

2021 Wireless Days (WD 2021)

Paris, France
30 June – 2 July 2021



IEEE Catalog Number: CFP2114F-POD
ISBN: 978-1-6654-2560-5

**Copyright © 2021 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***** *This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2114F-POD
ISBN (Print-On-Demand):	978-1-6654-2560-5
ISBN (Online):	978-1-6654-2559-9
ISSN:	2156-9711

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

Table of Contents:

1	Technical Session 1: Wireless and Mobile Communications I: Chaired by: Celimuge Wu (University of Electro-Communications, Japan)	
1.1	<i>Demystifying the Performance of Bluetooth Mesh: Experimental Evaluation and Optimization</i> Adnan Aijaz (Toshiba Research Europe Ltd, United Kingdom (Great Britain)); Aleksandar Stanoev (Toshiba Europe Ltd, United Kingdom (Great Britain)); Dominic London and Victor Marot (Toshiba Europe Ltd., United Kingdom (Great Britain))	1
1.2	<i>Towards a Realistic Maximum Flow Model in Hybrid Multi-Channel Wireless Mesh Networks</i> Martin Backhaus and Michael Rossberg (Technische Universität Ilmenau, Germany); Guenter Schaefer (Technische Universität Ilmenau, Germany)	7
1.3	<i>Hypergraph-Based Model for Coexistence Management of Heterogeneous Wireless Networks</i> Tawachi Nyasulu and David Crawford (University of Strathclyde, United Kingdom (Great Britain))	15
2	Short papers session 1: Wireless Resource Allocation: Chaired by: Somayeh Mohammady (TUD, Dublin)	
2.1	<i>A Priority and Guarantee-based Resource Allocation with Reuse Mechanism in LTE-V Mode</i> Mariem Allouch (VEDECOM & University of Versailles Saint-Quentin-en-Yvelines UVSQ, France); Sondes Kallel (University of Paris Saclay, France); Ahmed Soua (VEDECOM, France); Samir Tohme (University of Versailles Saint-Quentin-en-Yvelines UVSQ, France)	23
2.2	<i>Evaluations of SIC by Power Difference in IM-NOMA</i> Yuta Tsuzuki (Waseda University, Japan); Shigeru Shimamoto (Waseda University & Graduate School of Global Information and Telecommunication Studies, Japan); Zhenni Pan (Waseda University, Japan)	28
2.3	<i>Comparison of Piece-Wise and full CFR for OFDM (LTE, 5G beyond), WCDMA, and DVB-S2X signals</i> Somayeh Mohammady (Technological University Dublin, Ireland); Ronan Farrell (Maynooth University, Ireland); John Dooley (National University of Ireland Maynooth, Ireland); Pooria Varahram (Benetel Limited, Ireland)	33
2.4	<i>Stateless Reinforcement Learning for Multi-Agent Systems: the Case of Spectrum Allocation in Dynamic Channel Bonding WLANs</i> Sergio Barrachina-Muñoz (Centre Tecnològic de Telecomunicacions de Catalunya, Spain); Alessandro Chiumento (University of Twente, The Netherlands & Katholieke Universiteit Leuven, Belgium); Boris Bellalta (Universitat Pompeu Fabra, Spain)	41

