useful information from large amount of relational databases. Data mining can perform these various activities using its technique like clustering, classification, prediction, association learning etc. This paper presents an overview ofalgorithms for extracting frequent Itemsets. Algorithms are discussed with proper example and compared based on some performance factors like data support, execution speed etc.
Keywords—Datamining, itemsets frequent, algorithm charm, Pascal, Titanic, FP-tree.

A comparative study between « Eclat, SAM, SSDM, RElim »

Khadija El Mestar and Mustapha Lydiri
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University

KhadijaElmestar@gmail.com, mustaphalydiri@gmail.com

Abstract—Data Mining is a technology whose purpose is the exploitation of information and the extraction of knowledge from a large number of data. Frequent model extraction is the most important step in association rules. The time required for generating frequent itemsets plays an important role. This paper provides a comparative study of algorithms Eclat SSDM SAM RELIM which are among the most used algorithms for the frequent extraction of objects. The performance of these algorithms is compared according to the efficiency of the time and memory usage. The comparative study of algorithms includes aspects like different support values, size of transactions and different dataset.

Keywords—Relim algorithm, SAM, SSDM, Eclat.

Comparaison between SVM, CLARA,PAM and K-MEANS

Lahcen GOUSKIR
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
l.gouskir@gmail.com

Abstract—Data mining is a search for relationship and patterns that exist in large database. Clustering is an important data mining technique. Because of the complexity and the high dimensionality of gene expression data, classification of a disease samples remains a challenge. Hierarchical clustering and partitioning clustering is used to identify patterns of gene expression useful for classification of samples. In this paper, we make a comparative study of three partitioning methods namely VSM, PAM, CLARA and k-means to classify the cancer dataset

Keywords—Clustering, classification VSM, PAM, CLARA, k-means.

Extraction of frequent closet itemsets by Close, A-Close and Closet Algorithms

Tichira Yassine
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
tichirayassine@gmail.com

Abstract—Mining frequent closed itemsets provides complete and non-redundant results for frequent pattern analysis. Extensive studies have proposed various strategies for efficient frequent closed itemset mining, such as depth-First search vs. breadth-First search, vertical formats vs. horizontal formats, tree-structure vs. other data structures, top-down vs. bottom-up traversal, pseudo projection vs. physical projection of conditional database, etc. It is the right time to ask : What are the advantages and disadvantages of the strategies?" What and how can we pick and integrate the best strategies to achieve higher performance in general cases?" In this study, we answer the above questions by a systematic study of the search strategies and develop a winning algorithm CLOSET+. CLOSET+ integrates the advantages of the previously proposed effective strategies as well as some ones newly developed here. A thorough performance study on synthetic and real data sets has shown the advantages of the strategies and the improvement of CLOSET in terms of runtime, memory usage and scalability.
Keywords—Closet itemsets, algorithms, close, closet, apriori, pascal.

A Comparative Study on Clustering and Classification Algorithm

Youssef FAKIR and Jamal EDDYN IMAD
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
jfakir95@gmail.com, i.jamaleddyn@gmail.com

Abstract—Data mining is defined as the method of extracting hidden relationships from large databases. It binds together disciplines like machine learning, statistics, information retrieval and visualization techniques helping users in predictive analysis of raw data. Clustering deals with grouping objects into different classes based on their similar habits whereas classification classifies objects based on predefined classes. It finds its application in statistical data analysis, pattern recognition, image analysis, information retrieval etc . This paper presents study of two kinds of algoriths, the machine learning algorithms (bagging, AdaBoost, CART) and the unsupervised learning algorithm (K-means). In addition, we will present a description of these algorithms in terms of average execution time and memory usage.
Keywords—Datamining, clustering, classification, AdaBost, bagging, Kmeans, Cart.

Comparison of some clustering algorithms

Anas Sijasse
Department of computer science, Faculty of Sciences and Technology, Sultan Moulay Slimane University
anasjessi@gmail.com

Abstract—In the arena of software, data mining technology has been considered as useful means for identifying patterns and trends of large volume of data. This approach is basically used to extract the unknown pattern from the large set of data for business as well as real time applications. It is a computational intelligence discipline which has emerged as a valuable tool for data analysis, new knowledge discovery and autonomous decision making. The raw, unlabeled data from the large volume of dataset can be classified with an unsupervised fashion by using cluster analysis and supervised fashion with decision tree. clustering the assignment of a set of observations into clusters so that observations in the same cluster may be in some sense be treated as similar. Decision trees are a very effective method of supervised learning. It aims is the partition of a dataset into groups as homogeneous as possible in terms of the variable to be predicted. It takes as input a set of classified data, and outputs a tree that resembles to an orientation diagram where each end node (leaf) is a decision (a class) and each non- final node (internal) represents a test. Each leaf represents the decision of belonging to a class of data verifying all tests path from the root to the leaf. In this research work two important clustering algorithms namely, centroid based K-Means and representative object based FCM (Fuzzy C-Means) clustering algorithms are compared, and ID3 and C4.5 algorithms have been introduced by J.R Quinlan which produce reasonable decision trees.

Keywords—Clustering, kmeans, fuzzy c-means, id3, c4.5.