6th International Conference on Soft Computing and Pattern Recognition

August 11-14, 2014, Ramada Plaza hotel, Tunis – Tunisia

http://www.mirlabs.org/socpar14/

Conference Booklet

SoCPaR 2014

Welcome Message from Chairs

After the success of the 5th International Conference on Soft Computing and Pattern Recognition (SoCPaR 2013), SoCPaR 2014 is organized to bring together worldwide leading researchers and practitioners interested in advancing the state of the art in Soft Computing and Pattern Recognition, for exchanging knowledge that encompasses a broad range of disciplines among various distinct communities. It is hoped that researchers and practitioners will bring new prospects for collaboration across disciplines and gain inspiration to facilitate novel breakthroughs. The themes for this conference are thus focused on "Innovating and Inspiring Soft Computing and Intelligent Pattern Recognition".

The Conference is jointly organized by the Machine Intelligence Research Labs (MIR Labs) - USA and the Research Groups in Intelligent Machines (REGIM-Lab) - Tunisia. The conference is Technically Co-Sponsored by the IEEE Tunisia Section, the IEEE Systems, Man and Cybernetics Society (SMCS) Tunisia Chapter, and the IEEE SMCS Technical Committee on Soft Computing.

On behalf of the organizing committee, we are happy to announce that we received 130 submissions from researchers of 25 countries around the world. 118 papers were reviewed by three reviewers, 10 papers were reviewed by four reviewers and the other 2 papers were reviewed by five reviewers. Finally, 82 papers were accepted, of which 22 are for oral presentation and 60 are for poster presentation. As such, the acceptance rate for oral papers is about 17%. The technical program consists of 5 plenary talks and 2 tutorials by world-class experts followed by technical sessions covering various topics in the soft computing and pattern recognition fields.

This conference would not have been possible without the hard work of many people. Please allow us to present our heartfelt thanks to all authors for their submissions, special session organizers and chairs for their valuable responsibilities, the reviewers for their quality appraisal, the invited speakers for significant remarks, the attendees for their support and last but not least we are grateful to all the committee members for their tireless efforts towards the success of SoCPaR 2014.

The General Chairs and the Program Chairs along with the entire team cordially invite you to attend the International Conference on Soft Computing and Intelligent Pattern Recognition to be held on August 11-14, 2014 in Tunis, Tunisia.

General Chairs

Ajith Abraham, Machine Intelligence Research Labs (MIR Labs), USA

Adel M. Alimi, Research Groups in Intelligent Machines (REGIM-Lab), Tunisia

Technical Program Committee Chairs

Haikal El Abed, University of Braunschweig, Germany

Mohamed Ben Halima, University of Gabes, Tunisia

SoCPaR 2014 - Program at a Glance

August 11-14, 2014, Ramada Plaza Hotel, Tunis – Tunisia

	August 11, 2014	August 12, 2014	August 13, 2014	August 14, 2014
08:30-09:00		Registration	Oral Session 2 (6x20') #12, #53, #70, #93, #98, #123	Oral Session 4 (6x20') #16, #62, #67, #100, #110, #118
09:00-09:30		Opening Session		
09:30-10:00		Plenary Talk 1 (1h) *Fakhri Karray (Canada)*		
10:00-10:30				
10:30-11:00		Coffee Break	Coffee Break	Coffee Break
11:00-11:30		Oral Session 1 (6x20') #38, #48, #71, #78, #89, #106	Plenary Talk 3 (1h) *Farouk Cherif (Tunisia)*	Plenary Talk 5 (1h) *Robert John (UK)*
11:30-12:00				
12:00-12:30			Oral Session 3 (4x20') #43, #84, #105, #115	Awards & Closing Session
12:30-13:00				
13:00-13:30		Lunch	Lunch	Lunch
13:30-14:00				
14:00-14:30	Registration	Open Networking	Open Networking	Excursion: Visit to Bardo Museum & Sidi Bousaïd
14:30-15:00				
15:00-15:30				
15:30-16:00				
16:00-16:30	Tutorial 1 (1h) *Volker Märgner (Germany)*	Plenary Talk 2 (1h) *Manuel Roveri (Italy)*	Plenary Talk 4 (1h) *Abderazek Ben Abdallah (Japan)*	
16:30-17:00				
17:00-17:30	Coffee Break	Coffee Break	Coffee Break	
17:30-18:00	Tutorial 2 (1h30') *Nikolai Petkov (Netherlands)*	Teasers 1 (30x1')	Teasers 2 (29x1')	
18:00-18:30		Poster Session 1 #2, #10, #13, #14, #18, #30, #31, #34, #35, #41, #47, #54, #57, #59, #60, #64, #65, #73, #76, #82, #85, #87, #99, #101, #107, #108, #112, #116, #120, #122	Poster Session 2 #8, #9, #15, #19, #25, #28, #33, #36, #37, #42, #44, #50, #51, #52, #55, #58, #63, #69, #72, #77, #83, #86, #91, #95, #96, #102, #119, #121, #127, #130	
18:30-19:00				
21:00-23:00			Gala Dinner	

Monday, August 11, 2014

14:00-15:30   **Registration**

16:00-17:00   **Tutorial 1**

Chairs: Nicolai Petkov (Univ. of Groningen, Netherlands) & Manuel Roveri (Politecnico di Milano, Italy)

Volker Märgner
Technische Universität Braunschweig, Germany

Title: *Historical Document Processing as an Application Field for Pattern Recognition Research*

Abstract: Massively scanning of historical books by companies or libraries all over the world makes images of historical books available for everybody who has access to the internet. Unfortunately only the given Meta data can be used for searching but for the work on the content again the original document or a printed copy has to be used.

Automatic analysis and processing of scanned historical documents can help to overcome this disadvantage by using image processing and pattern recognition methods and tools.

In my talk I will present an overview about problems and solutions for historical document processing. Present a system for analyzing and processing of historical documents, the modules and some solutions that show how the humanities can take advantage of pattern recognition knowledge to ease their research and open doors for new applications.

Finally some results from an ongoing project for historical Arabic manuscript processing are shown.

Biography: Volker Märgner received his diploma (Dipl.-Ing.) and doctorate (Dr.-Ing.) degrees in electrical engineering from the Technische Universität Carolo Wilhelmina zu Braunschweig (TUBS), Germany, in 1974 and 1983 respectively. Since 1983, he has been working at the TUBS. Currently he is a member of the research and teaching staff at the Institute for Communications Technology, in the position of an academic director. He lectures in image processing and pattern recognition. His main areas of research are image processing and pattern recognition. Currently, he is working on image pre-processing and pattern recognition methods and their application to industrial quality control as well as to the recognition of cursive handwriting on documents. He developed recognizer for printed German text and for German handwritten words. Robust pre-processing and feature extraction with an HMM based recognizer are the key features of this solution. Since 1991 he is also working on Arabic text recognition, at the beginning on printed text recognition thereafter on handwritten Arabic word recognition. This work is done in close cooperation with Tunisian universities. He developed the IFN/ENIT-database of handwritten words in 2002 and organizes the biennial competition on Arabic handwriting recognition within the ICDAR conference since 2005. He worked on the important task of system evaluation, in particular on the evaluation of document segmentation results. He published more than 60 papers including journal papers and book chapters. He is a member of program committees of conferences and workshops. He is a reviewer for international journals, including IEEE-PAMI, IJDAR, and PR and he is a member of VDE/VDI, DAGM, IAPR (TC10, TC11), and IEEE.

