Call for Workshop

ICT in Horizon 2020
October 28th, 2013, Jordan University of Science and Technology

Organizers:
Dr. Abdoul Rjoub
Jordan University of Science and Technology
Email: jewel@ict-jewel.eu
Tel. +962776546989

Dr. Spiros Nikolaidis
Aristotle University-Greece
Email: snikolaid@auth.gr

Soraya Bernad
Inno – France
Email: S.bernard@inno-group.com

Secretary
Soraya Bernad
Inno – France
Email: S.bernard@inno-group.com

Sponsor

Background
For the third year, "Jordan Europe Wide Enhanced research Links in ICT, JEWEL," will organize the sixth workshop on:

"Information and Communication Technology in Horizon2020".

One of JEWEL's objectives is to organize workshops and network activities in order to bridge the gap between EU and Jordan in the ICT thematic research areas, and their applications in current technological advances.

Aim and Scope
The aim of the workshop is to invite scientists, researchers, developers and specialists from the EU and Jordan in order to discuss different opportunities listed in the last ICT call of Horizon 2020. Attendees are expected to present their latest research results and proposed ideas in: ICT in Health, ICT in Environment, ICT in Energy, ICT in Transportation, and all other related areas of ICT. Faculty members, staff, and master students are invited to present their research ideas, research results and their vision toward Horizon 2020.

Expected Outcomes
It is expected from this workshop to create teams and groups who have the same research interests from both sides (EU – Jordan) in order to submit their research ideas in different areas of ICT, the team should present their ideas in the workshop, later on JEWEL will try disseminate and publish those ideas by all media to create a consortium capable of submitting regular proposals based on the Horizon 2020 funding platform.

Important dates:
October 25th, 2013: Ideas Submission,
October 28th, 2013, Workshop in JUST, Salah Al-Deen Auditorium.

Keynote Speakers
Dr. Nikolaos Mavridis, New York University, NYC,
Dr. Alexander Astaras, Dept. of Medicine, Aristotle University, Greece,

Further Details & information
Schedule and activities of the workshop may be found in the website of JEWEL.

http://www.ict-jewel.eu
Abdoul Rjoub: JEWEL Coordinator,

Welcome Speech,

Your Excellences, Vice Rector of Jordan University of Science and Technology, Deans, Chairmen, and colleagues.

Our Special Guests: Dr. Mavridis Nikolas, and Dr. Alexander Astaras.

On behalf of FP7, INCO, ERA-WIDE, “Jordan Europe Wide Enhanced research Links in ICT” JEWEL project, I would like to express my pleasure to welcome you in this 6th in series workshop “Information and Communication Technology in Horizon 2020”

JEWEL is an ICT support action Project co-funded by the 7th Framework Program of the European Commission, it was initiated by Jordan University of Science and Technology, Aristotle University of Thessaloniki - Greece, and inno, - France. JEWEL is running from 2010 until 2013, it is expected to expand it is experience to other academic and industrial institutions in Jordan as well as in the countries of the MENA, identifying and promoting visibility of mutual RTD potential and collaboration opportunities. JEWEL gives the Jordanian specialists the possibility to improve the research activities of their highest quality in the FP7 priorities in ICT. The overall objective of the JEWEL is to stimulate win-win cooperation and strategic partnerships between Europe and Jordan and integrating Jordan into the European Research Areas, by strengthening Jordan participation in the 7th Framework Program, and later on in Horizon 2020. By JEWEL we honored many awards and special recognitions, thanks to JEWEL team Mutasem Ajlouni, who worked from the first days of JEWEL honored the 4th places in “Static Timing Analysis, IBM Contest in Spain, and while Hassan Manasrah honored the most downloaded award from Journal of Circuits and Systems. Special thanks to Prof. Abdoul Malkawi, Prof. Ahmed Beteiha, who were always ready for any help and assist during the JEWEL life.
Draft Agenda

