

## Advanced Education Program in ICT *Information and Communication Technologies*

Friday, October 3, 2014 - 3:00 p.m. to 6:30 p.m.  
DITEN - Room D1 - Via Opera Pia 11, Genoa

### INTERNATIONAL SEMINAR

#### *Federated Sensor Clouds and Spatial Ambient Intelligence*

*Adnan Al-Anbuky, Auckland University of Technology, New Zealand*

#### ABSTRACT

Modern enabling technologies like the Internet of Things IoT and Cloud Computing have opened up more doors for emphasising the importance of the field of wireless Sensor Network. Research and development of concepts related to sensor networks are driving towards taking the experiments from the laboratory into the field, with emphasis on various modes of communication including Cognitive networking, Opportunistic connectivity and Machine-to-Machine communication. Areas like data and reality mining, cyber-physical systems and others, with emphasis on spatio-temporal coverage, have started formulating highly complex dynamic systems. With the need for integrating the multiple subspaces and multiple phenomena, these systems are centred round federation of sensor clouds over the Internet. They are feeding the virtual cloud with the big data which in turn acts as the ingredient for the various services. These systems are driving towards the smart cities and what has been referred to as the planet nervous system. While elements of the concept have started taking shape, there are significant operational and optimization challenges that need to be addressed.

The talk will provide key highlights to the large scale systems organization and the role of key acting elements in facilitating efficient services. The roles of sensor clouds and related big data, the Internet and related IoT architecture and the virtual Cloud and related services will be discussed. Furthermore the impact of big data on system performance and role of embedded intelligence in supporting timely services is considered. Examples taken from the experience of AUT SeNSE research laboratory will be used for demonstrating the various aspects of the system architecture. Here the role of heterogeneous sensing within shared spaces is taken as a typical case study. Impact on enhancing the smart grid and achieving both goals of energy saving as well as ambient intelligence are considered. Furthermore the talk will shed the light on the future directions of these technologies as it contributes to the fabrics of Smart Cities.

#### Adnan Al-Anbuky

Adnan Al-Anbuky <http://www.sense.aut.ac.nz/adnan.cfm> received his BSc, MSc and PhD degrees from the University of Baghdad/1969, University of Salford/1971 and UMIST/ 1975 respectively. During 1975 to 1995 he has assumed number of academic positions in both Baghdad University of Technology and Yarmouk University of Jordan. The area of his focus was embedded systems as applied to robotics and incremental motion control. Professor Al-Anbuky joined Switchtec/ New Zealand on 1996 and started establishing an industrial research unit driving toward increasing the level of automation within the telecommunication power systems service industry. It was one of the active research units in Christchurch that resulted in a numerous outcomes including products, concepts, IPs and publications. The unit were later serving the international \$3.5 Billion Invensys corporate with related research and development. Late 2005 he joined AUT as a professor and head of electrical and electronics engineering department. The establishment of the Sensor Network and Smart Environment (SeNSE) research centre <http://www.sense.aut.ac.nz/> in mid-2006 has led to a number of projects that benefited both the local and international communities. Recently, the involvement in projects like smart shared spaces and traceability of food condition during logistics has encouraged the contribution towards the concept of the smart cities. They both involve federated networks, Internet of things and big data management. Adnan is a member of the editorial board of number of international journals and scientific groups. He is actively contributing to the organization or operation of numerous local and international events and conferences. He has more than 10 granted patents and numerous publications.

#### REGISTRATION

La partecipazione è obbligatoria per gli studenti ISICT del primo e del secondo della laurea triennale (anno accademico 2013-2014) e del primo e secondo anno della laurea magistrale (anno accademico 2014-2015). In caso di assenza è obbligatorio inviare una mail giustificativa a [segreteria@isict.it](mailto:segreteria@isict.it).

Per la partecipazione di altri studenti dell'Università di Genova e del personale dei Soci di ISICT è richiesta la prenotazione mediante invio di una email a [segreteria@isict.it](mailto:segreteria@isict.it). Le iscrizioni verranno accolte fino a esaurimento posti. La segreteria dell'Istituto ISICT, su richiesta, rilascerà un attestato di frequenza.

#### VENUE

DITEN (Department of Electrical, Electronic, Telecommunications Engineering, and Naval Architecture)

Via Opera Pia 11, Genoa - Room D1 (ground floor)

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