Highlights

METIS becomes the EU reference project for 5G

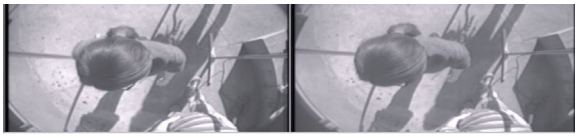
iTEAM-UPV is the only University partner from Spain participating to METIS Project, which was launch one year ago, being the first international and large-scale research activity on 5th Generation of Mobile Networks, and has triggered extraordinary global interest on the topic of 5G. Moreover, in 2013 the EU announced research grants worth up to €50 million to develop '5G' technology. That the interest is so high is not surprising as societal development has been leading to changes in the way mobile and wireless communication systems are used. In fact, it is predicted that smartphone subscriptions will grow from 1.2 billion in 2012 to 4.5 billion by 2018. This in turn means an equally astonishing increase in mobile data traffic, which doubled between Q1 2012 and Q1 2013, and by the end of 2018 it is expected to be 12 times as large as it was at the end of 2012. The surge in mobile data consumption is driven not only by growth in subscriptions, but also by people consuming more and more data. The future information society users will demand and rely on a wide variety of applications and services, ranging from infotainment services, through increased safe and efficient

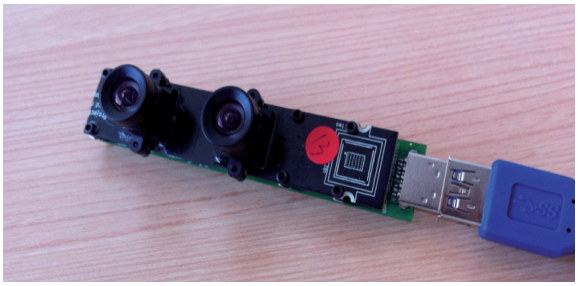
usage of transportation, to completely new industrial applications. In the coming months, METIS will continue to lay the foundation of the 5G mobile and wireless communications system. In particular, METIS is developing and evaluating the key technology components of 5G systems, and will integrate the technical components that address the requirements of this system.

Video-based people counter that uses stereo cameras

ITEAM is developing jointly with the company Visual Tools a video-based people counter that uses stereo cameras. Stereo Cameras produce a depth map by matching features from left to right cameras. The depth map is used to detect and track people in the field of view of the camera. The main advantages of stereo cameras are the robustness against moving shadows and illumination changes. Moreover, it allows to differentiate between adults and children or to place the camera in a non-zenith position.

On the other hand, stereo cameras require calibration (precise determination of relative position between cameras); having a fast and economical procedure for calibrating stereo pairs is a necessity for launching a commercial product to market.



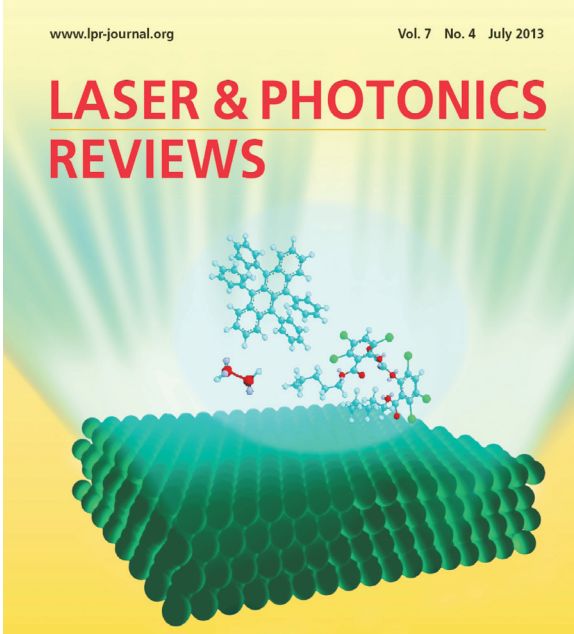


Dynamic brain oscillations modeled in Neurodin

iTEAM researchers have developed an electroencephalographic (EEG) signal dynamic model in Neurodin, a project in the framework of a coordinate collaboration between the Universidad Politécnica de Valencia and the Hospital Universitario y Politécnico La Fe de Valencia. This model has been applied to the evaluation of the memory function during neuropsychological tests with visual and auditory stimuli. Thus, the connectivity and dominance of the nervous centers in the different stages of the tests are estimated. The parameters of the model are being studied with neurologists and neurophysiologists of Hospital La Fe in order to identify conspicuous patterns of clinical significance. The ultimate application of the developed model is to support the medical diagnosis of epilepsy patients.