17:00-17:30   **Coffee Break**

Monday, August 11, 2014

17:30-19:00   **Tutorial 2**

Chairs: Volker Märgner (Technische Universität Braunschweig, Germany) & Adel M. Alimi (Univ. of Sfax, Tunisia)

Nicolai Petkov
University of Groningen, Netherlands
Lecture 1
Title: *2D Gabor functions and filters for image processing and computer vision*
Abstract Neuro-physiologic background: properties of simple and complex cells in cortical areas V1/V2. Two-dimenisonal Gabor functions as models of the receptive fields of simple cells. Mathematical parametrisation of receptive field properties: preferred orientation, spatial frequency, bandwidth, shape. Semi-linear Gabor filters and banks of such filters. Complex cells and Gabor energy filters. Gabor filters vs. Canny ede detectors. Gabor filter banks and texture descriptors. CORF filters as more realistic models of simple cells.
Lecture 2
Title: *Contour detection by surround suppression of texture*
Abstract The masking role texture in the perception of contours: psychophysical and neuro-physiological evidence. Computational models of surround suppression in complex cells and 2D Gabor filters. Improving the performance of contour detectors by surround suppression of texture.
Biography: Nicolai Petkov is professor of computer science at the University of Groningen since 1991. In the period 1998-2009 he was scientific director of the Institute for Mathematics and Computer Science. He works in the field of brain-inspired visual pattern recognition. See www.cs.rug.nl/~petkov.

Tuesday, August 12, 2014

08:30-09:00	Registration
09:00-09:30	Opening Session
09:30-10:30	Plenary Talk 1

Chairs: Ajith Abraham (MIR-Labs, USA) & Adel M. Alimi (Univ. of Sfax, Tunisia)

Fakhreddine Karray
Univ. of Waterloo, Canada

Title: *Multi Entity Bayesian Networks for Situation Assessment in Connected Vehicular Network*

Abstract: Inattentiveness of drivers has been shown to be the main cause in road accidents making it a major factor in road safety for next generation connected car systems. In this work, we propose a comprehensive framework to address the problem of road safety by tackling it from a high-level information fusion standpoint, considering the Vehicular Ad- hoc Networks (VANET) as the deployment platform. The proposed framework relies on the Multi-Entity Bayesian Networks (MEBN), which exploits the expressiveness of first- order logic for semantic relations, and the strength of the Bayesian networks in handling uncertainty. To demonstrate the capabilities of the proposed framework, we have developed a collision warning system simulator, which evaluates the likelihood of a vehicle being in a near-collision situation using a wide variety of local and global information sources available in VANET environment. Our experimental results for two driving scenarios simulating near-collision situations demonstrate the capability of the proposed framework to achieve situation assessment on the road.

Biography: Fakhreddine Karray is the Univ. Research Chair Professor in Electrical and Computer Engineering and co- Director of the Center for Pattern Analysis and Machine Intelligence Center at the Univ. of Waterloo, Canada. He received the Ing. Dip (EE), degree from ENIT, Tunisia and the PhD degree from the Univ. of Illinois, Urbana Champaign, USA in the area of systems and control. Dr. Karray's research interests are in the areas of intelligent systems, soft computing, sensor fusion, and context aware machines with applications to intelligent transportation systems, cognitive robotics and natural man- machine interaction. He has (co)authored over 350 technical articles, a textbook on soft computing and intelligent systems, five edited textbooks and 13 textbook chapters. He holds 15 US patents. He has chaired/co-chaired 14 international conferences in his area of expertise and has served as keynote/plenary speaker on numerous occasions. He has also served as the associate editor/guest editor for more than 12 journals, including the IEEE Transactions on Cybernetics, the IEEE Transactions on Neural Networks and Learning, the IEEE Transactions on Mechatronics, the IEEE Computational Intelligence Magazine. He is the Chair of the IEEE Computational Intelligence Society Chapter in Kitchener- Waterloo, Canada.

Dr. Karray is the co-founder of Intelligent Mechatronic Systems Inc. and Voice Enabling Systems Technology Inc. (Vestec Inc.), two spinoff companies of the Univ. of Waterloo, employing collectively more than 230 scientists and engineers. He currently serves as the Chairman of the Board of Vestec Inc, with branches in Japan, Tunisia and USA. He is also a founding member and past Vice President of the Arab Science and Technology Foundation (ASTF).

10:30-11:00	Coffee Break

Tuesday, August 12, 2014

11:00-13:00   Oral Session 1

Chairs: Fakhreddine Karray (*Univ. of Waterloo, Canada*) & Haikal El Abed, (Univ. of Braunschweig, Germany)

#38	**Topological and textural features for off-line signature verification based on Artificial Immune Algorithm** Yasmine Serdouk, **Hassiba Nemmour** and Youcef Chibani *Univ. of Sciences and Technology Houari Boumediene (USTHB), Algiers, Algeria*
#48	**Color Segmentation for Historical Documents Using Markov Random Fields** Werner Pantke, Arne Haak, **Volker Märgner** *Institute for Communications Technology Technische Universitat Braunschweig, Germany*
#71	**Towards Glaucoma Detection Using Intraocular Pressure Monitoring** **Christophe Gisler**, Antonio Ridi, Milène Fauquex, Dominique Genoud and Jean Hennebert *Univ. of Applied Sciences Western Switzerland*
#78	**Efficient Recognition of Machine Printed Arabic text Using Partial Segmentation and Hausdorff Distance** **Raid Saabni** *Triangle Research & Development Center*
#89	**Approach of Texture Signature Determination - Application to Forest Cover Classification of High Resolution Satellite Image** Wala Zaaboub and **Zouhour Ben Dhiaf** *Faculty of Science of Tunis, Tunisia*
#106	**GMM-based Handwriting Style Identification System for Historical Documents** **Fouad Slimane**[1], Torsten Schaßan[2] and Volker Märgner[1] [1] *Institute for Communications Technology, Technische Univ. Braunschweig, Germany* [2] *Herzog August Bibliothek Wolfenbüttel (HAB) - Braunschweig, Germany*

13:00-16:00   **Lunch & Open Networking**

16:00-17:00   **Plenary Talk 2**

Chairs: Ahmed Rubaai (Howard Univ., Washington, DC, USA) & Mohamed Ben Halima (Univ. of Gabes, Tunisia)

Manuel Roveri
Politecnico di Milano, Italy

Title: *Intelligence for Embedded Systems*

Abstract: The emergence of nontrivial embedded units mounting a rich sensor platform, sensor networks, the Internet of Things, pervasive and cyber-physical systems has made possible the design of sophisticated applications where large amounts of real-time data are collected and analyzed. The talk will present some fundamental mechanisms behind intelligence and learning strategies and show how they represent the key ingredients needed to design the current and future generation of intelligent embedded systems and derived applications.