10:00 – 10:05: Opening (Quran Kareem and national custom
10:05 - 10:20: Keynote speech(Dr. Abdoul Rjoub)
10:20 - 10:30: Coffee break
10:30 - 10:45: Dr. Ghassan M. Tashtoush, “Renewable Energy Center”
10:45 - 11:00: Dr. Qutaibah Althebyan, “Large Scale Monitoring for Health Applications,”
11:00 – 11:15: Dr. Salma Nashif, “e-Education in Health,” Royal University for Medical Sciences.
11:15 – 11:30: Alxandras Astaras, Proposed synergies in the fields of Electronics and Biomedical Engineering based on the first Horizon 2020 call
11:30 – 11:45: Dr. Mamoun F. Al-Mistarihi, “Cognitive Radio Based Bandwidth Allocation Scheme for WiMAX Networks,”
12:00 – 13:30: Lunch
13:45 - 14:00: Yasser Jararwah, “Title: Software Defined Systems,”
14:00 – 14:15: Dr. Mohammed Shurman, “Title: Overlapping Security Keys and IP Addresses Assignment Protocols for Mobile Ad Hoc Networks,”
14:15 – 14:30: Dr. Moad Y. Mowafi, JUST, Jordan “ Multimedia Applications in Wireless Sensor Networks,”
14:45 - 15:45: Dr. Nikolaos Mavridis, “Title: Robots, Artificial Intelligence, and Cognitive Systems,”
14:45 - 15:45 Discussion- round table, “Opportunities for cooperation”
    Modulator, Abdoul Rjoub

http://www.ict-jewel.eu
Dr. Ghassan M. Tashtoush, Ph.D. Mechanical . Eng.

Title: Thermal Power and Renewable Energy

Dr. Ghassan Tashtoush received his Bachelor and Master degrees from Jordan University of Science and Technology (JUST) in 1989 and 1993 respectively, and his (PhD) in 1997 from the Mechanical Engineering Department at the University of Kentucky, USA. He joined the JUST, Department of Mechanical Engineering in September 1999. Prior to that, Dr. Tashtoush worked as an associate researcher at University of Kentucky in conjunction with Toyota Production Company (Lean Manufacturing System). Currently he is an associate Professor and a director of the energy center at (JUST), Jordan, With more than ten years of teaching and researching in the field of Mechanical Engineering, renewable energy and energy management, he has direct and deep understanding of the research environment, as a result of working as a supervisor for student projects and master thesis on applying the principle of science into industry. He has an experience in Engineering Design and Project Management, and has in depth understanding of the Energy and renewable energy systems and green buildings. Dr. Tashtoush has published several journal articles and technical papers and participated in many international and regional conferences. He is recipient of the DAAD Scholar Research Award on renewable energy (2004).

Abstract: The Energy center was established in 2004, for the purpose of achieving sustainable development by contributing to the national, regional and global effort to conserve energy in terms of the exploitation of resources, diversification of their alternatives, application of conservation measures, and efficient use of energy. This is to be achieved by the interaction with industrial, environmental, and economic enterprises. The center aims at educational activities, training, research and consultancy relating to energy and its applications and their interactions with the industrial, environmental, health, and economic sectors. The energy center also aims to contribute to the national effort best suited to exploit energy resources and conservation measures and the search for alternative sources of energy. The center aims to graduate students in the "Energy Technology" and offer elective courses for university students related to energy, and to encourage continuous education for those interested in energy from outside the university. The Energy center is interested in the establishment of regional scientific conferences dealing with energy issues, educational sessions and training workshops in energy and its effects and revenue to serve the local and regional community. The energy center is also aiming at performing inspection, testing, certifying energy products, and strengthening the relationship between the center and national and international institutions.
Dr. Qutaibah Althebyan

