

2014 IEEE 19th International Workshop on Computer Aided Modeling and Design of Communication Links and Networks

(CAMAD 2014)

**Athens, Greece
1-3 December 2014**



**IEEE Catalog Number: CFP14CAM-POD
ISBN: 978-1-4799-7134-3**

Program

Monday, December 1

09:00 - 09:10

Welcome and Opening Ceremony

Room: Ballroom I

09:10 - 10:00

K1: Keynote 1: Does 5G Meet the Future Internet?

Prof. Rui Aguiar (Universidade de Aveiro, Portugal)

Room: Ballroom I

The talk will look at the current 5G ambitions from the point of view of the evolution of technologies associated with Future Internet. The talk will go through the starting european efforts on the Future of the Internet, and will illustrate the path that led to the upcoming 5G development efforts. The final part of the talk will look at the stated objectives of the 5G systems, and will raise some questions on what requirements are they fulfilling, and how these look from the more traditional view of Future Internet systems.

10:00 - 11:00

K2: Keynote 2: Massive MIMO: Bringing the Magic of Asymptotic Analysis to Wireless Networks

Dr. Emil Björnson (Linköping University, Sweden)

Room: Ballroom I

The use of access points with very many antenna elements has emerged as one of the key technologies for 5G wireless networks. This concept is known as massive MIMO (multiple-input multiple-output) and the main idea is to capitalize on asymptotic behaviors of random matrices by deploying hundreds of antennas to serve tens of user devices in parallel. With such an excessive number of service antennas, as compared to the number of users, one can achieve strong signals by exploiting the large arrays gain offered by coherent beamforming. In addition, the user scheduling and interference rejection can be greatly simplified since the users' channels become quasi-orthogonal and the short-term fading effects vanish. In this talk, I will describe the fundamental characteristics and assumptions behind the massive MIMO concept. The goal is to describe the role that it can play in the wireless evolution and clarify some common misconceptions. Moreover, I will describe some recent research findings on how to exploit the excessive number of service antennas to achieve seemingly magic properties; almost everything seems to get easier and better when you go large!

11:00 - 11:30

Coffee Break

11:30 - 13:00

S1: Energy-efficient Networking Techniques

Room: Ballroom I

Chair: Marco Di Renzo (French National Center for Scientific Research (CNRS), France)

Battery-Aware Network Discovery Algorithm for Mobile Terminals within Heterogeneous Networks

Xavier Pons Masbernat (Airbus Defense & Space, France); Saud Althunibat and Godfrey Kibalya (University of Trento, Italy); Christophe Gruet (Cassidian, France); Lirida Naviner (Ecole Nationale Supérieure des Télécommunications, France); Fabrizio Granelli (University of Trento, Italy)
pp. 1-5

Energy Efficient Proportionally Fair Uplink Offloading for IP Flow Mobility

Vasileios Miliotis (Universitat Politècnica de Catalunya, Spain); Luis Alonso (Universidad Politecnica de Catalunya-BarcelonaTECH & Telecommunications and Aerospace Engineering School of Castelldefels, Spain); Christos Verikoukis (Telecommunications Technological Centre of Catalonia, Spain)
pp. 6-10

Energy Impact of Outdoor Small Cell Backhaul in Green Heterogeneous Networks

Agapi Mesodiakaki (Universitat Politècnica de Catalunya, Spain); Ferran Adelantado (Universitat Oberta de Catalunya, Spain); Angelos Antonopoulos (Telecommunications Technological Centre of Catalonia (CTTC), Spain); Elli Kartsakli (Universitat Politècnica de Catalunya (UPC), Spain); Luis Alonso (Universidad Politecnica de Catalunya-BarcelonaTECH & Telecommunications and Aerospace Engineering School of Castelldefels, Spain); Christos Verikoukis (Telecommunications Technological Centre of Catalonia, Spain)
pp. 11-15

A Performance Study of Energy Minimization for Interleaved and Localized FDMA

Lei You (Qingdao University, P.R. China); Lei Lei and Di Yuan (Linköping University, Sweden)
pp. 16-20

How much overhead is required for stable group formation in VANETs?

Victor Sucasas (Instituto de Telecomunicacoes, Portugal); Ayman Radwan (Instituto de Telecomunicações & Queen's University, Portugal); Hugo Marques (University of Aveiro, Portugal); Jonathan Rodriguez (Instituto de Telecomunicações, Portugal); Seiamak Vahid and Rahim Tafazolli (University of Surrey, United Kingdom)
pp. 21-25

S2: Design, Modeling and Analysis of Network Services and Systems

Room: Alkioni

Chair: Ioannis Moscholios (University of Peloponnese, Greece)

Handoff Modeling in Cellular CDMA with Finite Sources and State-Dependent Bandwidth Requirements

