

2015 IEEE 14th International Symposium on Network Computing and Applications (NCA 2015)

**Cambridge, Massachusetts, USA
28 – 30 September 2015**



**IEEE Catalog Number: CFP15295-POD
ISBN: 978-1-5090-1850-5**

**Copyright © 2015 by the Institute of Electrical and Electronic 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 publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP15295-POD
ISBN (Print-On-Demand):	978-1-5090-1850-5

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

CURRAN ASSOCIATES INC.
proceedings
.com

2015 IEEE 14th International Symposium on Network Computing and Applications

NCA 2015

Table of Contents

Message from the Steering Committee Chair.....	x
Message from the Program Chair.....	xi
Conference Committee.....	xii
Program Committee.....	xiii
External Reviewers.....	xv

Sensor Network

@migo: A Comprehensive Middleware Solution for Participatory Sensing Applications	1
<i>Rafael Bachiller, Nelson Matthys, Javier del Cid, Wouter Joosen, Danny Hughes, and Kristof Van Laerhoven</i>	
An Energy-Aware System for Decision-Making in a Residential Infrastructure Using Wireless Sensors and Actuators	9
<i>Geraldo P.R. Filho, Jo Ueyama, Bruno S. Faical, Gustavo Pessin, Claudio M. de Farias, Richard W. Pazzi, Daniel L. Guidoni, and Leandro A. Villas</i>	
On the Analysis of Newman & Watts and Kleinberg Small World Models in Wireless Sensor Networks	17
<i>Renan Pereira Araújo, Fernanda Sumika Hojo De Souza, Jo Ueyama, Leandro Aparecido Villas, and Daniel Ludovico Guidoni</i>	
Putting Sense inside Sensor Systems: A Coordinated Approach to Messaging	22
<i>Klaas Thoelen, Wouter Joosen, and Danny Hughes</i>	

Performance Evaluation

Performance Evaluation of Microservices Architectures Using Containers	27
<i>Marcelo Amaral, Jordà Polo, David Carrera, Iqbal Mohomed, Merve Unuvar, and Malgorzata Steinder</i>	

Counting with Population Protocols	35
<i>Yves Mocquard, Emmanuelle Anceaume, James Aspnes, Yann Busnel, and Bruno Sericola</i>	

Performance Evaluation of Mixed Traffic Scheduling Algorithm in LTE Network	43
<i>Aymen Belghith, Wafa Ben Elmabrouk, and Selem Trabelsi</i>	

Security

Secure Fragmentation for Content-Centric Networks	47
<i>Cesar Ghali, Ashok Narayanan, David Oran, Gene Tsudik, and Christopher A. Wood</i>	

Cheating Resistant Implicit Security	57
<i>Abhishek Parakh</i>	

Automated and Optimized FDD-Based Method to Fix Firewall Misconfigurations	63
<i>Amina Saâdaoui, Nihel Ben Youssef Ben Souayah, and Adel Bouhoula</i>	

Network

A Metaheuristic Approach for the Virtual Network Embedding Problem_	68
<i>Samuel M.A. Araújo, Daniel L. Guidoni, and Fernanda S.H. De Souza</i>	

Robustness of Multiple High Speed TCP CUBIC Connections under Severe Operating Conditions	76
<i>Artur Pilimon, Sarah Ruepp, and Michael S. Berger</i>	

Secondary Market Mobile Users for Internet Access	81
<i>Hengky Susanto, Benyuan Liu, Byungguk Kim, Honggang Zhang, Biao Chen, Junda Zhu, and Xinwen Fu</i>	

Memory Management Optimization for Content Routers in DONA	85
<i>Amine Abidi, Soniamettali Gammar, Farouk Kamoun, Walid Dabbous, and Thierry Turetti</i>	

Cloud Computing

NACER: A Network-Aware Cost-Efficient Resource Allocation Method for Processing-Intensive Tasks in Distributed Clouds	90
<i>Ehsan Ahvar, Shohreh Ahvar, Noel Crespi, Joaquin Garcia-Alfaro, and Zoltán Ádám Mann</i>	

Adaptability and Stability in Dynamic Integration of Body Sensor Networks with Clouds	98
<i>Yi Cheng Ren, Junichi Suzuki, Shingo Omura, and Ryuichi Hosoya</i>	

Cost Effective and Deadline Constrained Scientific Workflow Scheduling for Commercial Clouds	106
<i>Vahid Arabnejad and Kris Bubendorfer</i>	

Proactive Scalability and Management of Resources in Hybrid Clouds via Machine Learning	114
<i>Dimitar R. Avresky, Pierangelo Di Sanzo, Alessandro Pellegrini, Bruno Ciciani, and Luca Forte</i>	