In particular, aspects related to the study and design of intelligent embedded systems (i.e., embedded systems inheriting intelligent mechanisms proper of human cognition), the investigation and design of adaptive computational-intelligence techniques (i.e., learning in non stationary environments) and the deployment of credible networked intelligent embedded systems able to operate in harsh environments will be introduced. We will see how these methodologies, techniques and solutions for adaptive and intelligent information processing systems allow the design of intelligent embedded systems able to interact proactively with the environment and react and adapt to evolving time-variant situations.

Biography: Manuel Roveri, received the Dr. Eng. degree in Computer Science Engineering from the Politecnico di Milano (Milano, Italy) in June 2003, the MS in Computer Science from the Univ. of Illinois at Chicago (Chicago, Illinois, U.S.A.) in December 2003 and the Ph.D. degree in Computer Engineering from Politecnico di Milano (Milano, Italy) in May 2007. Currently, he is an assistant professor at the Department of Electronics and Information of the Politecnico di Milano. He has been visiting researcher at Imperial College London (UK).

Manuel Roveri is an Associate Editor of the IEEE Transactions on Neural Networks and Learning Systems and served as chair and member in many IEEE subcommittees. He is the co-organizer of the IEEE Symposium on Intelligent Embedded Systems in 2014 and organizer and co-organizer of workshops and special sessions at IEEE-sponsored conferences. Current research activity addresses adaptation and learning in non-stationary environments and intelligence for embedded systems and cognitive fault diagnosis.

Manuel Roveri has published about 70 papers in international journals and conference proceedings.

17:00-17:30   **Coffee Break**

Tuesday, August 12, 2014

17:30-18:00   **Teasers (1min / poster)**

Chairs: Manuel Roveri (*Politecnico di Milano, Italy*) & Chokri Ben Amar (*Univ. of Sfax, Tunisia*)

18:00-19:00   **Poster Session1**

Chairs: Manuel Roveri (*Politecnico di Milano, Italy*) & Chokri Ben Amar (*Univ. of Sfax, Tunisia*)

#2   **Genetic Stereo Matching Algorithm with Fuzzy Fitness**
Haythem Ghazouani
Ecole Supérieure de Technologie et d'Informatique Charguia II, Tunisia

#10   **Face recognition system using neural network with Gabor and discrete wavelet transform parameterization**
Chelali Fatma Zohra and Djeradi Amar
Univ. of science and technology Houari Boumedienne. Algiers, Algeria

#13   **Prior Segmentation of Old Arabic Manuscripts by Separator Word Spotting**
Nabil Aouadi and Afef Kacem
LaTICE-ENSIT, Univ. of Tunis, Tunisia

#14   **Multi-task Deep Learning for Image Understanding**
Bo Yu[1] and Ian Lane[2]
[1] The State Key Laboratory of Remote Sensing Science, Chinese Academy of Sciences, China
[2] Carnegie Mellon Univ., NASA Research Park, USA

#18   **Performance of curvelets, dual-tree complex wavelet and discrete wavelet transform in handwritten word classification**
Mohamed Benjelil[1], Mullot Rémy[2]
[1] REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia
[2] L3i La Rochelle France

#30   **Partial 3D-Object Retrieval Using Level Curves**
Amine Mahiddine, Djamal Merad, Pierre Drap and Jean-Marc Boï
LSIS UMR CNRS 7296, Centre National de la Recherche Scientifique, Marseille, France

#31   **Camera-based Sudoku recognition with Deep Belief Network**
Baptiste Wicht and Jean Hennebert
Switzerland

#34   **Experimental Analysis of Crisp Similarity and Distance Measures**
Leila Baccour[1] and Robert I. John[2]
[1] REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia
[2] Jubilee Campus, UK

#35   **Proposition of a Classification System beta-LS-SVM and its Application to Medical Data Sets**
Fatma Dammak and Leila Baccour
REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

#41   **The Lifted Wavelet Transform for Encephalic Signal Diagnostic**
Malika Kedir-Talha, **Nafissa Sadi Ahmed** and AitAmer Mohamed Amine
USTHB, Faculty of electronics and informatics, Laboratory of instrumentation, Algeria

#47   **ACS-F2 – A New Database of Appliance Consumption Signatures**
Antonio Ridi[1], **Christophe Gisler**[1] and Jean Hennebert[2]
[1] Univ. of Applied Sciences Western, Switzerland
[2] Univ. of Fribourg, Switzerland

#54   **A new automated method for breast mass segmentation**
Sourour Khouaja, Hajer Jlassi and Kamel Hamrouni
Research Unit of Signal, Image and Pattern Recognition, Nat. Eng. School of Tunis, Tunisia

#57   **Microcalcifications Detection in Mammograms based on Ant Colony Optimization and Markov Random Field**

Amira Bacha[1], Karim Kalti[1], Basel Solaiman[2] and Najoua Essoukri Ben Amara[1]

[1] National Engineering School of Sousse, Tunisia

[2] Telecom Bretagne, France

#59   **Image Features Extraction for Masses Classification in Mammograms**

Ramzi Chaieb[1], Karim Kalti[1,2], Fradj Ben Lamine[3] and Amira Bacha[1]

[1] Advanced Systems in Electrical Engineering, Nat. Engineering School of Sousse, Tunisia

[2] FSM, Univ. of Monastir, Monastir, Tunisia

[3] High School of Sciences and Technologies of Hammam Sousse, Univ. of Sousse, Tunisia

#60   **Data-clustering approach based on artificial ant colonies with control of emergence**

Billel Kenidra[1] and Souham Meshoul[2]

[1] National Superior institute of computer science, (E.S.I), Algiers, Algeria

[2] Dept. of Fundamental Computer Science and Applications, Univ. of Constantine 2, Algeria

#64   **A Hybrid Approach Based on Decision Trees and Clustering for Breast Cancer Classification**

Hind Elouedi[1], Walid Meliani[1], Zied Elouedi[2] and Nahla Ben Amor[2]

[1] ISET Rades, Tunisia

[2] ISG Tunis, Tunisia

#65   **A New System Using Beta Wavelet Network for Descriptors Extraction and Fuzzy Decision Support for CBIR**

Asma Eladel[1], Ridha Ejbali[2], Mourad Zaied[1] and Chokri Ben Amar[3]

REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

#73   **Pyramid Histogram of Oriented Gradient for Machine-printed/Handwritten and Arabic/Latin word discrimination**