Title: Large Scale Monitoring for Health Applications

Dr. Qutaibah Althebyan is an assistant professor in the department of Software Engineering at Jordan University of Science and Technology (JUST). He has been there since August of 2008. Dr. Qutaibah Althebyan finished his Ph.D. degree in 2008 in Computer Science from University of Arkansas - Fayetteville and his Master degree in 2004 in Computer Information Systems from the University of Michigan - Dearborn. Dr. Althebyan published several papers in high ranked journals and conferences. He is also a reviewer for many journals and conferences. Dr. Althebyan's main research interests are, but not limited to, in information security, database security, security in the cloud, big data management, health information systems, information assurance, software metrics and quality of open-source systems. Lately, he has been working in different security, e-health and software engineering projects, namely; Large Scale Insider Threat Assessments and damage assessment in distributed database in the area of security. Also, studies of Power laws and their effects in object oriented metrics in the area of software engineering.

Abstract: A mobile e-health information system for continuous and remote monitoring, diagnosis, and management of various types of physiological signals will be developed (Fig.1). The system comprises at least one smart wireless sensor, mobile device, remote e-health server and intelligent software. The sensor should be reconfigurable one and has low-cost, lightweight, and ultra low power consumption. The sensor captures the desired physiological signals, provides suitable conditioning and transmits them wirelessly to the mobile device worn by the patient or located in his proximity. The mobile device (Cellular Phone, Personal Digital Assistant (PDA) or Pocket PC) provides local monitoring and primary diagnosis of measured physiological signals using intelligent techniques. The software is used to provide intelligent control and processing of captured biosignals. The system is also capable of transmitting the biosignals wirelessly from the mobile device to the e-health server in a remote location and to remote healthcare professionals. The remote e-health server provides advance data processing, monitoring, diagnosis and management. This system can be used for monitoring, diagnosis and management of different medical parameters such as (but not limited to): biopotentials (Electrocardiogram (ECG), Electroencephalogram (EEG), Electromyogram (EMG), Electrococulogram (EOG), Electroretinogram (ERG)), blood pressure, blood glucose concentration, oxygen saturation and blood gases and electrolytes. The system intends also to benefit those at high risk and already receiving some form of surgical treatment. By placing the wireless sensor (small device) on the patient's body, the patient need not worry about device operation.
Dr. Salama Nashif, Royal University for Medical Sciences

Title: e-Education for Health

Dr. Salama Nashif is working at the Royal University for Medical Sciences. She has the experience as an Instructor at different Universities, Head of section for the Guidance of students abroad in the Jordanian Ministry of Higher Education. & Head of Research Office in Dammam University. She worked in the colleges of education & Universities in different countries as Oman, KSA, Libya & Jordan. She is the author of eleven books in the field of education.

Abstract: This proposal aims to examine the effect of e – learning upon the empathy of the 1st year students of medical sciences in the Jordanian Universities. The society will be all the medicine & nursing students in the Jordan Universities for the 1st semester of the academic year 2014- 2015, & the sample will be the students of medicine in the Royal University of Medical Sciences in Amman where the researcher lives. The sample will be divided into the experimental & control groups with equal numbers of students. The experimental group will be studied by the e- method while the control group with the ordinary method. A questionnaire will be used to measure the effect of each method upon the clinical empathy of students. The data will be analyzed by the use of percentages to check the effect of e-learning upon the empathy of the students of the Jordan Universities.
Dr. Alexander Astaras is Adjunct Professor in Computer Science at the American College of Thessaloniki (ACT) and a Research Associate in the Lab of Medical Physics, Dept. of Medicine, Aristotle University of Thessaloniki (AUTH), Greece. He is also a part-time Research Associate in electronics at the Department of Automation of the Alexander Technological Educational Institute (ATEITH). He obtained his BA in Physics from Oberlin College, USA and his PhD in Electronics and Electrical Engineering from the University of Edinburgh, Scotland, UK. He has authored more than 30 publications in scientific journals and conferences in Electronics and Biomedical Engineering, has designed and tested 5 prototype electronic chips and several biomedical engineering data acquisition devices. In the past he has worked in analogue and mixed-signal integrated circuits, system-on-chip and lab-on-chip integration as well as mapping artificial neural networks on silicon. His research interests include biomedical sensors, low power mixed-signal VLSI electronics design, robotics and machine learning. He has served as a reviewer, organising committee member and track chair for several international journals and conferences. He is an active member of the IEEE and the Hellenic Biomedical Engineering Society (ELEVIT), on whose board of directors he has served (2010-2013).

