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PE-CRN, NC-Pro, WCNS, and SUNSET 2011
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Revised Selected Papers

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Message from the Chairs

The IFIP Networking conference is an international series of events that started in Paris (France) in 2000. The 2011 edition was held at the Universitat Politècnica de Valencia in Spain in May 2011.

Practically since the beginning, co-located with the main conferences, a series of workshops have been dedicated to discussing timely topics. Four workshops were planned during the 2011 edition. They were the "Workshop on Network Coding Applications and Protocols" (NC-Pro 2011), the "Workshop on Sustainable Networking" (SUNSET 2011), the "Workshop on Wireless Cooperative Networks Security" (WCNS 2011), and finally the "Workshop on Performance Evaluation of Cognitive Radio Networks" (PE-CRN 2011).

After a strict review process, involving submitted papers plus some invited contributors solicited by the workshop editors, the four workshops took place on May 13, 2011 at the Networking 2011 venue in Valencia (Spain).

Twenty-eight papers were presented and discussed in all four workshops. Fruitful discussions maintained during the workshops were considered by the Chairs and by the authors as a valuable input for the final writing of the papers.

We would like to warmly thank the eight Chairs of the workshops: João Barros and Daniel E. Lucani of NC-Pro 2011; Laurent Lefevre and Rastin Pries of SUNSET 2011; Miguel Soriano and Javier Lopez of WCNS 2011; and Frank Li and Vicent Pla of PE-CRN 2011. They did excellent work when issuing the call for papers and a very professional task during the review process together with the Technical Program Committees. Thanks to all of them.

Last, but not least, we thank all of the attendees for contributing to the success of the workshop.

Thanks to the utmost important topics addressed and the high level of all 28 contributions, this proceedings volume provides a valuable summary of the main research efforts in the fields of network coding, sustainable networking, security on wireless cooperative networks and performance evaluation of cognitive radio networks.

May 2011

Ana Pont
Pietro Manzoni
Vicente Casares-Giner

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Workshop on Performance Evaluation of Cognitive Radio Networks: From Theory to Reality (PE-CRN 2011)

The workshop on Performance Evaluation of Cognitive Radio Networks: From Theory to Reality (PE-CRN) 2011 was held in Valencia, Spain, on May 13, 2011, in conjunction with the Networking 2011 conference sponsored by the IFIP Technical Committee on Communication Systems (TC6).

This was the first workshop focusing on the recent trend of cognitive radio networks (CRNs) from a research topic to operational networks. The main objectives of PE-CRN 2011 were to bring together state-of-the-art results on the performance of CRNs including theoretical and experimental studies from both academia and industry, and to share experiences in making CRNs from theory to reality.

The workshop consisted of nine papers with contributions from Brazil, Belgium, Canada, China, Germany, Israel, Norway, Spain, and USA. It was organized into three sessions, each with three papers, focusing on various aspects of CRNs and opportunistic radio access.

- Session 1: Performance Analysis on CRNs. This session focused on the theoretical aspect of CRNs, especially using Markov chain to analyze the behavior and performance of secondary users with various sensing and access strategies.
- Session 2: Capacity and Spectrum Occupancy in CRNs. This session dealt with measurement-based channel occupancy models, how to apply the theory of network calculus into CRNs and an evaluation of using CR technology and concepts in a realistic factory scenario from a techno-economic point of view.
- Session 3: Dynamic Spectrum Allocation and Opportunistic Networking. This session addressed how to allocate or distribute channels in an opportunistic manner in WLANs, multicast opportunistic routing wireless mesh networks and dynamic spectrum allocation in LTE cellular networks from both theoretical and practical perspectives.

We would like to thank Ana Pont and Pietro Manzoni, the General Chairs of Networking 2011, and Vicente Carares-Giner, the Workshop Chair of Networking 2011, all from Universitat Politècnica de València, for their encouragement and support in organizing this successful workshop. Our gratitude also goes to our TPC members and reviewers for their excellent cooperation.

