Cognitive and cooperative sensing is a novel concept in signal processing that promises to revolutionize the way we interpret and understand our world. It has even been hailed as “a way of the future” in remote sensing networks. Smart or intelligent sensor networks have the potential to impact almost every aspect of our lives through applications such as smart homes, environmental monitoring, security, disaster detection and assessment, noninvasive health monitoring, and traffic information systems. Remote sensing refers to the ability to extract information about the properties or nature of a phenomenon without coming into direct contact. Typically, this is accomplished by exploiting sensors such as cameras, radar systems, thermal devices, sound detectors, seismic, and magnetometers. Cognitive and cooperative sensing envisions not just the fusion of information gathered from multiple sources, but intelligent data gathering geared towards removing the need for human intervention, capable of adaptively controlling and selecting sensors within the network for optimal performance. Our research forms a key stepping stone towards achieving this ultimate goal by pursuing several tasks that can be grouped into two primary categories: 1) Detection, estimation, and tracking algorithms for cognitive, distributed sensor networks, and 2) Multi-sensor intelligent information fusion. This research project holds promise to yield significant advances in a variety of applications, which are defined as main research challenges in the FP7 ICT, Environment and Security Themes of the 2010 Workprogramme, at a time when the application of cognition to remote sensing is still in an embryonic stage. We have played a significant role in initial
research relating to this project, and are therefore in a very good position to lead the solution of the problems posed in this project.

**Field of Science**

/engineering and technology/environmental engineering/remote sensing

/engineering and technology/electrical engineering, electronic engineering, information engineering/information engineering/telecommunications/radio technology/radar

/engineering and technology/civil engineering/architecture engineering/home automation

/engineering and technology/electrical engineering, electronic engineering, information engineering/electronic engineering/signal processing

**Programme(s)**

FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

**Topic(s)**

FP7-PEOPLE-2009-RG - Marie Curie Action: "Reintegration Grants"

**Call for proposal**

FP7-PEOPLE-2010-RG

**See other projects for this call**

**Funding Scheme**

MC-IRG - International Re-integration Grants (IRG)

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