2017 Second International Conference on Fog and Mobile Edge Computing (FMEC 2017)

Valencia, Spain 8-11 May 2017



IEEE Catalog Number: ISBN: CFP17CMP-POD 978-1-5386-2860-7

Copyright © 2017 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:	CFP17CMP-POD
ISBN (Print-On-Demand):	978-1-5386-2860-7
ISBN (Online):	978-1-5386-2859-1

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

Keynote speech 1: The path to which the 5G takes us, from the atom to the direct communication	1
Keynote speech 2: Attribute-Based Access Control Status and Directions	2
Keynote speech 3: QoS-aware deployment of Fog applications	3
Keynote speech 4: Smart Multimedia Services Distribution Using Software Defined Adaptive Cognitive Networks	4
Fog and Mobile Edge Computing Resource Optimization in Fog Enabled IoT Deployments Visali Mushunuri, Ajay Kattepur, Hemant Kumar Rath and Anantha Simha	6
Towards data privacy in heterogeneous cloud environments: an extension to the SANTA policy language Nasser Abwnawar, Helge Janicke, Richard Smith and Aboubaker Lasebae	14
Decentralized Data Offloading for Mobile Cloud Computing Based on Game Theory Dongqing Liu, Lyes Khoukhi and Abdelhakim Hafid	20
Location-aware Load Prediction in Edge Data Centers Chanh Nguyen Le Tan, Cristian Klein, and Erik Elmroth	25
A Data Protection Model for Fog Computing Thanh Dat Dang and Doan Hoang	32
EdgeCloudSim: An Environment for Performance Evaluation of Edge Computing Systems Cagatay Sonmez, Atay Ozgovde and Cem Ersoy	39
Authentication Proxy as a Service Jacques Bou Abdo	45
Next Generation Marine Data Networks in an IOT Environment Rabab Al-Zaidi, John Woods, Mohammed Al-Khalidi, Khattab Alheeti and Klaus McDonald	50
From Smog to Fog: A Security Perspective Ruben Rios, Rodrigo Roman, Jose A. Onieva and Javier Lopez	56
Cloud, Fog and Edge: Cooperation for the Future? Kay Bierzynski, Antonio Escobar, Matthias Eberl	62
Edge Computing for Interactive Media and Video Streaming Kashif Bilal and Aiman Erbad	68
Fog Function Virtualization: a Flexible Solution for IoT Applications Damian Roca, Josue V. Quiroga, Mateo Valero and Mario Nemirovsky	74
Fog Computing Through Public-Resource Computing and Storage Sa´ul Alonso-Monsalve , F´elix Garc´ıa-Carballeira and Alejandro Calder´on	81
Smart Virtual eNB (SVeNB) for 5G Mobile Communication Fouad Yaseen, Nahlah Alkhalidi and Hamed Al-Raweshidy	88

Cooperative Load Balancing Scheme for Edge Computing Resources Roberto Beraldi , Abderrahmen Mtibaay and Hussein Alnuweiri	94
Towards Gateway to Cloud Offloading in IoT Publish/Subscribe Systems Daniel Happ and Adam Wolisz	101
Defining and Testing Virtual Federated Networks Across Multiple Cloud Sites Ivan Andrade, Carlos de Alfonso and Ignacio Blanquer	107
Reliable and Efficient Mobile Edge Computing in Highly Dynamic and Volatile Environments Minh Le, Zheng Song, Young-Woo Kwon, and Eli Tilevich	113
Exploring the trade-off between performance and energy consumption in cloud infrastructures D. Kanapram, G. Lamanna and M. Repetto	121
A Service Orchestration Architecture for Fog-enabled Infrastructures Mathias Santos de Brito, Saiful Hoque, Thomas Magedanz, Ronald Steinke, Alexander Willner, Daniel Nehls, Oliver Keils and Florian Schreiner	127
Cloud Based Intelligent Extensible Shared Context Services Sufyan Almajali, Dhiah el Diehn and I. Abou-Tair	133
Resilience at the Edge in Cyber-Physical Systems Abhishek Dubey, Gabor Karsai and Subhav Pradhan	139
Leveraging Sensor Data Content to Assure Sensor Device Trustworthiness in Mobile Edge Computing John Yoo	147
Internet of Things: Systems, Management and Security Priority-based Session Admission Control Method for Next Generation Internet Andris Skrastiņš and Jans Jeļinskis	153
IoT development: Discovering, enabling and validation of real life IoT scenarios Denis Makoshenko, Ilya Enkovich	159
Proposed Model to Implement High-Level Information Security in Internet of Things Sergio Duque Castilho, Eduardo P. Godoy and Tayane W. L. Castilho	165
Simulating IoT Cloud Systems: A Meteorological Case Study Andras Markus and Attila Kertesz	171
AFT: Adaptive Fibonacci-based Tuning Protocol for Service and Resource discovery in the Internet of Things Firas Albalas, Wail Mardini and Majd Al-Soud	177
Internet of Things Data Analytics for User Authentication and Activity Recognition Samera Batool, Nazar A. Saqib, Muazzam and A. Khan	183
Multi-Level Security for the 5G/IoT Ubiquitous Network Ola Salman, Ayman Kayssi, Ali Chehab, and Imad Elhajj	188
Cognitive Edge Computing based Resource Allocation Framework for Internet of Things Anas Amjad, Fazle Rabby, Shaima Sadia, Mohammad Patwary and Elhadj Benkhelifa	194

On consumable energy allocation frame-work with SWIPT for remotely located wireless node within internet of things AlaaAllah Ahmed ElSabaa, Mohammad Patwary, Elhadj Benkhelifa, Amira Zaki and Said E. El- Khamy	201
Collision-Free Anycast Transmission Scheduling in UWSNs Ahmad Ababneh, Mahmoud Al-Ayyoub, Yaser Jararweh and Mohammad Alsmirat	207
Mobile Cloud Computing systems, Management, and Security Towards the Optimization of Power and Bandwidth Consumption in Mobile-Cloud Hybrid Applications Aamir Akbar and Peter R. Lewis	213
Automated Service Delivery Platform for C-RANs Deval Bhamare, Aiman Erbad, Raj Jain and Mohammed Samaka	219
A Critical Overview of Latest Challenges and Solutions of Mobile Cloud Computing Hesham Allam, Nasser Nassiri, Amala Rajan and Jinesh Ahmad	225
An Energy-Efficient Cross-Layer Approach for Cloud Wireless Green Communications Ali Safa Sadiq, Turfah Zeyad Almohammad, Rabiatul Adawiah Bt Muhamed Khadri, Abdulghani Ali Ahmed and Jaime Lloret	230
Cloudlet Solution for Digital Forensic Investigation of Multiple Cases of Multiple Devices Siyakha Mthunzi, Elhadj Benkhelifa, Yaser Jararweh and Mahmoud Al-Ayyoub	235