Asma Saidani and Afef Kacem

LaTICE-ENSIT, Univ. of Tunis, Tunisia

#76   **New Human Body Shape Descriptor Based on Anthropometrics Points**

Moez Hamad, Sébastien Thomassey and Pascal Bruniaux

ENSAIT-GEMTEX, France

#82   **Towards a dynamic knowledge base based on ontology for clinical decision support system**

Souad Benomrane and Mounir Ben Ayed

REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

#85   **New Prior Knowledge Based Extensions for Stable Feature Selection**

Afef Ben Brahim and Mohamed Limam

High Institute of Management, Univ. of Tunis, Tunisia

#87   **New contributions into the Dezert-Smarandache theory: Application to remote sensing image classification**

Fatma Haouas[1] and Zouhour Ben Dhiaf[2]

[1] Faculty of Science of Monastir, Tunisia

[2] Faculty of Science of Tunis, Tunisia

#99   **Architectural Proposal for a Mobile Telepresence Robot, REGIMTEL**

Nouha Ghribi, Boudour Ammar and Adel M. Alimi

REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

#101   **Feature Selection and Classification for Urban Data Using Improved F-Score with Support Vector Machine**

Salah Zemmoudj, **Akila Kemmouche** and Youcef Chibani

Faculty of Electronics and Computer Sciences, Univ. Sciences & Technology USTHB, Algeria

#107   **A reproducible application to B-MODE transcranial ultrasound based on echogenicity evaluation analysis in defined area of interest**

Jiří Blahuta, Petr Cermak and Michal Vecerek

Czech Republic

#108	**Parallel Rules Mining Using Graphic Processor Units and Bees Behaviors**
	Youcef Djenouri, Ahcene Bendjoudi, Malika Mehdi, Nadia Nouali Taboujemat and Zineb Habbas
	Ceriste Center Research, Algiers, Algeria USTHB LSI, Algiers, Algeria
#112	**Hardware adaptation for multimedia application Case study: augmented reality**
	Tarek Frikha and Nader Ben Amor
	National Engineering School of Sfax, Tunisia
#116	**Swarm Intelligence and Multi Agent System in Healthcare**
	Hanen Jemal, Zied Kechaou and Mounir Ben Ayed
	REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia
#120	**Toward a Kindergarten Video Surveillance System (KVSS) using background subtraction based Type-2 FGMM model**
	Slim Abdelhedi, Ali Wali and Adel M. Alimi
	REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia
#122	**Enhanced Query Support for NoSQL Crowd sourcing Systems**
	Alfredo Cuzzocrea[1], Marcello Di Stefano[2], Paolo Fosci[3] and Giuseppe Psaila[3]
	[1] ICAR-CNR and Univ. of Calabria
	[2] Univ. of Palermo
	[3] Università di Bergamo

Wednesday, August 13, 2014

08:30-10:30   **Oral Session 2**

Chairs: Farouk Cherif (University Sousse, Tunisia) & Raid Saabni (Triangle R&D Center)

#12   **Bi-Spectrum Based-EMD Applied to the Non- Stationary Vibration Signals for Bearing Faults Diagnosis**

Lotfi Saidi[1], Benali Jaouher[1], Farhat Fnaiech[1] and Brigitte Morello[2]

[1] Engineering National Higher School of Tunis (ENSIT), Univ. of Tunis, Tunisia

[2] FEMTO-ST Institute, AS2M department, UMR CNRS 6174 - UFC / ENSMM /UTBM, France

#53   **3D-model retrieval using Bag-Of-salient local Spectrums (BOS)**

Hela Haj Mohamed and Samir Belaid

Faculty of Science of Monastir-Tunisia

#70   **Simulation, Feature Extraction And Disorder Detection (using Fuzzy Logic) Of Uterine Contractions**

Niyati Tiwari[1], **Sai Siddhartha Padmanabhuni**[1], Ratika Garg[1] and Vijay Chourasia[2]

[1]The LNM Institute of Information Technology, Jaipur, Rajasthan, India

[2]Manoharbhai Patel Institute of Engineering &Technology, Gondia, Maharashtra, India

#93   **Parallel Differential Evolution Clustering Algorithm based on Map Reduce**

Meroua Daoudi, Soumiya Hamena, **Zakaria Benmounah** and Mohamed Batouche

Department of computer science, College of NTIC, Constantine 2 Univ., Algeria

#98   **A Modified Hybrid Naive Possibilistic Classifier for Heart Disease Detection from Heterogeneous Medical Data**

Karim Baati, Tarek M. Hamdani and Adel M. Alimi

REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

#123   **A Composite Methodology for Supporting Collaboration Pattern Discovery via Semantic Enrichment and Multidimensional Analysis**

Alfredo Cuzzocrea[1], Claudia Diamantini[2], Laura Genga[2], Domenico Potena[2], Emanuele Storti[2]

[1] ICAR-CNR and Univ. of Calabria, Rende, Italy

[2] Dipartimento di Ingegneria dell'Informazione Universita Politecnica delle Marche, Italy

10:30-11:00   **Coffee Break**

11:00 -12:00   **Plenary Talk 3**

Chairs: Alfredo Cuzzocrea (Univ. of Calabria, Italy) & Nicolai Petkov (Univ. of Groningen, Netherlands)

Farouk Chérif
Univ. Sousse, Tunisia

Title: Stability and Oscillations of Recurrent neural networks (RNNs)

Abstract: Many scientific studies have proven that an animal continuously senses its environment via different perceptual means and integrates the sensory information to adapt its behavior. The temporal aspect of this integration is fundamental for the sensory perception. A population of neurons makes a success of this dynamic integration by an intricate combination of synchronization of potential of action and recurring connections.
Inspired by this biological mechanism, recurrent neural networks (RNNs) are believed to be a powerful sequence processing method. Recurrent interactions among large populations of neurons are expected to yield collective phenomena adapted for dealing with temporal behavior.
The stability of dynamical systems in presence of time-delay is a problem of big interest since the presence of a time-delay may induce instabilities, and complex behaviors for the corresponding schemes. In particular, the problem becomes even more difficult in the case when the delays are distributed or mixed.
This talk is concerned with the stability and oscillations to some delayed recurrent neural networks with periodic (resp. almost periodic, resp. pseudo almost periodic) environments.