May 2011

Frank Y. Li
Vicent Pla

Workshop on Network Coding Applications and Protocols (NC-Pro 2011)

Since the seminal work by Alhswede et al., which showed that the multicast capac-ity of a network can be achieved by allowing intermediate nodes to code packets instead of just forwarding or replicating them, network coding has come a long way from an information theoretic concept and has begun its transition into more practical applications and implementations. A variety of initiatives showing the potential of network coding to peer-to-peer systems, distributed storage, multimedia applications, and robust networking (amongst many others) have been reported in journals and conferences as diverse as the topics themselves.

However, a focused conference bringing together researchers and developers who are forming the final bridge from theory to applications and protocols was still missing. The Network Coding Applications and Protocols Workshop (NC-Pro) 2011 was envisioned in the hope that it would provide such a meeting place to discuss crucial aspects and details for the successful transition of network coding into widely available technologies. We were very fortunate to have contributions from leading universities in the field, including the Massachusetts Institute of Technology (MIT), the Technical University at Munich (TUM), and Aalborg University. We also had the privilege to work with a Technical Program Committee that included some of the pioneers in the area of the theory and applications of network coding as well as young, rising stars in the community.

The workshop was divided into two main sessions. The first was focused on specific applications that could benefit from network coding protocols. Applications included (a) satellite communications, analyzing energy benefits from efficient medium access control protocols, (b) heterogeneous networks, studying association policies to guarantee a quality of service requirement, and (c) wireless body area networks, focusing on energy-aware protocols. The second session was organized around algorithms and implementation issues of network coding. Contributions included enhanced decoding algorithms for sparse network codes, energy-aware VLSI implementations envisioned for the design of body area networks, and the introduction of an open source and research-oriented library in C++ to allow both experts and newcomers to develop protocols and implementations promptly and seamlessly.

As a final remark, we would like to thank the Technical Program Committee, whose effort in ensuring the quality and prompt review of the different papers submitted to the conference was instrumental for this event; the conference organizers, who provided us with invaluable organizational and technical support; the authors and attendees, who provided high-quality contributions and enjoyable discussions during the workshop.

May 2011

Daniel E. Lucani
João Barros

Workshop on Wireless Cooperative Network Security (WCNS 2011)

Wireless cooperative networks is a highly promising communications paradigm that will play an essential role in the next generation of wireless mobile networks since they can substantially improve communication capability. The cooperation among nodes allows a distributed space-time signal processing which enables environmental monitoring, localization techniques, distributed measurements, and others, with a reduced complexity or energy consumption per node. Cooperative networks include among others sensor networks, mesh networks, and cognitive radio networks.

This new paradigm implies new and very interesting security challenges. The 2011 Workshop on Wireless Cooperative Network Security (WCNS 2011) was the first workshop specifically devoted to security issues in these new scenarios. These proceedings contain the nine papers selected for presentation at the workshop, which was co-located with the IFIP Networking 2011 conference and sponsored by the IFIP Technical Committee on Communication Systems (TC6).

The main objective of WCNS 2011 was to bring together major experts in the area from both academia and industry and start discussions on the different topics addressed by the workshop. Such an objective was fully achieved thanks to the impressive level of interesting discussions and keen participation of all the attendees.

Lots of people deserve acknowledgment for having volunteered their time and energy to make WCNS 2011 a success. We would like to especially thank the IFIP Networking 2011 local organizers for the great help they provided to us before and during the organization of the event. Clearly, we are greatly indebted to all members of the Program Committee for their work during the review and selection process. Last, but certainly not least, our sincere gratitude goes to all submission authors as well as to all the workshop attendees.

May 2011

Miguel Soriano
Javier Lopez

Workshop on Sustainable Networking (SUNSET 2011)

The Workshop on Sustainable Networking (SUNSET 2011) is the first workshop on sustainable and green networking collocated with the Networking conference and sponsored by the IFIP Technical Committee on Communication Systems (TC 6). The main objective of SUNSET 2011 was to bring together experts in the area of sustainable networking from both academia and industry, addressing issues with a high potential of energy savings in wireless and wired access for local and core networks.

For SUNSET 2011, we received 9 paper submissions and selected 4 papers for the final SUNSET 2011 program.

We wish to thank all the Program Committee members and the external reviewers who worked hard to put together an exciting program.

We also want to acknowledge the efforts of the authors of all paper submissions, without whom this workshop would not have been possible.

May 2011

Laurent Lefèvre
Rastin Pries

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