Abstract: An overview of 4 cross-disciplinary projects in the fields of biomedical and electronics engineering will be presented. Project USEFIL develops an assistive smart home environment that supports older people who live alone. Project IDEAS developed an electronic capsule that can be swallowed by a human being and wirelessly transmits sensor data from inside the gastrointestinal tract. MAIA is a project aiming to monitor infants while they sleep, gather valuable paediatric data and wirelessly raise the alarm in case neither heartbeat nor breathing are detected. Project MERCURY develops body-machine and brain-machine interfaces for telemedicine applications, rehabilitation and neurophysiological research. These projects will subsequently serve as paradigms for proposed Horizon 2020 synergies.
Dr. Mamoun F. Al-Mistarihi

Title: Cognitive Radio Based Bandwidth Allocation Scheme for WiMAX Networks

Mamoun F. Al-Mistarihi received the B.Sc. and M.Sc. degrees in Electrical Engineering from Jordan University of Science and Technology, Irbid, Jordan, M.E.E. and Ph.D. degrees in Electrical Engineering from University of Minnesota, Minneapolis, MN, USA, in 1992, 1996, 2005, and 2005, respectively. From 1994 to 2000, he was with the Royal Scientific Society, Amman, Jordan. Presently he is an Assistant Professor with the Electrical Engineering Department, Jordan University of Science and Technology, Irbid, Jordan. His research interests include digital signal processing, wireless communications, wireless Ad hoc networks, WiMAX, and wireless sensor networks.

Abstract: With the growing need for broadband wireless access, WiMAX (Worldwide Interoperability for Microwave Access) has recently gained popularity due to its wide service coverage, high data rate, and quality of service (QoS) support. In WiMAX networks managing the uplink access is an important issue as it deals not only with the available bandwidth but also with the QoS requirements of different traffic classes. This study proposes a new scheme for bandwidth allocation in WiMAX systems, named WiMAX Full Cognitive Radio Scheme (WFCRS). The proposed scheme uses cognitive radio in order to attain high bandwidth utilization and to increase the total throughput. Cognitive radio allows secondary (or unlicensed) users to use the channel (or spectrum) allocated to primary (or licensed) users when they are not fully using it. For performance analysis, an analytical model will be developed, and the effect of applying cognitive radio on different service classes will be studied and the bandwidth utilization for each service class will be analyzed. Preliminary results show that the proposed scheme provides higher bandwidth utilization and lower blocking probability in comparison to several existing schemes.
Dr. Mohammed Malkawi

Title: Wireless Sensor Networks and Cloud Computing: Perspectives and Challenges

Dr. Mohammad Malkawi received his Ph.D degree from the University of Illinois at Urbana-Champaign in computer engineering in 1986. He received his MS in electrical and computer engineering from Yarmouk University in 1983 and his BS degree in computer engineering from Tashkent Polytechnic Institute in 1980. Currently, Dr. Malkawi is associate professor of computer and software engineering at Jordan University of Science and Technology. Dr. Malkawi was a senior architect at Cambium Networks in the USA, where he was responsible for the architecture of broadband wireless systems. Dr. Malkawi previously worked at SUN Microsystems (ORACLE) as a senior staff engineer, where he was a member of a team working on DARPA sponsored project on “High Productivity Computing Systems”. Dr. Malkawi also worked at Motorola, where he was a member of the High Availability Platform responsible for delivering a 5 NINES mobile infrastructure system. Dr. Malkawi’s research interests include reliable and high availability computing systems, distributed and parallel high performance systems, memory architecture, wireless communication and graph theory.