3 Technical Session 2: AI for Wireless and Mobile Networks:	Chaired by: Floriano De Rango (Universita della Calabria, Italy)	
3.1	<i>LAPSE: A Machine Learning Message Forwarding Approach based on Node CentralityEstimation in Sparse Dynamic Networks</i> Carlos Borrego (Universitat de Barcelona, Spain); Enrique Hernández-Orallo and PietroManzoni (Universitat Politècnica de València, Spain); Anna Maria Vigni (Roma Tre University, Italy)	46
3.2	Information Distribution in Multi-Robot Systems: Adapting to Varying Communication Conditions Michał Barciś and Hermann Hellwagner (Klagenfurt University, Austria)	52
3.3	<i>Cognitive IoT enabled by Layered Architecture and Neural Networks in a Smart HomeEnvironment</i> Abdon Serianni, Floriano De Rango and Pierfrancesco Raimondo (University of Calabria, Italy)	60
4 Short papers session 2: IoT & Sensors Networks:	Chaired by: Khaled Boussetta (University Sorbonne Paris Nord, France)	
4.1	<i>A Privacy-Preserving Authentication Model Based on Anonymous Certificates in IoT</i> Khaled Hamouid (UB2, Algeria); Mawloud Omar (ESIEE Paris, LIGM, University of Gustave Eiffel, France); Kamel Adi (University of Quebec in Outaouais, Canada)	67
4.2	Target Counting Using Binary Sensors Based on Disjoint Connected SubgraphsShino Shiraki and Shigeo Shioda (Chiba University, Japan)	73
4.3	<i>On the Use of Carrier Sense Mechanisms in Low-Power Wide Area Networks</i> Abderrahman Ben Khalifa and Razvan Stanica (INSA Lyon, France); Herve Rivano (Inria & Université de Lyon, INRIA, INSA Lyon, CITI, France)	78
1.1	<i>Distance Estimation for BLE-based Contact Tracing – A Measurement Study</i> Bernhard Etzlinger, Barbara Nußbaummüller, Philipp Peterseil and Karin AnnaHummel (Johannes Kepler University Linz, Austria)	83
5 Technical Session 3: Privacy & Connected Vehicles:	Chaired by: Nadjib Achir (Université Paris 13, France)	
5.1	Modelling activation of congestion control for estimating channel load in vehicular networks Aashik Chandramohan and Geert Heijenk (University of Twente, The Netherlands)	88
5.2	<i>A Clustering-based radio resource allocation scheme for C-V2X</i> Khabaz Sehla (Sorbonne, France); Thi Mai Trang Nguyen (Sorbonne Université & LIP6, France); Guy Pujolle (Sorbonne University, France); Pedro B. Velloso (Universidade Federal do Rio de Janeiro (UFRJ), France & LIP6, Sorbonne Université, France)	96
5.3	<i>Privacy-preserving Identity Broadcast for Contact Tracing Applications</i> Vladimir Dyo and Jahangir Ali (University of Bedfordshire, United Kingdom (Great Britain))	104

6 Short papers session 3: Routing and Security: Chaired by: Nadjib Achir

(Université Paris 13, France)

- | | | |
|-----|--|-----|
| 6.1 | <i>A Trajectory Inference-based Technique for Energy Efficient Store-and-ForwardTechnology</i>
Antônio Rodrigo Delepiane De Vit (UFSM – Federal University of Santa Maria, Brazil); CésarMarcon (PUCRS – Pontifícia Universidade Católica do Rio Grande do Sul, Brazil); Raul CerettaNunes (Federal University of Santa Maria, Brazil); Sidnei Silveira (UFSM – Federal University of Santa Maria, Brazil); Ricardo Macedo (Federal University of Santa Maria & Campus FredericoWestphalen, Brazil) | 110 |
| 6.2 | <i>Market Equity for Car-sharing Applications using Homomorphic Encryption andOpportunistic Networking</i> Miguel Carpio and Sergi Robles (Universitat Autònoma de Barcelona, Spain); AdrianSanchez (Universitat Autonoma de Barcelona, Spain); Carlos Borrego (Universitat de Barcelona,Spain) | 115 |
| 6.3 | <i>Secrecy in Congestion-Aware Broadcast Channels</i> Antonia Arvanitaki, Nikolaos Pappas and Niklas Carlsson (Linköping University,Sweden); Parthajit Mohapatra (Indian Institute of Technology Tirupati, India) | 120 |
| 6.4 | <i>A New Metric for Routing Optimization in Mobile Networks Based on The Entropy Concept</i>
Peppino Fazio (DSMN Ca' Foscari Venezia); Mauro Tropea (Università della Calabria, Italy) | 125 |

7 Technical Session 4: Wireless and Mobile Communications II: Chaired

by: Anna Maria Vigni (Roma Tre University, Italy)

- | | | |
|-----|---|-----|
| 7.1 | <i>Evaluation of Channel Capacity of a 3D Curvilinear Metasurface in the THz band</i> Anna Maria Vigni (Roma Tre University, Italy); Valeria Loscrí (Inria Lille-Nord Europe, France) | 129 |
| 7.2 | <i>Phase Control Scheme to Reduce Ionospheric Fading for Long Distance HFCommunication</i>
Kazutoshi Yoshii, Megumi Saito, Zhenni Pan and Jiang Liu (Waseda University, Japan); ShigeruShimamoto (Waseda University & Graduate School of Global Information and TelecommunicationStudies, Japan) | 137 |
| 7.3 | <i>Cascaded Scheduling Scheme for Massive Multi-Connectivity</i> Marie-Theres Suer (TU Braunschweig & Robert Bosch GmbH, Germany); ChristophThein and Hugues Tchouankem (Robert Bosch GmbH, Germany); Lars C Wolf (TechnischeUniversität Braunschweig, Germany) | 144 |