Vassilios G. Vassilakis (University of Surrey, United Kingdom); Ioannis Moscholios (University of Peloponnese, Greece); John S Vardakas (IQUADRAT Informatica S. L. Barcelona, Spain); Michael D. Logothetis (University of Patras, Greece)
pp. 26-30

Social Sensing Model and Analysis for Event Detection and Estimation with Twitter

Kardelen Cepni and Ozgur B. Akan (Koc University, Turkey)
pp. 31-35

Predicting and Quantifying the Technical Debt in Cloud Software Engineering

Georgios Skourletopoulos (University of Nicosia, Cyprus); Rami Bahsoon (The University of Birmingham, United Kingdom); Constantinos X. Mavromoustakis (University of Nicosia, Cyprus); George Mastorakis (Technological Educational Institute of Crete, Greece); Evangelos Pallis (Technological Educational Institute of Crete, Greece)
pp. 36-40

OppSim: A Simulation Framework for Opportunistic Networks Based on MiXiM

Ruifeng Zhang, Anupam Ramachandran, Nick Francis Timmons and Jim Morrison (Letterkenny Institute of Technology, Ireland)
pp. 41-45

On the Number of Transmissions vs. Redundancy Tradeoff for Flooded Fountain Codes

Paolo Casari (University of Padova, Italy); Waqas Abbas (NUCES-FAST Islamabad, Pakistan); Michele Zorzi (University of Padova, Italy)
pp. 46-50

Coverage Capabilities of a Multi-Wavelength Passive Optical Network Architecture

Konstantinos Yiannopoulos (University of Peloponnese, Greece); Emmanouel Varvarigos (University of Patras & Computer Technology Institute, Greece); Vasileios Katopodis (Computer Technology Institute and Press Diophantus, Greece); Kostas Christodouloupoulos (University of Patras, Greece); Dimitrios Klonidis and Ioannis Tomkos (AIT, Greece); Ioannis Lazarou, Paraskevas Bakopoulos and Hercules Avramopoulos (National Technical University of Athens, Greece); Lowell-Panayotis Dimos and George Heliotis (Hellenic Telecommunications Organization S.A., Greece)
pp. 51-55

13:00 - 14:30

Lunch Break

14:30 - 16:00

S3: Quality Evaluation & Experimentation

Room: Ballroom I

Chair: Michail Alexandros Kourtis (University of the Aegean, Greece)

Reputation-Based Trust in Federated Testbeds Utilizing User Experience

Aggelos Kapoukakis, Stella Kafetzoglou, Georgios Androulidakis, Chrysa Papagianni and Symeon Papavassiliou (National Technical University of Athens, Greece)
pp. 56-60

Semantic Aware Resource Mapping for Future Internet Experimental Facilities

Mary Giatili, Chrysa Papagianni and Symeon Papavassiliou (National Technical University of Athens, Greece)
pp. 61-65

On Quality Evaluation of 3D Video Using Colour-plus-Depth and MDC

Christos Tselios (University of Patras, Greece); Ilias Politis and Tasos Dagiuklas (Hellenic Open University & University of Patras, Greece); Stavros Kotsopoulos (University of Patras, Greece)
pp. 66-69

MPEG-DASH over IDVB-T: The QoE unfairness issue

Anargyros Sideris (University of the Aegean & Technological Educational Institute of Crete, Greece); Evangelos K. Markakis (Technological Educational Institute of Crete & University Hospital of Heraklion, Greece); Andreas Trigonis and George Alexiou (Technological Educational Institute of Crete, Greece); Evangelos Pallis (Technological Educational Institute of Crete, Greece); Harry Skianis (University of the Aegean, Greece)
pp. 70-74

Compression Performance and Video Quality Comparison of HEVC and AVC

Harilaos Koumaras (NCSR Demokritos, Greece); Michail Alexandros Kourtis and Harry Skianis (University of the Aegean, Greece)
pp. 75-79

S4: CODELANCE (Special Session)

Room: Alkioni

Chair: Paris Flegkas (University of Thessaly, Greece)

An Improved Homomorphic Message Authentication Code Scheme for RLNC-Enabled Wireless Networks

Alireza Esfahani (University of Minho & Institute de Telecommunication, Portugal); Du Yang (Institution of Telecommunications, Portugal); Georgios Mantas (Instituto de Telecomunicações - Pólo de Aveiro, Portugal); Alberto Nascimento (University Madeira, Portugal); Jonathan Rodriguez (Instituto de Telecomunicações, Portugal)
pp. 80-84

Jointly Padding for Subspace Orthogonality against Tag Pollution

Du Yang (Institution of Telecommunications, Portugal); Alireza Esfahani (University of Minho & Institute de Telecommunication, Portugal); Georgios Mantas (Instituto de Telecomunicações - Pólo de Aveiro, Portugal); Jonathan Rodriguez (Instituto de Telecomunicações, Portugal)
pp. 85-89