Biography: Farouk Chérif received the B.S. degree from the Univ. of Monastir, Tunisia, the M.S. degree from the Univ. of Paris 7, France, and the Ph.D. degree from the Univ. of Paris 1, Panthéon-Sorbonne, Paris, France, all in mathematics/applied mathematics, in 1989, 1992 and 1995 respectively.
He was with CERMCEM, Univ. of Paris 1 Panthéon-Sorbonne from 1992 to 1996. In 1996, he joined the Department of Mathematics and Computer Science, Military Academy, Sousse, Tunisia.
He is currently an Associate Professor with the Department of Computer science, the higher institute of applied sciences and technology of Sousse, Univ. of Sousse.
Farouk is the author or co-author of more than 25 journal papers and book chapters. His research was first nonlinear analysis and especially the qualitative study of Hamiltonian systems. In particular, he defined and studied an index to characterize the existence of almost periodic solutions and chaotic behavior of Hamiltonian systems via Lyapunov exponents. Later, he studied the nonlinear dynamics and the delayed differential equations and different applications in various fields such as artificial neural networks (RNNs, CNNs, SICNNs). Hence, the existence of almost periodic solutions and/or almost auto-morphicof such models are established. Recently, Dr. Farouk has built a new and original space: Quadratic-mean pseudo almost periodic functions. This new concept has allowed to solve the stochastic differential equations and in particular the stochastic delayed recurrent neural networks.
Dr. Farouk, currently, serves as a reviewer of several international journals and a Program Committee for various international conferences and workshops.

Wednesday, August 13, 2014

12:00-13:00   **Oral Session 3**

Chairs: Christophe Gisler (Univ. of Applied Sciences Western, Switzerland) & Haikal El Abed (Univ. of Braunschweig, Germany)

#43   **Multilevelthresholding for image segmentation based on parallel distributed optimization**

Mohamed Sandeli and Mohamed Batouche

Faculty of NTIC, Univ. Constantine 2, Constantine, Algeria

#84   **Visual substitution system for blind people based on SIFT description**

Hanen Jabnoun, Faouzi Benzarti and Hamid Amiri

Signal, Images and Information Technology (LR-SITI-ENIT), Tunisia

#105   **Artificial Neural Network-Based Classification System for Lung Nodules on Computed Tomography Scans**

Emre Dandıl[1,3], Murat Çakıroğlu[2], Ziya Ekşi[3], Murat Özkan[3,4], Özlem Kar Kurt[5], Arzu Canan[6]

[1]*Bilecik Vocational High School, Bilecik Şeyh Edebali University, Bilecik, Turkey*

[2]*Faculty of Technology, Mechatronics Engineering, Sakarya University, Sakarya, Turkey*

[3]*Faculty of Technology, Department of Comp. Eng., Sakarya University, Sakarya, Turkey*

[4]*Bolu Vocational High School, Abant Izzet Baysal University, Bolu, Turkey*

[5]*Faculty of Medicine, Department of Chest Diseases, Abant İzzet Baysal University, Bolu, Turkey*

[6]*Faculty of Medicine, Department of Radiology, Abant İzzet Baysal University, Bolu, Turkey*

#115   **An Intelligent and Robust Multi-Oriented Image Scene Text Detection**

Salem Sayahi and Mohamed Ben Halima

REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

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13:00-16:00   **Lunch & Open Networking**

16:00-17:00   **Plenary Talk 4**

Chairs: Volker Märgner & Fouad Slimane (Technische Univ. Braunschweig, Germany)

Abderazek Ben Abdallah
Univ. of Aizu, Japan

Title: *On-Chip Optical Interconnects for Future Computing Systems: Prospects and Challenges*

Abstract: Interconnects will play a leading role in overall system performance and energy consumption of future computing systems. As new applications continuously require more communication bandwidth, electrical links in future many-core computing systems will not scale to the desired performance/power levels required to ensure efficient systems. This is due to the high power consumption, limited bandwidth, and signal integrity problems of the electrical links.

Optical interconnects is a novel and promising concept enabling low-power and high bandwidth especially when combined with wavelength division multiplexing to concurrently transfer multiple parallel optical stream of data through a single waveguide. This talk will discuss the prospects and challenges of this emerging paradigm and present our findings in the area. The talk will conclude by describing future prospects on photonic-electronic chips and their impacts on future computing systems.

Biography: Abderazek Ben Abdallah is a Full Professor of Computer Science and Engineering and Head of the Division of Computer Engineering, The Univ. of Aizu, Japan. He is also directing the Adaptive Systems Laboratory at the School of Computer Science and Engineering, the Univ. of Aizu, Japan. Prior to joining the Univ. of Aizu, he was a faculty member at the Graduate School of Information Systems, The Univ. of Electro-Communications at Tokyo from 2002-2007.

He received his B.S. degree in Electrical Engineering, and his M.S. degree in Computer Engineering from Huazhong Univ. of Science and Technology in 1994, and 1997, respectively. He received his PhD degree in Computer Engineering from the Univ. of Electro-Communications at Tokyo in 2002.

Dr. Ben Abdallah's research interests are in adaptive computing systems, and energy-efficient system design and many core SoC design. He is also active in the areas of network-on-chip and high-performance computing architectures.

He has published more than 200 publications in international journals and conferences, three books, received numerous research grants, and supervised more than 30 graduate and undergraduate students. He was awarded the 2010 Presidential Prize for scientific research and technology, and several best paper awards. He has delivered several keynotes at conferences as well as invited lectures/courses at well-known universities including, Hong Kong Univ. of Science and Technology and Huazhong Univ. of Science and Technology. In addition, he has frequently consulted for international governmental and industrial bodies.

Dr. Ben Abdallah served on the chair, editorial, and review boards of several journals and conferences including, founding and steering chair of the IEEE MC SoC Symposium Series. He has been also involved in organizing many symposia, and conferences sponsored by professional organizations as well as guest editor of special issues in journals, such as IEEE Transactions on Emerging Topics in Computing. He is a senior member of IEEE, and a member of ACM and IEICE

17:00-17:30   **Coffee Break**

Wednesday, August 13, 2014

17:30-18:00 **Teasers (1min / poster)**

Chairs: Abderazek Ben Abdallah (*Univ. of Aizu, Japan*) *&* Alfredo Cuzzocrea (ICAR-CNR and University of Calabria)

18:00-19:00 **Poster Session 2**

Chairs: Abderazek Ben Abdallah (*Univ. of Aizu, Japan*) *&* Alfredo Cuzzocrea (ICAR-CNR and University of Calabria)

#8 **Facial Expression Identification System with Euclidean Distance ofFacial Edges**
Sonia Kherchaoui and Amrane Houacine
Houari Boumediene Univ., Algeria

#9 **Variable Hierarchical Dependencies in Feature Selection**
Djamal Ziani
King Saud Univ., KSA

#15 **Local Descriptors to Improve Off-line Handwriting-based Gender Prediction**
Nesrine Bouadjenek, **Hassiba Nemmour** and Youcef Chibani
Univ. of Sciences and Technology Houari Boumediene, Algiers, Algeria

#19 **Real Time Traffic Accident Detection System using Wireless Sensor Network**
Hosam Mohamed Shreif[1], Mohamed Shedid[1] and **Samah Senbel**[2]
[1] *Future Academy, Cairo, Egypt*
[2] *Arab Academy for Science, Technology and Maritime Transport, Cairo, Egypt*

#72 **Novel hand biometric system using invariant descriptors**
Nesrine Charfi[1], Hanene Trichili[1], Adel M. Alimi and Basel Solaiman[2]
[1] *REGIM -Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia*
[2] *Telecom Bretagne, France*

