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Preface

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The evolution in the field of wireless and mobile technologies, and networks has provided the framework on which a variety of devices, agents and sensors can communicate and collaborate. As a consequence, decision making in this environment of ubiquitous operation and ad hoc communication, requires the use of multiple dynamically changing parameters in order to be able to provide context awareness. A typical example is the use of environmental factors. As a result, at academic/research and even corporate level, we have witnessed several deployments of systems that observe, measure, record and decide following common principles.

In this special issue "Cooperative Decision Making in Heterogeneous Hybrid Systems", proposals on novel ways to integrate different, heterogeneous systems that bring sparse information, combine this information with general rules to take decisions and enforce these decisions using automated systems are presented. Ideas on the support of cooperative decision making on wireless networks covering different protocols and radio technologies as well as the use of MPEG standards are provided in the five selected papers appearing in the special issue.

In "Introducing Fairness-Efficiency Trade-off for Energy Savings in Wireless Cooperative Networks", the authors present a wireless cooperative network architecture, where a group of users exploits short-range wireless links to share the costs of a cellular download, addressing the fairness issue by relying on game theoretic bargaining solutions.

In "Optimal Resource Allocation in Heterogeneous MIMO Cognitive Radio Networks", a study of the joint problems of transmission time and power allocation in a MIMO cognitive

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radio scenario is presented, leading to a proposal for a dynamic optimal joint transmission time and power allocation scheme for heterogeneous cognitive radio networks.

In "Performance Analysis of Network Coding Based Two-Way Relay Wireless Networks Deploying IEEE 802.11", a performance analysis of the IEEE 802.11 DCF protocol is provided, analyzing two models at the data link layer and proceeding with solutions in terms of models evaluated through simulations.

In "Energy-Efficient Cooperative Transmission in Heterogeneous Wireless Networks with QoS Constraint", the authors present their developments on an energy-efficient scheme for cooperative transmission in heterogeneous wireless networks with QoS constraint.

Finally, in their paper "On Supporting Secure Information Distribution in Heterogeneous Systems using Standard Technologies", the authors present an integrated security architecture for heterogeneous distributed systems based on the MPEG-21 standard data structures and the MPEG-M standard services.

We hope that you will enjoy this issue, and we would like to thank all authors that have contributed to it. We received many excellent papers, but unfortunately could only include a subset. Special appreciation is given to the colleagues at Springer for their continuous efforts in keeping up with the timeline.