Wireless Network Virtualization: The CONTENT Project Approach

Kostas Katsalis (University of Thessaly & CERTH, Greece); Kostas Choumas (University of Thessaly, Greece); Thanasis Korakis (Polytechnic Institute of New York University, USA); Markos Anastasopoulos and Anna Tzanakaki (University of Bristol, United Kingdom); Jordi Ferrer Riera (Fundació i2CAT, Internet i Innovació Digital a Catalunya, Spain); Giada Landi (Nextworks, Italy)
pp. 90-94

VirtueMAN: A Software-Defined Network Architecture for WiFi-based Metropolitan Applications

Dimitris Syrivelis (CERTH-ITI, Greece); Georgios S. Paschos (Huawei Technologies & CERTH-ITI, France); Leandros Tassioulas (Yale University, USA)
pp. 95-99

Reverse Direction Transmissions and Network Coding for Energy-Efficient Wi-Fi Networks

Raul Palacios (University of Trento, Italy); Dzmityr Kliazovich (University of Luxembourg, Luxemburg); Fabrizio Granelli (University of Trento, Italy)
pp. 100-104

16:00 - 16:30

Coffee Break

16:30 - 18:00

S5: Smart Energy Grid: Theory, ICT Technologies and Novel Business Models (Special Session)

Room: **Ballroom I**

Chair: Emmanouel Varvarigos (University of Patras & Computer Technology Institute, Greece)

Multilayer Communication Network Architecture for Wind Power Farm

Shahid Hussain and Young-Chon Kim (Chonbuk National University, Korea)
pp. 105-109

LTE Uplink Delay Constraints for smart grid applications

Spiros Louvros, Michael Paraskevas and Vasilios Triantafyllou (Supreme Technological Educational Institution of Western Greece, Greece); A Baltagiannis (University of Patras, Greece)
pp. 110-114

Electric Vehicles Charging Management in Communication Controlled Fast Charging Stations

John S Vardakas (IQUADRAT Informatica S. L. Barcelona, Spain)
pp. 115-119

A Highly-Dynamic and Distributed Operational Framework for Smart Energy Networks

George Lyberopoulos, Elina Theodoropoulou and Ioanna Mesogiti (COSMOTE Mobile Telecommunications S.A., Greece); Prodromos Makris and Emmanouel Varvarigos (University of Patras & Computer Technology Institute, Greece)
pp. 120-124

Energy Minimization Design of Fixed- and Flex-Grid Optical Networks

Polyzois Soumplis, Panos Papanikolaou and Kostas Christodoulopoulos (University of Patras, Greece); Georgios Papadimitriou (Aristotle University, Greece); Emmanouel Varvarigos (University of Patras & Computer Technology Institute, Greece)
pp. 125-129

S6: International Workshop on Wireless Sensors Networks for Mobile Health (WSN4HEALTH) / ICT based rehabilitation and training for the elderly (KINOPTIM 2014) (Special Session)

Room: Alkioni

Chair: Stefano Tennina (University of L'Aquila, Italy)

A cluster analysis approach for the determination of a fall risk level classification

Caroline Barelle (Univ Orleans-INSA-PRISME & MAAP, France); Nicolas Houel (Ecole Supérieure d'Ostéopathie & MAAP, France); Dimitrios Koutsouris (National Technical University of Athens, Greece)
pp. 130-134

KINOPTIM System Architecture: Modules and Services for Fall Prevention through telerehabilitation

Panagiotis Vartholomeos and Stamatia Rizou (Singular Logic, Greece); Anastasios Tagaris (NTUA, Greece); Caroline Barelle (University of Orleans, France); Javier Montesa and Charalampos Tsirmpas (Brainstorm Multimedia, Spain); Stelios Pantelopoulos (Singular Software AE, Greece); Eleftheria Vellidou (NTUA, Greece); Dimitrios Koutsouris (National Technical University of Athens, Greece)
pp. 135-138

The Hunter: Tracking Randomly Moving WBAN Targets

Kyriakos Skafas (South-East European Research Centre, Greece); Thomas Lagkas (The University of Sheffield International Faculty, CITY College, Greece); George Eleftherakis (SEERC, Greece)
pp. 139-143

An Energy Efficient Protocol Architecture for m-Health Systems

Stefano Tennina (University of L'Aquila, Italy); Elli Kartsakli (Universitat Politècnica de Catalunya (UPC), Spain); Fabio Graziosi (University of L'Aquila, Italy); Manuel Joaquim Pereira Dos Santos (WEST Aquila srl, Portugal); Aris S. Lalos (Technical University of Catalonia (UPC), Spain); Angelos Antonopoulos (Telecommunications Technological Centre of Catalonia (CTTC), Spain); Prodromos-Vasileios Mekikis (Universitat Politècnica de Catalunya (UPC), Spain); Marco Di Renzo (French National Center for Scientific Research (CNRS), France); Luis Alonso (Universidad Politecnica de Catalunya-BarcelonaTECH & Telecommunications and Aerospace Engineering School of Castelldefels, Spain); Christos Verikoukis (Telecommunications Technological Centre of Catalonia, Spain)
pp. 144-148