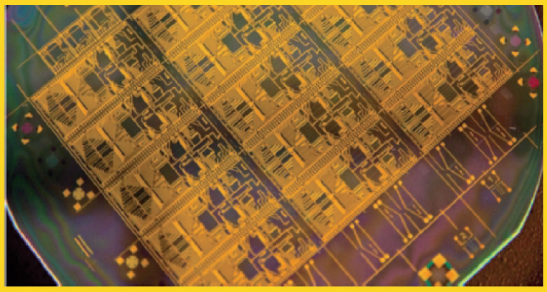
Incorporation of RF-Photonics functionalities on optical chips

ITEAM researchers together with researchers from the University of Twente and the companies LioniX, SatraX and VLC Photonics have published an invited paper on the subject of integrated Microwave Photonics in the july 2013 issue of the highly prestigious Lasers and Photonics Reviews (LPR) journal edited by John Wiley and Sons. This paper is an authoritative and comprehensive report of the salient progress that photonic miniaturization has achieved in the incorporation of RF-Photonics functionalities on optical chips.

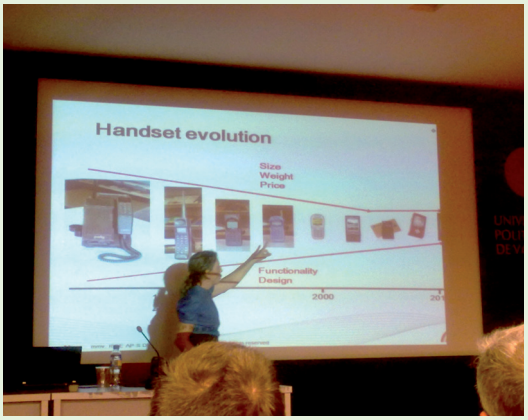


LPR is the second top ranked journal in the field of photonics and publishes high impact papers and reviews only by invitation. In the paper many of the high international visibility research results obtained by ITEAM researchers and its spin-off VLC Photonics are included.

Abstract Microwave photonics (MWP) is an emerging field in which radio frequency (RF) signals are generated, distributed, processed and analyzed using the strength of photonic techniques. It is a technology that enables various functionalities which are not feasible to achieve only in the microwave domain. A particular aspect that recently gains significant interests is the use of photonic integrated circuit (PIC) technology in the MWP field for enhanced functionalities and robustness as well as the reduction of size, weight, cost and power consumption. This article reviews the recent advances in this emerging field which is dubbed as integrated microwave photonics. Key integrated MWP technologies are reviewed and the prospective of the field is discussed.



Prof. Alberto González from the Signal Processing for Audio and Communications Group (GTAC) has been elected Director of the School of Telecommunication Engineering for a period of 4 years. Next year 2014, the School will celebrate its 25th anniversary as an independent engineering faculty of the Universitat Politècnica de València.



ITEAM has started in 2012 a new Program of Invited Distinguished Lectures on Communications and Multimedia. Till now four lecturers have visited the iTEAM within this program: DL of the IEEE Vehicular Technology Society Prof. Halim Yanikomeroglu from Carleton University (Canada), DL of the IEEE Antennas & Propagation Society Prof. Marta Martínez-Vázquez from IMST GmbH (Germany), DL of the IEEE MTT Microwave Society Prof. Richard Cameron from COM DEV Europe, and DL of the IEEE Signal Processing Society Prof. V. John Mathews from University of Utah (USA).

The XXIX Spanish Symposium of the Unión Científica Internacional de Radio (URSI 2014) will be held at the School of Engineering of the UPV next September. The President and the Vice-president of the Organizing Committee are Prof. Alberto González and Prof. Héctor Esteban respectively. Other iTEAM members will participate in the Technical Program Committee.