#25 **Possibility theory for supervised classification of remotely sensed images: a study case in an urban area in Algeria**
Radja Kheddam and Aichouche Belhadj Aissa
Image processing and radiation laboratory, Univ. science & technology (USTHB), Algeria

#28 **Arabic Diacritics Detection and Fuzzy Representation For Segmented Handwriting Graphemes Modeling**
Houcine Boubaker[1], Aymen Chaabouni[1], Mohamed Ben Halima[1], Abedelkarim Elbaati[1] and Haikal El Abed[2]
[1] *REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia*
[2] *Institute for Communications Technology (IfN) Technische Univ. Braunschweig, Germany*

#33 **Face Recognition Based on Geometric Features Using Support Vector Machines**
Wael Ouarda[1], Hanene Trichili[1,2], Adel M. Alimi[1] and Basel Solaiman[2]
[1] *REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia*
[2] *ITI Department Telecom Bretagne France*

#36 **In RKHS space identification of non linear system using kernel canonical correlation analysis**
Nadia Souilem, Ilyes Elaissi, Okba Taouali and Hassani Messaoud
Laboratory of Automatic Signal and Image Processing, ENIM, Univ. of Monastir, Tunisia

#37 **Approximate matching approach for large graphs classification, optimised by NSGA-II**
Abir Mbaya[1] and **Omar Hammami**[2]
[1] *Univ. of Sfax*
[2] *ENSTA PARISTECH, France*

#42 **Supervised wavelet-network based fuzzy-logic classifier performance on the UCI databases**
Olfa Jemai, **Tahani Bouchrika**, Mourad Zaied and Chokri Ben Amar
REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

#44 **Hybrid Soft Computing Methods for Prediction of Oil Prices**
Lubna Gabralla[1] and Ajith Abraham[2]
[1] Sudan Univ. of Science and Technology, Sudan
[2] Machine Intelligence Research Labs, USA

#50 **Handover Simulation of LTE and LTE-A Standards**
Emna Hajlaoui[1], Khouloud Abidi[2], Mahmoud Abdellaoui[3]
[1] National Engineering School of Gabes, Tunisia
[2] National Engineering School of Sfax, Tunisia
[3] National Institute of Electronics and Communications of Sfax, Tunisia

#51 **Using Dynamic Bayesian Networks for the Prediction of Mental Deficiency in Children with Down Syndrome**
Houcem Turki and Mounir Ben Ayed
REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

#52 **Dynamic Management of Materialized Views in Real-Time Data Warehouses**
Issam Hamdi[1], Emna Bouazizi[2] and Jamel Feki[1]
[1] MIRACL Laboratory, Univ. of Sfax, Tunisia
[2] Univ. of Monastir, Tunisia

#55 **Scintigraphic Image Segmentation Based on Grammatical Inference and Spiral Matrix**
Salah Hamdi, Asma Ben Abdallah and Mohamed Hedi Bedoui
Laboratory of Technology and Medical Imaging (LTIM)
Faculty of Medicine of Monastir (FMM), Univ. of Monastir, Tunisia

#58 **Multi-Agents CP-Nets with Incomplete and Different Structures**
Sleh El Fidha and Nahla Ben Amor
ISG, Univ. of Tunis, LARODEC laboratory, Tunis, Tunisia

#63 **Medical image retrieval using hybrid wavelet network classifier**
Sana Othman, Olfa Jemai, Mourad Zaied and Chokri Ben Amar
REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

#69 **A Highly Efficient Distributed Web Crawler Adjustment Mechanism in Social Networks**
Cheng-Hung Tsai, Tsun Ku, Ping-Yen Yang and Ming-Jen Chen
Institute for Information Industry, Taiwan

#77 **Adaptative Shock Filter For Image Characters Enhancement and Denoising**
Khouloud Guemri, Fadoua Drira, Adel M. Alimi
REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

#83 **Distributed MOPSO with dynamic Pareto Front driven population analysis for TSP problem**
Raja Fdhila and Walid Elloumi
REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

#86 **Fast Classification of Handwritten On-line Arabic Characters**
George Kour and Raid Saabni
Triangle Research & Development Center

#91 **Survey on clustering methods: Towards fuzzy clustering for big data**
Abdelkarim Ben Ayed and Mohamed Ben Halima
REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

#95 **An Island Model based Genetic Algorithm for Solving the Capacitated Vehicle Routing Problem**
Meryem Ammi and Salim Chikhi
MISC laboratory, Computer Science Depart., College NTIC, Univ. of Constantine 2, Algeria

#96 **Big Data clustering validity**
Monia Tlili[1], Tarek M. Hamdani[2] and Adel M. Alimi[1]
[1] REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia
[2] Taibah Univ., College Of Science And arts at Al-Ula, al-Madinah al-Munawwarah, KSA

#102   **Tabu search for Dynamic Time Warping global constraint learning**

Bilel Ben Ali[1], Youssef Masmoudi[1] and Souhail Dhouib[2]

[1]*LOGIC Reasearch Unity, Univ. of sfax, Tunisia*
[2]*AL-Baha Univ., KSA*

#119   **Fuzzy set-based formalization of gradual patterns**

Sarra Ayouni and Sadok Ben Yahia

Faculty of science of Tunis, Univ. of EL Manar, Tunisia

#121   **Parameter Estimation in Directed Evidential Networks from Evidential DataBases**

Narjes Ben Hariz and Boutheina Ben Yaghlane

LARODEC Laboratory, Institut Supérieur de Gestion de Tunis, Tunisia

#127   **Stability of stochastically perturbed Hopfield-type neural networks with mixed delays**

Chiraz Jendoubi[1] and Farouk Cherif[2]

[1]*Sfax Faculty of Sciences, Univ. of Sfax, Tunisia*
[2]*LR11ES35, ISSAT Univ. of Sousse, Tunisia*

#130   **CWW: The Encoding Part**

Sahar Cherif, Nesrine Baklouti and Adel M.Alimi

REGIM-Lab, National Engineering School of Sfax, Univ. of Sfax, Tunisia

Thursday, August 14, 2014

08:30-10:30   **Oral Session 4**

Chairs: Heyam Al-Baity (King Saud Univ. KSA) & Mohamed Ben Jlaiel (Univ.of Gafsa, Tunisia)

#16   **Wireless Landmines Tracking System Based on GPS and GPRS**
Salem S. M. Khalifa, Kamarudin Saadan and Norita Md Norwawi
Univ. Sains Islam, Malaysia

#62   **Quantum Behaved Particle Swarm Optimization for Data Clustering with Multiple Objectives**
Heyam Al-Baity[1], Souham Meshoul[2], Ata Kaban[3] and Lilac Alsafadi[4]
[1] King Saud Univ. and Univ. of Birmingham, KSA
[2] Univ. Constantine 2, Algeria
[3] Univ. of Birmingham, UK
[4] King Saud Univ., KSA