Device Free Patients Localization in Controlled Indoor Environments

Matteo Faraone, Roberto Alesii and Stefano Tennina (University of L'Aquila, Italy); Fabio Graziosi (University of L'Aquila, Italy)
pp. 149-153

Tuesday, December 2

09:00 - 10:00

K3: Keynote 3: A Vision of Korea-leading 5G Services and Technologies

Prof. Yongwan Park (Yeungnam University, Korea)

Room: Ballroom I

The paradigm shift of the mobile communications environment in year 2020, is expected as the explosion of traffic and mobile devices. And demands toward 2020+ society are a consistent of user experience on any services/contents in anytime and anywhere, new user cases by IOE/IOT and public safety/services, resource managements from socio-economic and business perspective. To satisfy those things, 5G system should be designed and operated on extreme challenging environment. As the success of 5G system, Korean government announced goal towards to 5G as "Quadruple x1000"; A thousand times-increased mobile traffic, A thousand time-reduced Latency, A thousand times-increased Mobile devices and A thousand times -efficient energy savings. In this talk, we introduce the service scenarios and candidates of technologies which are taken into account as the promising 5G services and technologies of 5G Forum. The higher level requirements for 5G will be discussed and several key technology issues including KPI(key performance index) and killer-service applications will be presented to cover the Quadruple*1000. Finally, we also present

the activities of 5G Forum of Korea and global harmonization with foreign organizations such as IMT2020 PG of China, ARIB of Japan, 5GPPP of EU, etc.

10:00 - 11:30

Coffee Break and Demo Presentations

Room: Electra

Chair: Eleni Patouni (University of Athens, Greece)

Including presentations of the following demos:

1. Javier Montesa, Francisco Ibanez and Christos Verikoukis, "Optical and Inertial Tracking System for Postural Exercises", FP7 KINOPTIM
2. Christian Koch, Joerg Widmer, Julius Ruckert and David Hausheer, Nicola Bui, Foivos Michelinakis and Guido Fioravanti, "Mobile Social Prefetcher using Social and Network Information", FP7 SmartenIT and FP7 eCOUSIN
3. Kostas Tsagkaris and Vassilis Foteinos, "AUTOFLOW: Experimentation Framework for Autonomic Software Defined Networks", FP7 Autonomic OpenFlow (AUTOFLOW)
4. Alexandros Fragkiadakis, Vangelis Angelakis, Raphael Naves, George Vasilakis and Elias Tragos, "CS-based crowd-sourcing IoT applications", FP7 RERUM, FP7 MESHWISE
5. Aris Leivadeas, Giorgos Aristomenopoulos, Chrysa Papagianni, and Symeon Papavassiliou, "RICH Media Content Delivery in wireless environments - RIMECODE", FP7 Fed4FIRE
6. Ioannis Askoxylakis and Nikolaos Petroulakis, "Demonstration of a Rapid Emergency Deployment Mobile Communication Node (REDComm)", REDComm
7. Manolis Surligas, Antonis Makrogiannakis and Stefanos Papadakis, "Software Defined Radio implementation of IEEE 802.11a Physical and MAC layer transceiver on General Purpose Processors", REDComm + Master Thesis of Manolis Surligas
8. Stefano Tennina, Elli Kartsakli, F. Graziosi, Manuel Santos, Aristidis Lalos, Angelos Antonopoulos, Prodromos Vasilios Mekikis, Marco Di Renzo and Luis Alonso, "An Energy Efficient Protocol Architecture for m-Health Systems: a Showcase of Multi Access Relay Channel with Network Coding Scenario", FP7 WSN4QoL
9. Theodore Zahariadis and Kostas Vrionis, "Virtual Reality European Parliament", FP7 REVERIE
10. Konstantinos Kourmousis, "Telelog: Advanced wireless control and management system", Greek Research Funding Program PRAXE
11. Helen Catherine Leligou and Lampros Sarakis, "Versatile platforms for testing routing schemes for wireless ad-hoc networks", Greek Research Funding Program ARCHIMEDES III
12. Antonis Gavaletakis, Stefanos Papadakis and Manolis Surligas, "NetFPGA-based Implementation for Multi-Gigabit High Accuracy & Precision Network Measurements", Master Thesis of Antonis Gavaletakis + FP7 SORBeT, FP7 MESHWISE
13. Stefanos Papadakis, Antonis Makrogiannakis and Manolis Surligas, "Low-cost Multiple Primary & Secondary Users Emulation Platform for Cognitive Radio Testbeds", FP7 RERUM, FP7 MESHWISE
14. Harris Moysiadis, "FINoT Platform for Plug n Play", Future Intelligence