SDN

Seamless SDN Route Updates	120
<i>Sylvie Delaet, Shlomi Dolev, Daniel Khankin, Shimrit Tzur-David, and Tomer Godinger</i>	
Extending the Floodlight Controller	126
<i>Laura Victoria Morales, Andres Felipe Murillo, and Sandra Julieta Rueda</i>	
Identification and Selection of Flow Features for Accurate Traffic Classification in SDN	134
<i>Anderson Santos da Silva, Cristian Cleder Machado, Rodolfo Vebber Bisol, Lisandro Zambenedetti Granville, and Alberto Schaeffer-Filho</i>	

Routing

Reputation for Inter-Domain QoS Routing	142
<i>Emmanuelle Anceaume, Yann Busnel, Paul Lajoie-Mazenc, and Géraldine Texier</i>	
A Flexible and Lightweight BGP Route Injector to Multiple Peers	147
<i>Jialiang Pan and Yaoqing Liu</i>	

Big Data

Efficiently Summarizing Data Streams over Sliding Windows	151
<i>Nicoló Rivetti, Yann Busnel, and Achour Mostéfaoui</i>	
A Scalable Architecture for Spatio-Temporal Range Queries over Big Location Data	159
<i>Rudyard Cortés, Olivier Marin, Xavier Bonnaire, Luciana Arantes, and Pierre Sens</i>	

Agreement

A Message-Passing and Adaptive Implementation of the Randomized Test-and-Set Object	167
<i>Emmanuelle Anceaume, François Castella, Achour Mostéfaoui, and Bruno Sericola</i>	
A Failure Detector for k-Set Agreement in Dynamic Systems	176
<i>Denis Jeanneau, Thibault Rieutord, Luciana Arantes, and Pierre Sens</i>	

Vehicular Network

Car Rank: An Information-Centric Identification of Important Smart Vehicles for Urban Sensing	184
<i>Junaid Ahmed Khan and Yacine Ghamri-Doudane</i>	
Analyzing the Effect of Soft Handover on WLAN Usage Efficiency under Load Condition	192
<i>Nitish K. Panigrahy and Sasthi C. Ghosh</i>	
Vehicle Density and Roadmap Topology Issues when Characterizing Vehicular Communications	200
<i>Julio A. Sanguesa, Vicente Torres, Fernando Naranjo, Manuel Fogue, Piedad Garrido, Jesus Gallardo, and Francisco J. Martinez</i>	
Optical PUF for Non Forwardable Vehicle Authentication	204
<i>Shlomi Dolev, Łukasz Krzywiecki, Nisha Panwar, and Michael Segal</i>	

Storage

Optimal Network Coding-Based In-Network Data Storage and Data Retrieval for IoT/WSNs	208
<i>Camila H.S. Oliveira, Yacine Ghamri-Doudane, Carlos Eduardo F. Brito, and Stéphane Lohier</i>	
An Empirical Evaluation Methodology for iSCSI Storage Networking	216
<i>Vahid Salmani and Seong Won Shin</i>	
Scattering and Placing Data Replicas to Enhance Long-Term Durability	226
<i>Véronique Simon, Sébastien Monnet, Mathieu Feuillet, Philippe Robert, and Pierre Sens</i>	
Content Sharing among Visitors with Irregular Movement Patterns in Visiting Hotspots	230
<i>Shahriar Kaiser, Joarder Kamruzzaman, Gour Karmakar, and Iqbal Gondal</i>	

Fuzzy Logic

A Congestion Control Scheme Based on Fuzzy Logic in Wireless Body Area Networks	235
<i>Sara Ghanavati, Jemal Abawaji, and Davood Izadi</i>	
A Fuzzy Controller to Optimize a Wireless Network Environment	243
<i>Gustavo Pereira Mateus, Beatriz Wilges, Mario Antonio Ribeiro Dantas, and Silvia Modesto Nassar</i>	
Enhancing Skyline Computation with Collaborative Filtering Techniques for QoS-Based Web Services Selection	247
<i>Fatma Rhimi, Saloua Ben Yahia, and Samir Ben Ahmed</i>	

Video Streaming and Caching

On-Line Flows Classification of Video Streaming Applications	251
<i>Ronit Nossenson and Shuval Polacheck</i>	
Packet Erasure Multi-Channel Model for Video Streaming Applications	259
<i>Ronit Nossenson and Nir Nossenson</i>	
Efficient Free-Rider Detection Using Symmetric Overlays	263
<i>João Silva, Xavier Vilaça, Hugo Miranda, and Luís Rodrigues</i>	
Optimizing Negative Caching for DNSSEC-Oblivious Resolvers	267
<i>Zheng Wang</i>	
Author Index	275