Università Tor Vergata, Roma

Ingegneria Civile e Ingegneria Informatica

GeoInformation PhD Curriculum

2^{nd} 2014 GeoInformation Seminar

DISP meeting room, Ingegneria dell'Informazione, 1 Via del Politecnico
27 March 2014, starting at 15:00

Rossella Lodato

Feasibility of through-the-body UHF-RFID links for passive tags implanted into human limbs

The feasibility of UHF-RFID links for passive tags implanted into human limbs is presented. Performance gain indicators and reliability margins of the through-the-body RFID channel are estimated by electromagnetic simulations over an anthropomorphic phantom as well as by means of experimentation with a simplified in-vitro setup.

The results show that a stable communication link with tags implanted inside limbs might be feasible up to 10–35 cm from the body surface.

Rossella Lodato received the Laurea degree in Electronics Engineering from the University of Palermo, Italy, and is currently a Geoinformation PhD candidate at the Tor Vergata University of Rome.

In 2007 she was Research Fellow with the Technical Unit of Radiation Biology and Human Health of ENEA, where her main research activity concerned measurement and dosimetry of electromagnetic fields and the design of exposure systems for in-vitro and in-vivo experimentation.

Sabina Manzari

Battery-less ambient sensing by functionalized UHF RFID sensors

Battery-less UHF Radiofrequency Identification (RFID) tags coated by proper sensitive layers have recently demonstrated their capability in playing as low-cost sensors of some volatile compounds. The issue of cross-sensitivity and the feasibility of developing an array of differently coated sensors are however still completely open.

The seminar will present an experimental campaign involving a general-purpose sensor-antenna transducer, the potentiality of functionalized tags in the UHF RFID band to sense a multiplicity of volatile compounds, as well as the cross-sensitivity effects of different coatings in array configuration. Wireless sensing may be thus performed by narrow-band processing of the power response of the RFID tags as well as by the broadband extraction of features related to the resonance shift.

Sabina Manzari received her M.Sc. degree with honors in Medical Engineering from the Tor Vergata University of Rome in 2010. She is currently a PhD candidate in Geoinformation with the same university.

In 2010-2011 she was a Visiting Researcher in the RFID research group of Tampere University of Technology (Finland). Her research was mainly focused in passive RFID sensors development for temperature and heat monitoring.

Her research interests include electromagnetism, passive short-range sensing by chemical-loaded antennas for environment air quality monitoring, and wireless health monitoring by wearable radio frequency identification techniques.

Sabina has been awarded the 2012 Central and South Italy IEEE AP-S Chapter prize and also received the *Best Student Paper Award* at the 2012 IEEE RFID-TA Conference in Nice (France).

You are cordially invited to attend.

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http://www.disp.uniroma2.it/geoinformation/