11:30 - 13:00

S7: Radio-over-fiber Access Networks: Technologies and Architectures (Special Session)

Room: Ballroom I

Chair: Dimitris Tsiokos (Center for Research and Technology Hellas, Greece)

Photonic and Optoelectronic Components and Systems for Converged Fiber Wireless Access Networks

Stavros Iezekiel (University of Cyprus, Cyprus)
pp. 154-157

The Moving Extended N-Cells Handover Algorithm in Vehicular Radio-over-Fiber Networks at 60GHz

Nikolaos D. Tselikas, Evangelos Kosmatos and Anthony Boucouvalas (University of Peloponnese, Greece)
pp. 158-162

A WDM RoF system for heterogeneous 5GHz/60GHz wireless applications in MT-MAC-enabled networks

Charoula Mitsolidou (Aristotle University of Thessaloniki, Greece); George Kalfas (Center for Research and Technology Hellas & Information Technologies Institute, Greece); Dimitris Tsiokos (Center for Research and Technology Hellas, Greece); Nikos Pleros and Amalia N. Miliou (Aristotle University of Thessaloniki, Greece)
pp. 163-167

Bit-Error-Rate Performance of Semiconductor Optical Amplifiers in Negative Exponential Fading

Nikos C. Sagias, Konstantinos Yiannopoulos and Anthony Boucouvalas (University of Peloponnese, Greece)
pp. 168-172

S8: Recent Advances in Secure Management of Data and Resources in the IoT (RED-IOT) (Special Session)

Room: Alkioni

Chair: Elias Z. Tragos (Institute of Computer Science, FORTH, Greece)

An Heterogeneous wireless networks testbed for Smart Environment scenarios

Stefano Melzi (MobiMESH srl, Italy); Stefano Napoli (MobiMESH, Italy); Alberto Pollastro (MobiMESH srl, Italy); Scott Fowler (Linköping University, Sweden)
pp. 173-177

Hybrid Threshold-Based Selection Diversity Receivers for Efficient Resources Utilization

Petros S. Bithas (Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing, Greece); Theodoros Mouroutis, Yiannis Stylianou and Athanasios Lioumpas (Cyta Hellas, Greece); George Efthymoglou (University of Piraeus, Greece)
pp. 178-182

Aggregation and Perturbation in Practice: Case-Study of Privacy, Accuracy & Performance

Henrich Pöhls, Max Mössinger, Benedikt Petschkuhn and Johannes Rückert (University of Passau, Germany)
pp. 183-187

Lightweight Robust Cryptographic Combiner for Mobile Devices: Crypto Roulette

Marin Pamukov (Aalborg University & Technical University Sofia, Denmark); Vladimir K. Poulkov (Technical University of Sofia, Bulgaria); Albena Mihovska (Aalborg Universitet, Denmark); Neeli Rashmi Prasad (Center for TeleInFrastructure (CTIF), Denmark); Ramjee Prasad (Aalborg University, Denmark)
pp. 188-192

Utilizing Multiple Full-Duplex Relays in Wireless Systems with Multiple Packet Reception

Ioannis Avgouleas, Vangelis Angelakis and Nikolaos Pappas (Linköping University, Sweden)
pp. 193-197

13:00 - 14:30

Lunch Break

14:30 - 16:00

S10: RESONANT: Resource Optimization in Heterogeneous Wireless Access Networks (Special Session)

Room: Alkioni

Chair: Vangelis Angelakis (Linköping University, Sweden)

Interference minimization in Hybrid WiFi/Cellular Networks

Athanasios Lioumpas (Cyta Hellas, Greece); Petros S. Bithas (Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing, Greece); George K. Karagiannidis (Aristotle University of Thessaloniki, Greece); Bayan S Sharif (Khalifa University, UAE)
pp. 198-202

Simple Network design and Power allocation for 5G Device-to-Device Communication

Scott Fowler (Linköping University, Sweden); Yuan Li (Lund University, Sweden); Alberto Pollastro (MobiMESH srl, Italy); Stefano Napoli (MobiMESH, Italy)
pp. 203-207

A Game Theoretic Approach to the Power Control in D2D Communications Underlay Cellular Networks

Georgios Katsinis (National Technical University of Athens, Greece); Eirini Eleni Tsiropoulou (National Technical University of Athens/Institute of Comm. and Comp. Systems, Greece); Symeon Papavassiliou (National Technical University of Athens, Greece)
pp. 208-212

Experiences with deploying Compressive Sensing and Matrix Completion techniques in IoT devices

Alexandros Fragkiadakis (Institute of Computer Science, FORTH, Greece); Pavlos Charalampidis (FORTH-ICS, Greece); Stefanos Papadakis (University of Crete & Institute of Computer Science - FORTH, Greece); Elias Z. Tragos (Institute of Computer Science, FORTH, Greece)
pp. 213-217

On the Delay of a Throughput Optimal Flow Allocation Scheme for Random Access WMNs