Abstract: The advance development in the fields of sensors, wireless technologies and cloud computing has opened the door wide open for a vast new applications and research. The purpose of this working paper is to draw the attention on several applications, which warrant closer look from researchers and SW system engineers. Following is a brief description of each field:

1. Water Distribution Management: In countries, where water resources are scarce, the efficiency of water distribution and minimization of water loss becomes critical for the availability of water for end consumers in the country. Monitoring water loss in the distribution system can be accomplished via a network of sensors, which in their turn feed data through wireless system to the cloud, where the data is analyzed and solutions are prepared.

2. Water Pollution and Bio-Security: Water resources in many parts of the world are continuously impacted by various types of pollution. Waste dumps in lakes and rivers along with acid rain from nearby factories contribute to high level of pollution.

3. Farming: Farming is by and large responsible for the supply of food for all people in the world. Both plant and animal agriculture heavily depend on surrounding conditions for optimal productivity. For example, a cattle raised for meat production has an optimal weight for slaughter.
Dr. Yaser Jararweh

Title: Software Defined Systems

Dr. Yaser Jararweh received his Ph.D degree in Electrical and Computer Engineering from the University of Arizona in 2010. Prior to that, he received his B.S. and M.S. degrees from Jordan University of Science & Technology in 2005 and 2007, respectively. Immediately after finishing his Ph.D, he joined the Department of Computer Sciences at Jordan University of Science & Technology as an Assistant Professor. His research spans the areas of cloud computing, software defined systems, big data, network security, and cognitive radio networks. His research projects are funded by the NSF-USAID.

Abstract: Next generation cloud systems will require a paradigm shift in how they are constructed and managed. Conventional control and management platforms are facing considerable challenges regarding flexibility, dependability and security that next generation systems will require. The cloud computing paradigm has gone part of the way towards alleviating some of the problems associated with resource allocation, utilization and managements (e.g., via elasticity). However, many of the elements of a well-designed cloud environment remain “stiff” and hard to modify and adapt in an integrated fashion. This includes underlying networking topologies, many aspects of the user control over IaaS, PaaS or SaaS layers when such is needed, construction of XaaS services, provenance and meta-data collection, and so on. In many situations the problem may be because service abstraction is inadequate. Software Defined Systems (SDS) are systems that have added software components which help abstract actual IT equipment and other layers. One classical example, of course, are hypervisors. Such separation provides a great opportunity for system administrators to more easily construct and managing their systems through flexible software layers. Software Defined Systems include Software Defined Networking (SDN), Software Defined Storage, Software Defined Servers (Virtualization), Software Defined Datacenters (SDD), Software Defined Security (SDSec), and ultimately Software Defined Clouds (SDCloud) to name a few possibilities. Individual solutions and seamless integration of these abstractions remains in many respects a challenge.
Dr. Mohammad Shurman

Title: Overlapping Security Keys and IP Addresses Assignment Protocols for Mobile Ad Hoc Networks

Dr. Mohammad Shurman Mohammad Shurman received the B.Sc. degree in Electrical and Computer Engineering from Jordan University of Science and Technology, Irbid, Jordan, M.Sc. and Ph.D. degrees Computer Engineering-Wireless Networks from University of Alabama-Huntsville (UAH) in 2000, 2003, and 2006, respectively. Presently, he is an Assistant Professor with the Network Engineering and Security Department, Jordan University of Science and Technology, Irbid, Jordan. His research interests include wireless Ad hoc networks, security and key management of wireless networks, MAC layer fairness of IEEE802.11, wireless sensors networks, network coding. His publications span a wide range of research fields and available in various prestigious journals and conference proceedings.

