

Smart Cameras & Embedded Systems

Contacts

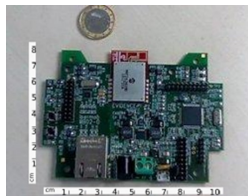
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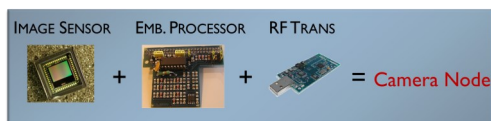
Real-time Image Analysis on Embedded Systems

In the Internet of Things era, the idea of creating smart sensors capable of acquiring raw video streams and extracting high-level information about the observed scene has certainly a huge potential in disparate applications, ranging from environmental monitoring and security to smart cities, logistics and intelligent traffic systems. The Signals and Images laboratory has been responsible for the design and development of embedded camera boards with advanced vision logics. The aim is not only restricted to the pre-processing of the images but it goes further to the highest levels of scene understanding (object detection, object recognition, event description).



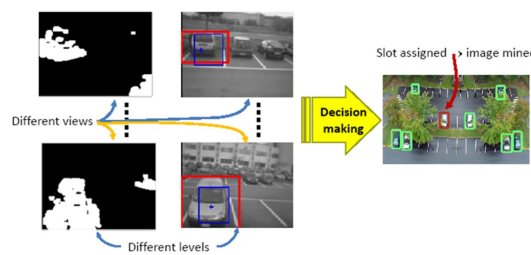
Multimedia Wireless Sensor networks (WSN)

Computer vision methods can be fully exploited over a Multimedia WSN, a special kind of sensor network whose nodes are



made up of a camera sensor, an embedded processor and an RF transmission module. The key feature of a multimedia WSN is the combination of the versatility and independence from any physical infrastructure typical of WSNs with the wealth of information that can be obtained by computer vision. In a multimedia WSN, the sensor nodes can cooperate together to solve a common vision task, merging the partial information extracted from each sensor by an in-network processing approach. Potential applications include environmental monitoring, video surveillance, ambient assisted living, infomobility and Intelligent Traffic Systems (ITS).

Applications in ITS and transports



In the POR Toscana IPERMOB, POR TOSCANA Simple and in the EU FP7 ICSI projects, sensor nodes prototypes were designed and developed together with vision logics for infomobility and ITS. In particular algorithms based on cooperative sensing were devised for monitoring parking lots and for the analysis of real-time traffic flow. The IPERMOB sensing platform was tested and validated at the Pisa International Airport.