Manolis Ploumidis (University of Crete, Greece); Nikolaos Pappas (Linköping University, Sweden); Apostolos Traganitis (University of Crete & ICS-FORTH, Greece)
pp. 218-223

S9: Autonomic Communication Systems and Self-Organized Networks

Room: Ballroom I

Chair: Dimitris Tsolkas (University of Athens, Greece)

Adapting Policy-based Management of Future Networks using Collaborative Filtering Techniques

Roi Arapoglou and Iason Rodis (National and Kapodistrian University of Athens, Greece); Panagis Magdalinos and Nancy Alonistioti (University of Athens, Greece)
pp. 224-228

A Broadcast Aware P2P mechanism for improving BitTorrent Content Delivery

Evangelos K. Markakis, Harry Skianis and Anargyros Sideris (University of the Aegean, Greece); George Alexiou (Technological Educational Institute of Crete, Greece); Evangelos Pallis (Technological Educational Institute of Crete, Greece)
pp. 229-233

Multi-Channel Collaborative Spectrum Sensing in Cognitive Radio Networks

Saud Althunibat, Tung Manh Vuong and Fabrizio Granelli (University of Trento, Italy)
pp. 234-238

A Comparison between Opportunistic and Fair Resource Allocation Scheduling for LTE

Marco Centenaro, Massimiliano Pesce, Daniele Munaretto, Andrea Zanella and Michele Zorzi
(University of Padova, Italy)
pp. 239-243

Is Analog Network Coding More Energy Efficient than TDMA?

Konstantinos Ntontin (CTTC, Spain); Marco Di Renzo (French National Center for Scientific Research (CNRS), France); Ana Perez-Neira (UPC, Spain); Christos Verikoukis (Telecommunications Technological Centre of Catalonia, Spain)
pp. 244-248

16:00 - 16:30

Coffee Break

16:30 - 18:00

T1: Tutorial: From Dumb to Smarter Switches in Software Defined Networks: An Overview of Data Plane Evolution

Antonio Capone (Politecnico di Milano, Italy), Giuseppe Bianchi (University of Roma Tor Vergata)

Room: Ballroom I

Coined in 2009, the term Software Defined Networking (SDN) has gained significant momentum in the last years. SDN's promises to enable easier and faster network innovation, by making networks programmable and more agile, and by centralizing and simplifying their control. Even if some SDN's programmable networking ideas date back to the mid of the 90s, and do not nearly restrict to device-level programmability and to OpenFlow, it is fair to say that OpenFlow is the technology which brought SDN to the real world. The separation between control and data plane is highlighted as a distinguishing feature of SDN, and sometimes even postulated as the SDN definition itself. But should such a separation necessarily take the form of a physical separation, namely a "smart" controller (or network of controlling entities), which runs the control logic for "dumb" switching fabrics? This was the case with the original OpenFlow, as its "match/action" programmatic abstraction necessarily resorts on an external controller for (reactively or proactively) updating forwarding policies in the switches' flow tables. Recently, the possibility of enriching the programmatic abstraction of OpenFlow to allow forwarding rules to evolve over time without directly involving the controller has emerged as a major trend in SDN research. This requires an evolution of the data plane that allows incorporating the ability to execute some kind of logic for reacting to events and modifying rules. This tutorial will discuss potential limits of SDN applications fully based on controllers and provide an overview of the trends in data plane evolutions analyzing advantages and potential risks.

20:30 - 23:00

Social Dinner

Room: Dionysos restaurant

Wednesday, December 3

09:30 - 11:00

S11: Network Optimization and Resource Provisioning

Room: Ballroom I

Chair: Daniele Munaretto (University of Padova, Italy)

Military Training Network with Admission Control using Real-Time Analysis

Hawar Ramazanali (Halmstad University & Saab Training & Simulation, Sweden); Magnus Jonsson, Kristina Kunert and Urban Bilstrup (Halmstad University, Sweden)

pp. 249-254

Resource Usage Prediction for Optimal and Balanced Provision of Multimedia Services

Yiannos Kryftis and Constandinos X. Mavromoustakis (University of Nicosia, Cyprus); Jordi Mongay Batalla (National Institute of Telecommunications & Warsaw University of Technology, Poland); George Mastorakis (Technological Educational Institute of Crete, Greece); Evangelos Pallis (Technological Educational Institute of Crete, Greece); Georgios Skourletopoulos (University of Nicosia, Cyprus)

pp. 255-259

Association Control in MillimeterWave Wireless Access Networks

George Athanasiou (KTH Royal Institute of Technology, Sweden); Pradeep Chaturanga Weeraddana (KTH, Stockholm, Sweden); Carlo Fischione (KTH, Sweden)

pp. 260-264

Performance Evaluation of Relay-aided Cellular Networks Using Stochastic Geometry