Abstract: Nodes in mobile adhoc networks (MANETs) form an independent network and exchange data with each other wirelessly. A requirement for nodes in MANET is to have an identity in order to communicate with others. MANET security is an important factor for many applications given that any node can listen to the channel and overhear the packets being transmitted. Thus, a security key is necessary for the nodes in these networks. MANET security is a challenging part and ideally takes place during the design phase of the routing module. In this paper, we merge the address assignment with the security key delivery into one protocol. To the best of our knowledge, no single protocol provides concurrent assignment of IP addresses and security keys for MANET nodes. We need a distributed method to distribute keys and security keys to the nodes securely without increasing required control packets needed for assigning network nodes IP addresses and security keys, media access control (MAC) layer packets, packet delay, and channel throughput over those obtained when using separate protocols. Additionally, security key not only must be available to the nodes from the first moment they join the network, but also secure delivery of the address and security key to all participating nodes. Designing a protocol to distribute keys and addressed for MANETs is a not an easy way and faces many obstacles, it also prohibits the practical adoption of a standard for such a networks.
Speaker: Dr. Moad Y. Mowafi, JUST, Jordan

Title: Multimedia Applications in Wireless Sensor Networks

Dr. Moad Y. Mowafi received his B.Sc. and M.Sc. degrees in Electrical Engineering from Jordan University of Science and Technology (JUST), Jordan in 1996 and 1998, respectively, and his Ph.D. degree in Computer Engineering from The University of New Mexico (UNM) Albuquerque NM in 2003. He worked as a Research Assistant at UNM High Performance Computing Center (2000-2003), an Assistant Professor at the Department of Computer Engineering at JUST (2004-2009), and he is currently an Assistant Professor at the Department of Network Engineering and Security at JUST. His research interests are in the areas of multimedia, wireless networking and security.

Abstract: Multimedia applications over wireless sensor networks (WSN) such as surveillance, environmental monitoring, and health care are emerging rapidly. Current research in this field focuses on multimedia processing in WSN; for example, developing energy-efficient algorithms and lightweight techniques and cross-layer optimization. This talk introduces the multimedia research carried out at JUST (Jordan University of Science and Technology). It includes the research conducted at the Multimedia Networking Research Lab at JUST. The topic includes the work in cross-layer optimization and spatial correlation exploitation in wireless multimedia sensor networks, information hiding in multimedia data, and image/video processing and compression. The talk concludes with future research projects and opportunities for potential collaboration with the European scientific community.
Title: Robots, Artificial Intelligence, and Cognitive Systems

Dr. Nikolaos Mavridis, PhD from the Massachusetts Institute of Technology, has taught, written about, researched, and built Intelligent Systems and Robots since his early youth. Currently he is serving as a Researcher at NCSR Demokritos, while he is also expanding his IRML lab to Greece. He has served as Asst. Professor at New York University Abu Dhabi, and is an Asst. Professor of Research at the NYU Poly in NYC. He is the founder of IRML (the Interactive Robots and Media Lab), which achieved wide publicity for "Ibn Sina", the world's first Arabic-Language Android Robot, as well as "FaceBots", Microsoft-award-recipient Social Robots which access info and publish on FaceBook. His past work includes "Ripley", a language-learning robot with abilities comparable to those assessed by the token test, a test administered to 3-year-old children. He is the founder and chair of the IEEE UAE Robotics and Automation Society, a member of the EU Cognitive Systems group, the vice-president of the Hellenic Artificial Intelligence Association, has served in numerous other leadership positions in the past, and has been a TEDx speaker twice.

Abstract: Building robots that can converse with humans using natural language, help them with tasks, and become companions has been a fascinating prospect for a long time. We will start by giving three examples of such systems in three different embodiments, towards three different purposes: Ripley (tabletop assistant robot with language-learning capacities), FaceBots (long-term companion robot that remembers previous meetings and friends), and Ibn Sina (historical character android robot). Then, we will discuss several interesting examples from current EU research projects in related fields. Finally, the proposal of the "Human-Robot Cloud" will be briefly presented, which opens the way for a new generation of hybrid human-machine large-scale cognitive systems.