



**WORKSHOP ON
INTELLIGENT SYSTEM AND OPTIMIZATION (ISO'17),
ZEWAIL CITY OF SCIENCE AND TECHNOLOGY, EGYPT.**

May 6, 2017

**Workshop on Intelligent System and Optimization (ISO'17),
Zewail City of Science and Technology, Egypt**

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Chair Professor Aboul Ella Hassanien

Founder and Chair of the Scientific Research Group in Egypt (SRGE)



Co-chair Dr. Essam Halim Houssein

Faculty of Computers and Information, Minia University

10.00 : 2:00 Registration

11.00 : 11:15 Welcome message by Professor Aboul Ella Hassanien



Keynote speaker

**The impact of the CloudIoT-Health integration on the future
of healthcare systems: A review**

By Dr. Ashraf Darwish,

Vice chair of the Scientific Research Group in Egypt

11.15-12.00

Abstract: Cloud Computing (CC) and Internet of Things (IoT) have emerged as new platforms in the ICT revolution of the 21st century. The adoption of the CloudIoT paradigm in the healthcare field can bring several opportunities to medical IT, and experts believe that it can significantly improve healthcare services and contribute to its continuous and systematic innovation. Moreover, CC and IoT are considered as complementary technologies such that they can enhance and improve each other capacity and capabilities. Their adoption and use are expected to be more pervasive, making them important components of the future of Internet and healthcare applications. This paper presents a review of the current literature on integration of CC and IoT to solving various problems in healthcare applications such as In addition, a brief introduction to cloud computing and internet of things with an application to health care is given. This paper presents a new concept of the integration of CC and IoT for healthcare applications, which is what we call the CloudIoT-Health paradigm. The term CloudIoT-Health and some key integration issues have been presented in this paper to offer practical vision to integrate current components of CC and the IoT in healthcare applications. This paper aims to present the state of the art and gap analysis of different levels of integration components, analyzing different existing proposals in CloudIoT-Health systems and pointing out some challenges and open research issues. In addition, previous research work has been reviewed CC and IoT integration for healthcare systems. Challenges to be addressed and future directions of research are identified and an extensive bibliography is also included.

Session (I): Intelligent System and applications

Session Chair Dr. Essam Halim, Faculty of Computers and Information, Minia University

12.00 : 12:15

Mona
Soliman



Using clustering method on earthquake early warning: A case study from Egypt

Abstract: Earthquakes arrive without previous warning and can destroy a whole city in a few seconds, causing numerous deaths and economical losses. Nowadays, a great effort is being made to develop techniques that forecast these unpredictable natural disasters in order to take precautionary measures. In this paper, clustering method in combination with a bio-inspired algorithm is used to obtain patterns which model the behavior of seismic temporal data and can help to predict medium-large earthquakes in specific area. This work depend on using k-means as a clustering algorithm with Silhouette method to determine the optimal number of clusters. In order to enhance the performance of k-means clustering, we use Grey Wolf Optimization (GWO). The proposed kmeans-GWO clustering algorithm will be used to cluster area of interest into high risk regions with warning of medium-large earthquake may occur and medium to low risk regions with stability in the tectonic structure of these regions.

12.15 : 12:30

Moatez Kilany



Emotion Recognition Based on EEG Signals.

Abstract: The ability to recognize emotional states of people surrounding us is an important portion of natural communication. We present an emotion recognition approach using electroencephalography (EEG) signals based on three emotional scales; valence, arousal and dominance. EEG raw data were pre-processed to remove artifacts using discrete wavelet transform (DWT) support vector regression (SVR) is combined with EHO optimization technique to predict emotional scales. Experimental results proved that SVR has achieved better results in terms of regression accuracy by 99\% after applying EHO.

12.30: 12.45

Sally
Elghamrawy



Spectrum Sensing Optimization in Cognitive Radio Network Using Genetic Artificial Bee Colony (GABC) Algorithm

Abstract: Due to the exponential increase in the number of wireless devices and in data rates demands, the shortage of the free frequency spectrum resources becomes a critical problem. As a result, there is an urgent need for proposing dynamic techniques that have the ability to avail the available spectrum. Recently, Cognitive radio (CR) is considered as an emerging technology that eases off the problem of spectrum shortage by optimizing the usage of the available spectrum through giving the unlicensed users the opportunity to exploit the spectrum without causing any interference with the primary users' usage. Therefore, the unlicensed users must sense the spectrum used by the primary users, through the use of spectrum holes, to access the unoccupied channels. Many efforts had been made for solving the spectrum sensing challenges. In this paper, a hybrid Genetic Artificial Bee Colony (GABC) algorithm is proposed to accommodate the unlicensed users in optimal possible space in the spectrum. GABC combines the advantages of the Genetic algorithm GA along with the Artificial Bee Colony ABC algorithm to select the more informative genes in order to optimize spectrum allocation without reaching the local optima caused by applying GA.