Wei Lu (L2S, CNRS, Université Paris-Sud, France); Marco Di Renzo (French National Center for Scientific Research (CNRS), France)

pp. 265-269

A performance evaluation framework for LTE cellular networks with beamforming

Francesco Guidolin (Università degli studi di Padova, Italy); Leonardo Badia (Università degli Studi di Padova, Italy); Eleftherios Karipidis (Ericsson Research, Sweden); Johannes Lindblom (Linköping University, Sweden); Michele Zorzi (Università degli Studi di Padova, Italy)

pp. 270-274

S12: Next Generation Mobile Networks

Room: Alkioni

Chair: Eleni Constantina Davri (NCSR Demokritos, Greece)

Massive Interference Neutralization in DIWINE Network

Kostas Ramantas (Iquadrat Informatica, Greece); Pin-Hsun Lin (TU Dresden, Germany); Zuleita Ka Ming Ho (Samsung Electronics, Korea); Eduard Jorswieck (TU Dresden, Germany)

pp. 275-279

Handover Performance in LTE-A HetNets Through Inter-Site Distance Differentiation

Georgios Kollias (Iquadrat Informatica, Spain); Ferran Adelantado (Universitat Oberta de Catalunya, Spain); John S Vardakas (IQUADRAT Informatica S. L. Barcelona, Spain); Kostas Ramantas (Iquadrat Informatica, Greece)

pp. 280-284

A Novel Multiple Access Scheme based on Spatial Modulation MIMO

Xiping Wu (University of Edinburgh, United Kingdom); Marco Di Renzo (French National Center for Scientific Research (CNRS), France); Harald Haas (The University of Edinburgh, United Kingdom)

pp. 285-289

A Rapid Emergency Deployment Mobile Communication Node

Yannis Askoxylakis and Antonis Makrogiannakis (FORTH-ICS, Greece); Andreas Miaoudakis (FORTH, Greece); Stefanos Papadakis (University of Crete & Institute of Computer Science - FORTH, Greece); Nikolaos E. Petroulakis (Foundation for Research and Technology - Hellas, Greece); Manolis Surligas (Computer Science Department, University of Crete & Institute of Computer Science, Foundation for Research and Technology - Hellas, Greece); Apostolos Traganitis (University of Crete & ICS-FORTH, Greece); Nikolaos Vervelakis (FORTH-ICS, Greece)

pp. 290-294

Cache-Aware Traffic Engineering in Information-Centric Networks

Vasilis Sourlas (University College London, United Kingdom); Paris Flegkas (University of Thessaly, Greece); Panos Georgatsos (CERTH-ITI, Greece); Leandros Tassioulas (Yale University, USA)

pp. 295-299

11:00 - 11:30

Coffee Break

11:30 - 12:30

K4: Keynote 4: 5G Challenges and Possible Solutions

Dr. Henrik Lundqvist (Huawei, Sweden)

Room: Ballroom I

The requirements being considered for 5G include 1000 times the area capacity of 4G, 1 ms RAN latency and the availability of 5G services also to mobile users. The proposed solutions typically center around massive MIMO, mmWave access links and dense deployment of small cells. However, there are some fundamental challenges that require more research. First, how to offer true 5G services to vehicular users, especially for people in cars and busses? Second, can significant RAN densification be reached at an acceptable costs? And third, how to do all this without significant increase in energy consumption, both in the end-user device and in the radio network? This talk will address all these three issues and propose possible solutions.

12:30 - 14:00

Lunch Break

14:00 - 15:30

S13: Network Anomaly Detection and Classification (Special Session)

Room: Ballroom I

Chair: Christian Callegari (University of Pisa, Italy)

Stream-wise Detection of Surreptitious Traffic over DNS

Tomas Cejka (CESNET, a.l.e., Czech Republic); Zdenek Rosa (CTU in Prague, FIT, Czech Republic);
Hana Kubatova (CTU in Prague, Czech Republic)
pp. 300-304

An Analysis of Correlations of Intrusion Alerts in an NREN

Václav Bartoš (Brno University of Technology, Czech Republic); Martin Zadnik (CESNET, a.l.e.,
Czech Republic)
pp. 305-309

Neural Network based Anomaly Detection

Christian Callegari, Stefano Giordano and Michele Pagano (University of Pisa, Italy)
pp. 310-314

Energy Requirements of Secure Vertical Handover Operations in the 802.21a Framework

Xenofon Foukas (NCSR "Demokritos", United Kingdom); Dimitris Loukatos (NCSR 'Demokritos',
Greece); Kimon Kontovasilis (NCSR Demokritos, Greece); Hugo Marques (University of Aveiro,
Portugal)
pp. 315-319

S14: Internet of Things (InThings 2014) (Special Session)

Room: Alkioni

Chair: Domenico Ficara (Cisco Systems, Switzerland)

Analysis of Deterministic Ethernet Scheduling for the Industrial Internet of Things