#67   **Multi-Bacterial Foraging Optimization for Dynamic Environments**
Mohamed Skander Daas[1] and Mohamed Batouche[2]
[1]Univ. Oum El Bouaghi, Algeria
[2]Univ. Constantine, Algeria

#100   **Statistical control of thinning algorithm with implementation based on hierarchical queues**
Rabaa Youssef[1], Sylvie Sevestre-Ghalila[2] and Anne Ricordeau[3]
[1] COSIM Lab, Tunisia
[2] CEA List, CEA LinkLab, Tunisia
[3] Laboratoire MAP5, Paris Descartes, France

#110   **An New Measure for Evaluating Association Rules**
Youcef Djenouri, Youcef Gheraibia, Malika Mehdi, Ahcene Bendjoudi and Nadia Nouali Taboujemat
CERIST Center Research, Algiers, Algeria

#118   **H_infinity fuzzy emulator design for multivariable control of drum boiler-turbine unit**
Hacene Habbi and **Oualid Lamraoui**
Univ. of Boumerdès, Algeria

10:30-11:00   **Coffee Break**

Thursday, August 14, 2014

11:00-12:00   **Plenary Talk 5**

Chairs: Nicolai Petkov (Univ. of Groningen, Netherlands) *&* Leila Baccour (Univ.of Sfax, Tunisia)

Robert John
Univ. of Nottingham, United Kingdom

Title: Type-2 Fuzzy Logic in Decision Support

Abstract: This talk will provide an overview of Bob's research in type-2 fuzzy logic and its application in Decision Support.
Type-2 fuzzy sets are fuzzy-fuzzy sets - that is, where the fuzzy set has membership grades that are themselves fuzzy sets, rather than numbers in [0,1]. Fuzzy sets (type-1) have had significant success in control applications but by their very definition are not particularly 'fuzzy' and struggle in applications that attempt to mimic human reasoning in decision support systems. Introduced in 1975, type-2 fuzzy logic really started to grow in the late '90s led by Bob and Jerry Mendel. In the intervening period the number of type-2 papers and researchers has grown considerably. This talk will introduce the audience to type-2 fuzzy logic and provide a brief history.
Bob will describe practical application of his work in decision support, such as the aggregation of uncertain information, supply chain modelling and medical diagnosis.

Biography: Bob John has a BSc in Mathematics, a MSc in Statistics and a PhD in Fuzzy Logic. He worked in industry for 10 years as a mathematician and knowledge engineer developing knowledge based systems for British Gas and the financial services industry. Bob spent 24 years at De Montfort Univ. in various roles including Head of Department, Head of School and Deputy Dean. He led the Centre for Computational Intelligence research group from 2001 until 2012. Bob joined Nottingham this year where he leads on the LANCS initiative and Heads up the research group ASAP in the School of Computer Science. The LANCS Initiative is built on a collaboration between four U.K. Universities: Lancaster, Nottingham, Cardiff and Southampton. The U.K.'s Engineering and Physical Sciences Research Council granted £5.4 million to support the development of research at the edge of Computer Science and Operational Research. The Automated Scheduling, Optimization and Planning (ASAP) research group carries out multi-disciplinary research into mathematical models and algorithms for a variety of real world optimization problems. It has 8 academic staff, 9 researchers and over 30 PhD students.

12:00-13:00   **Awards & Closing Session**

13:00-14:00   **Lunch**

14:00-19:00   **Excursion**

Welcome to Tunisia!

Although the smallest nation in North Africa, Tunisia's eventful and often dramatic history has been the result of its strategic position. Over the centuries, the country which was once the exclusive home of the Berbers, has, at one time or another, been settled on by most the world's greatest powers; from the Phoenicians, Romans and Vandals to Byzantines, Arabs, Ottomans and French. These people have come and gone, leaving their mark upon Tunisia in varying degrees, and providing a rich cultural and social heritage that is unique to this land.

Neptune (Bardo Museum)

The trip of Odysseus (Bardo Museum)

The Phoenicians introduced the alphabet to the Mediterranean region, but sadly little of their writings have survived. Tunisian literature really starts in the Roman and Byzantine periods. St Augustine was the most outstanding writer in the area of present-day Tunisia, later, the widespread reading of the Koran played an important role in the development of Arab literature. Many folk tales and poems existed in the past, often told by wandering storytellers at marketplaces and festivals. Modern Tunisian literature grew from a cultural renaissance in the early 20th century, with poetry being dominant genre.

Al-Zaytuna Mosque

El Ghriba Synagogue

Cathedral of St Vincent de Paul

Venue & Practical Information

SoCPaR 2014 will take place in the Ramada Plaza Tunis Hotel – Tunisia. The hotel is situated in Gammarth, 20 minutes from the airport. Guests can visit the historic city of Carthage and can enjoy golf, paragliding, sailing, jet skiing and waterskiing at the nearby beach. Guests can enjoy also snacks and relax with a drink in the hotel bar.

The attendees of the conference will dispose of:

- Keynotes, oral sessions, tutorials, teasers and group discussions will be held in the room A
- Poster sessions (paper posters and demo) will be held in the room B
- Coffee breaks will be held in the Hall
- Buffet Lunches (including free water and Tea) will be held in the hotel restaurant La cascade in the Hotel
- Free wireless connection (wifi)

Residents in the hotel will receive Free airport-hotel transfers (Please verify your flight details) and Breakfast in the hotel.

Registration desk:

- Monday 11 August 2014: 14:00-19:00
- Tuesday 12 August 2014 & Wednesday 13 August 2014: 8:30-13:00 & 15:30-19:00
- Thursday 14 August 2014 & Wednesday 13 August 2014: 8:30-13:00

Oral presentations: An oral presenter will have 20 minutes for the presentation (approximately 15 minutes for the talk and 5 minutes for the questions). Please make sure you introduce yourself to the session chair at least 10 minutes prior to the beginning of your session.

Poster presentations: A one minute teaser/spotlight presentation of your poster should be presented in Room A before the poster session in Room B. You will be expected to display your poster at least 10 minutes prior to the beginning of the assigned session. We encourage you to show a demo close to your poster.

Local transportation: Yellow Taxis can pick up and drop off anywhere. They are equipped with a meter. It is a fairly cheap means of transport.