<p>12.45: 1.00 Sara Abdelghafar</p>	<p>Telemetry Data Mining for Space Systems</p>  <p>Abstract: Space systems are amongst today's most complex, extremely sensitive and highly sophisticated technical systems, they fulfil their mission in a very special, harsh, and challenging environment. So it is practically impossible to completely eliminate the possibility of anomalies or faults, even if we increase the reliability of the system components to the limit. In addition to, it is extremely difficult to directly inspect or repair a damaged component of these systems once a severe failure occurs. Therefore, early detection and predication of anomalies and faults in the system behaviour is significantly important to avoid disastrous situations such as loss of control.</p>
<p>1.00: 1:15 Sameh Basha</p>	<p>Neutrosophic Logic in Data Mining</p>  <p>Abstract: This talk presents a non-trivial process of dealing with incomplete, imprecise, and inconsistent knowledge in classification and clustering of large-scale data using neutrosophic logic (NL). Neutrosophic logic is adapted for representing different forms of knowledge. The presented system generalizes using fuzzy logic in data mining by describing every logical variable with its degree of truth, degree of indeterminacy, and degree of falsity. In classification stage these degrees are obtained from truth, indeterminacy, and falsity membership functions extracted from the fuzzy trapezoidal membership function. Then, it is followed by an extraction of the "IF-THEN" rules which used in the classification phase. Also in clustering stage we generalize fuzzy c-mean technique by neutrosophic c mean. The performance of the proposed systems is tested on three real-world databases Iris, Wine, and Wisconsin Diagnostic Breast Cancer (WDBC). In a series of experiments, we compare the performance of the proposed neutrosophic classification system with that of the fuzzy classification system and we compare the performance of the proposed neutrosophic c mean with that of the fuzzy c mean.</p>
<p>1.15:1.30 Ahmed Hassan</p>	<p>Chemoinformatics and Drug Discovery</p>  <p>Abstract: Discoveries of new drugs is very costly process. To reduce costs for drugs design, new techniques are needed. Chemoinformatics implements the informational techniques and computer science like machine learning and graph theory to discover the chemical compounds properties, such as toxicity or biological activity. This is done through analyzing their molecular structure (molecular graph). Therefore, there is an increasing need for algorithms to analyze and classify graph data to predict the activity of molecules.</p>

<p>1.30: 1.45 Asmaa Hamad</p>	<p>EEG Signals Classification for Epileptic Detection based on Whale Optimization enhanced Support Vector Machine</p>  <p>Abstract: Epilepsy is one of the most widespread a chronic neurological disorders of the brain that affect millions of the world’s populations. It is characterized by recurrent seizures, which are physical reactions to sudden, usually brief, excrescent electrical discharges in a group of brain cells. Hence, seizure identification has great importance in clinical therapy of epileptic patients. Electroencephalogram (EEG) is most commonly used in epilepsy detection since it includes precious physiological information of the brain. However, it could be a challenge to detect the subtle but critical changes included in EEG signals due to the non-stationary and chaotic nature of it. In this paper, the discrete wavelet transform (DWT) is applied to EEG signals to pre-process, decompose it till the 4th level of decomposition tree. Furthermore, the whale optimization algorithm (WOA) was utilized to find the effective feature subset of EEG from a larger feature pool and the selected subset can provide better classification performance compared with using the whole set, also WOA used to optimize the SVM parameters, finally SVM with a Radial basis kernel function (SVM-RBF) was used for the classification process.</p>
<p>1.45:2.00 Yasmine S. Moemen</p>	<p>Using Molecular Mechanic Study in Evaluation the Role of natural resources in Preventing Type II Diabetes</p>  <p>Abstract: Type II Diabetes (T2D) is affected more than 285 million people worldwide. The International Diabetes Federation has announced that the Middle East and North Africa (MENA) region is considered the highest prevalence of diabetes in the world (37 million) and this expected to rise dramatically. India has the second highest incidence of diabetes (31.7 million), China (20.8 million) and finally the USA (17.7 million) while. Many synthetic compounds like Gliptin, Metformin and Pioglitazone are used as antidiabetic. Although the mechanism of action of these compounds still fully unknown and not decisive in treating T2D. Dipeptidyl peptidase-4 (DPP4) enzyme is considered target enzyme to control T2D, where a strong relation exist between DPP4 and hemoglobin A1c (HbA1c) which observed in T2D patients. The phenolic compounds present in in natural resources, are associated to hypoglycemic besides many other therapeutic effects like antioxidant, antihypertensive, hypocholesterolemic and cardioprotective activity. The current study aims to screen the mechanism of action of such compounds as DPP4 inhibitors, using molecular docking procedures and molecular mechanic simulation for better accuracy.</p>
<p>Closing and Certificates</p>	