Ramon Serna Oliver, Silviu S Craciunas and Georg Stoeger (TTTech Computertechnik AG, Austria)
pp. 320-324

Key ingredients in an IoT recipe: Fog Computing, Cloud Computing, and more Fog Computing

Marcelo Yannuzzi (Technical University of Catalonia (UPC) & Networking and Information Technology Lab, Spain); Rodolfo Milito (Cisco Research, USA); René Serral-Gracià (Technical University of Catalunya (UPC), Spain); Diego Montero (Technical University of Catalonia (UPC) & Networking and Information Technology Lab NetIT Lab, Spain); Mario Nemirovsky (ICREA Researcher at CNS - BSC & Barcelona Supercomputing Center, Spain)
pp. 325-329

Utilizing Terahertz Band for Local and Personal Area Wireless Communication Systems

Turker Yilmaz (Koc University & Next-generation and Wireless Communications Laboratory, Turkey); Ozgur B. Akan (Koc University, Turkey)
pp. 330-334

Bandwidth Sensing Errors in Network Systems: A Case Study of Video Rate Adaptation

Kaliappa Ravindran (City University of New York, USA); Xiliang Liu (CUNY Graduate center, USA)
pp. 335-339

CADC: Congestion Aware Duty Cycle Mechanism A Simulation Evaluation

Vasilis Michopoulos (Loughborough University, United Kingdom); George Oikonomou (University of Bristol, United Kingdom); Iain Phillips and Lin Guan (Loughborough University, United Kingdom)
pp. 340-344

15:30 - 16:00

Coffee Break

16:00 - 17:30

S15: Internet of Things and Machine-to-Machine Communications

Room: **Ballroom I**

Chair: Eirini Liotou (University of Athens, Greece)

Evaluation of Localization Methods in Millimeter-Wave Wireless Systems

Hazem El-Sayed (Universität Stuttgart, Germany); George Athanasiou (KTH Royal Institute of Technology, Sweden); Carlo Fischione (KTH, Sweden)
pp. 345-349

A Hybrid Lateration Time-Fingerprint Position Estimation Technique for Indoor UWB Systems

Eleni Bogdani, Demosthenes Vouyioukas, Nikolaos Nomikos, Dimitrios N Skoutas and Harry Skianis (University of the Aegean, Greece)
pp. 350-354

End-to-End Communication Challenges in M2M Systems for mHealth Applications

Elli Kartsakli (Universitat Politècnica de Catalunya (UPC), Spain); Aris S. Lalos (Technical University of Catalonia (UPC), Spain); Angelos Antonopoulos (Telecommunications Technological Centre of Catalonia (CTTC), Spain); Stefano Tennina (University of L'Aquila, Italy); Marco Di Renzo (French National Center for Scientific Research (CNRS), France); Luis Alonso (Universidad Politecnica de Catalunya-BarcelonaTECH & Telecommunications and Aerospace Engineering School of Castelldefels, Spain)
pp. 355-359

Ant Colony Optimization for Resource Sharing among D2D Communications

Eirini Liotou, Dimitris Tsolkas, Nikos Passas and Lazaros Merakos (University of Athens, Greece)
pp. 360-364

Robust Randomized Resource Allocation for Device-to-Device Communications

Christoforos Vlachos and Vasilis Friderikos (King's College London, United Kingdom)
pp. 365-369

S16: Green Communications

Room: Alkioni

Chair: Andreas Miaouidakis (FORTH, Greece)

Fast Power Charging Strategy for EV/PHEV in Parking Campus with Deployment of Renewable Energy

Qi Wang (University of Trento, Italy); I. Safak Bayram (Texas A&M University at Qatar, Qatar); Fabrizio Granelli (University of Trento, Italy); Michael Devetsikiotis (North Carolina State University, USA)

pp. 370-374

Energy optimization schemes in heterogeneous wireless mobile networks

Georgios Kyriazis and Angelos Rouskas (University of Piraeus, Greece)

pp. 375-379

Seamless Handover in 802.11 with Automatic Power Save Delivery

Fernando Valdenebro Gonzalez and Henrik Lundqvist (Huawei Technologies, Sweden); Kari Leppanen (Huawei Technologies, Finland)

pp. 380-384

An Accurate Model for Energy Efficiency in IEEE 802.11 WLANs

Eleni Constantina Davri, Emmanouil N. Kafetzakis and Kimon Kontovasilis (NCSR Demokritos, Greece); Harry Skianis (University of the Aegean, Greece)

pp. 385-389

Average Bit Error Probability of Receive-Spatial Modulation Using Zero-Forcing Precoding

Athanasios Stavridis and Dushyantha Basnayaka (The University of Edinburgh, United Kingdom); Marco Di Renzo (French National Center for Scientific Research (CNRS), France); Harald Haas (The University of Edinburgh, United Kingdom)

pp. 390-394

17:30 - 18:00

Closing

Room: Ballroom