Currency: The National currency of Tunisia is the Tunisian Dinar (TND). You may convert your money at the airport, at any bank, or at the hotel. The Dinar is broken down into 1,000 "millimes" or thousandths. 1 USD ~ 1,696 TND / 1 EUR ~2,271 TND. Credit cards are accepted in the majority of the hotels and restaurants like in almost all the stores for tourists. Slot-machines are available and allowing to carry out withdrawals, with the Visa cards and Mastercard.
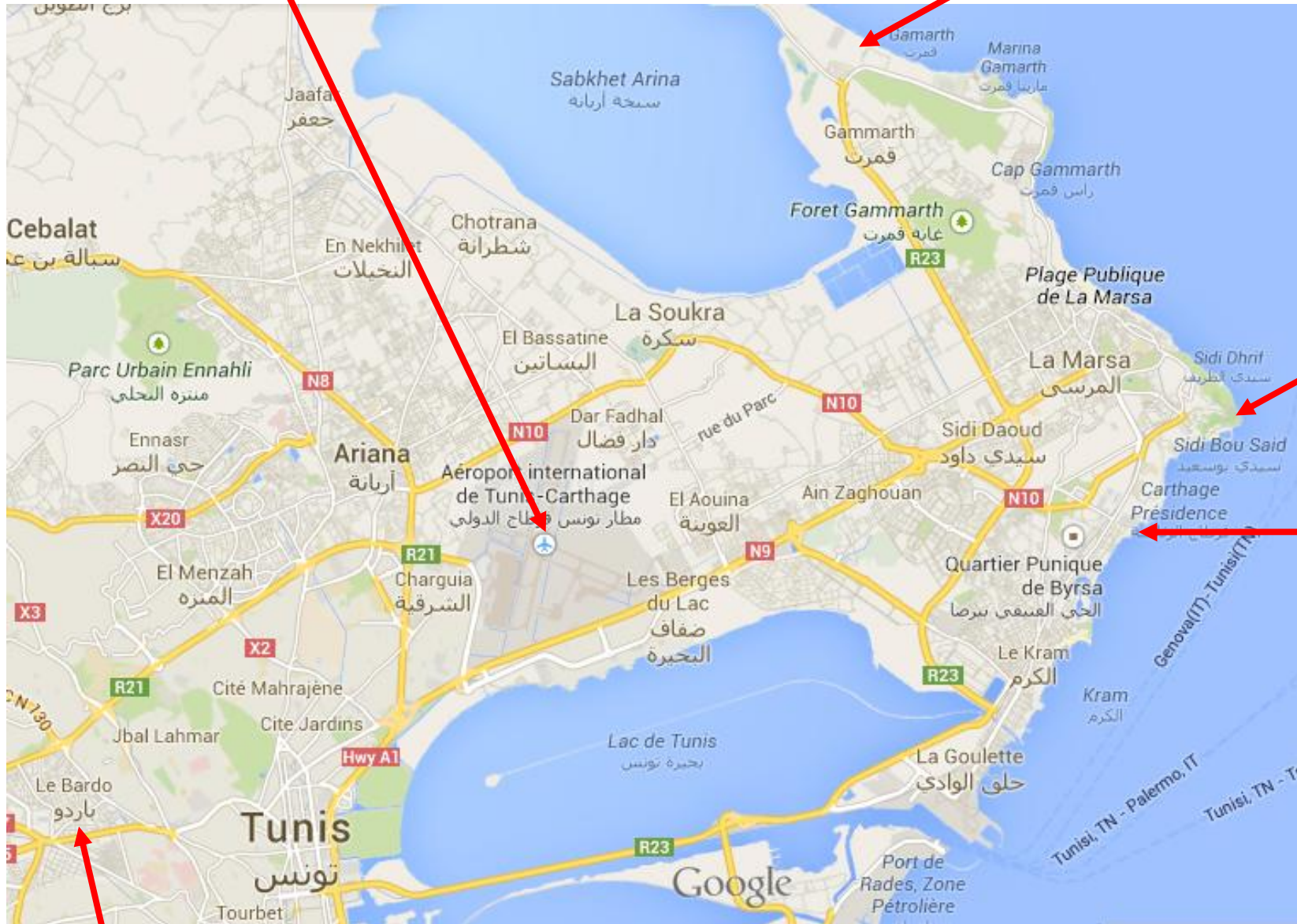
If you need any urgent help during your stay in Tunisia, don't hesitate to call Ali Wali (+216 53 946 045) / Habib M. Kammoun (+216 55 414 610). Emergency Info: Police: (+216) 197 - Ambulance: (+216) 190.

We wish you a pleasant stay in Tunisia!

General Map

Airport

Venue: Ramada Plaza Hotel

Sidi Bousaid

Carthage

Bardo Museum

Program of SS-CITA'2014

It is our pleasure to invite you to participate also in the summer school CITA'2014 which will be held in the same venue of SoCPaR 2014. The program is as follow:

Monday 11 August 2014

- 09:00-09:30   *Registration*
- 09:30-10:00   *Opening*
- 10:00-11:00   **Talk 1 – Ajith Abraham, *Introduction to Computational Intelligence***
- 11:00-11:30   *Coffee Break*
- 11:30-13:00   **Talk 2 – Manuel Roveri, *Supervised Learning (part I)***
- 13:00-14:00   *Lunch*
- 14:00-15:30   *Open Networking*
- 15:30-17:00   **Talk 3 – Manuel Roveri, *Supervised Learning (part II)***
- 17:00-17:30   *Coffee break*
- 17:30-19:00   **Poster Session: Doctoral Consortium**

Tuesday 12 August 2014

- 09:00-10:30   **Talk 4 – Farouk Cherif, *Basics on Recurrent Neural Network***
- 10:30-11:00   *Coffee Break*
- 11:00-13:00   **Talk 5 – Ahmed Rubaai, *Computational Intelligence Techniques for Industrial Systems***
- 13:00-14:00   *Lunch*
- 14:00-15:30   *Open Networking*
- 15:30-17:00   **Talk 6 – Fakhri Karray, *SVM: Fundamentals and Advanced Topics***
- 17:00-17:30   *Coffee break*
- 17:30-19:00   **Talk 7 – Volker Märgner, *Historical Document Processing – An Application of CI***

Wednesday 13 August 2014

- 09:00-10:30   **Talk 8 – Robert John, *Type-2 Fuzzy Logic (part I)***
- 10:30-11:00   *Coffee Break*
- 11:00-13:00   **Talk 9 – Robert John, *Type-2 Fuzzy Logic (part II)***
- 13:00-14:00   *Lunch*
- 14:00-15:30   *Open Networking*
- 15:30-17:00   **Talk 10 – Ajith Abraham, *Evolutionary Algorithms & Swarm Intelligence***
- 17:00-17:30   *Coffee break*
- 17:30-19:00   **Talk 11 – Ajith Abraham, *Hybrid Intelligent Systems***
- 20:00-23:00   **Gala Dinner**

Thursday 14 August 2014

- 09:00-10:00   **Talk 12 – Nicolai Petkov, *Brain-Inspired Computing***
- 10:00-11:00   **Talk 13 – Okyay Kaynak, *Intelligent Systems: An Assessment of the Past and the Prospects for the Future***
- 11:00-11:30   *Coffee Break*
- 11:30-12:30   **Evaluation Exam**
- 12:30-13:00   *Closing Session*
- 13:00-14:00   *Lunch*
- 14:00-19:00   *Excursion to Bardo Museum Carthage and Sidi Bousaid*