

# **2018 9th IFIP International Conference on New Technologies, Mobility and Security (NTMS 2018)**

**Paris, France  
26-28 February 2018**



**IEEE Catalog Number: CFP1868E-POD  
ISBN: 978-1-5386-3663-3**

**Copyright © 2018 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:	CFP1868E-POD
ISBN (Print-On-Demand):	978-1-5386-3663-3
ISBN (Online):	978-1-5386-3662-6
ISSN:	2157-4952

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# TABLE OF CONTENTS

<b>A GRAPH THEORY BASED NETWORK SELECTION ALGORITHM IN HETEROGENEOUS WIRELESS NETWORKS</b> .....	1
<i>Mohamed Lahby ; Abderrahim Sekkaki</i>	
<b>A MANY-TO-ONE MATCHING GAME APPROACH TO ACHIEVE LOW-LATENCY EXPLOITING FOGS AND CACHING</b> .....	5
<i>Bouchaib Assila ; Abdellatif Kobbane ; Mohammed El Koutbi</i>	
<b>A NETWORK MANAGEMENT FRAMEWORK FOR SDN</b> .....	7
<i>Sarah Abdallah ; Imad H. Elhadj ; Ali Chehab ; Ayman Kayssi</i>	
<b>A NEW DYNAMIC TRUST MODEL FOR "ON CLOUD" FEDERATED IDENTITY MANAGEMENT</b> .....	11
<i>Keltoum Bendiab ; Stavros Shiaeles ; Samia Boucherkha</i>	
<b>A TRUST-BY-DESIGN FRAMEWORK FOR THE INTERNET OF THINGS</b> .....	16
<i>Davide Ferraris ; Carmen Fernandez-Gago ; Javier Lopez</i>	
<b>ADDRESSING SECURITY IN OCPP: PROTECTION AGAINST MAN-IN-THE-MIDDLE ATTACKS</b> .....	20
<i>Juan E. Rubio ; Cristina Alcaraz ; Javier Lopez</i>	
<b>AN AUTHENTICATED ENCRYPTED COMPRESSIVE SENSING BASED IMAGING MECHANISM</b> .....	25
<i>Tao Wu ; Christoph Ruland</i>	
<b>AN EFFICIENT MULTI-USER SEARCHABLE ENCRYPTION SCHEME WITHOUT QUERY TRANSFORMATION OVER OUTSOURCED ENCRYPTED DATA</b> .....	29
<i>Deepthi Rao ; D. V. N. Siva Kumar ; P. Santhi Thilagam</i>	
<b>AN ENTROPY-BASED INVERSE TONE MAPPING OPERATOR FOR HIGH DYNAMIC RANGE APPLICATIONS</b> .....	33
<i>Pedram Mohammadi ; Mahsa T. Pourazad ; Panos Nasiopoulos</i>	
<b>AN EVALUATION OF UHF RFID ANTI-COLLISION PROTOCOLS WITH NS2</b> .....	38
<i>Rahma Ben Fraj ; Vincent Beroulle ; Nicolas Fourty ; Aref Meddeb</i>	
<b>AN EXTENSION OF RADIO NETWORK INFORMATION INTERFACES FOR TERMINAL ACTIVITY IN A CELL</b> .....	44
<i>Evelina Pencheva ; Ivaylo Atanasov</i>	
<b>AN INFINIBAND-BASED MECHANISM TO ENHANCE QOS IN MULTIPATH ROUTING PROTOCOLS IN MANETS</b> .....	49
<i>Raid Zaghal ; Saeed Salah ; Mohammad Ismail</i>	
<b>BÉZIER CURVES BASED NOVEL CALIBRATION TECHNIQUE OF BEAMFORMERS IN IEEE 802.11 WLAN NETWORKS</b> .....	54
<i>Mehdi Guessous ; Lahbib Zenkouar</i>	
<b>CLASSIFICATION OF UNKNOWN WEB SITES BASED ON YEARLY CHANGES OF DISTRIBUTION INFORMATION OF MALICIOUS IP ADDRESSES</b> .....	59
<i>Yoshitaka Nakamura ; Shihori Kanazawa ; Hiroshi Inamura ; Osamu Takahashi</i>	
<b>CLIMBOS: A MODULAR NFV CLOUD BACKEND FOR THE INTERNET OF THINGS</b> .....	63
<i>Massimo Gallo ; Samir Ghamri-Doudane ; Fabio Pianese</i>	
<b>COMPARISON OF THE PERFORMANCE SENSITIVITY TO THE PRIMARY AND SECONDARY SERVICE TIME DISTRIBUTION IN COGNITIVE RADIO NETWORKS</b> .....	68
<i>Felipe A. Cruz-Perez ; Jose Serrano-Chavez ; S. Lirio Castellanos-Lopez ; Genaro Hernandez-Valdez</i>	
<b>DDOS ATTACK DETECTION SYSTEM: UTILIZING CLASSIFICATION ALGORITHMS WITH APACHE SPARK</b> .....	72
<i>Amjad Alsirhani ; Srinivas Sampalli ; Peter Bodorik</i>	
<b>DEMAND SIDE MANAGEMENT IN SMART GRIDS: A STACKELBERG MULTI PERIOD MULTI PROVIDER GAME</b> .....	79
<i>Hala Alsalloum ; Ali Elmasri ; Leila Merghem-Boulahia ; Rana Rahim</i>	
<b>DENSITY-AWARE OUTAGE IN CLUSTERED AD HOC NETWORKS</b> .....	84
<i>Alperen Eroglu ; Ertan Onur ; Mehmet Turan</i>	
<b>DIRECT VEHICLE-TO-VEHICLE CHARGING STRATEGY IN VEHICULAR AD-HOC NETWORKS</b> .....	89
<i>Guangyu Li ; Lila Boukhatem ; Lin Zhao ; Jinsong Wu</i>	

<b>DUPLICATIONS AND MISATTRIBUTIONS OF FILE FRAGMENT HASHES IN IMAGE AND COMPRESSED FILES .....</b>	<b>94</b>
<i>Johan Garcia</i>	
<b>EVOLVING AL-FEC APPLICATION TOWARDS 5G NGMN .....</b>	<b>99</b>
<i>Christos Bouras ; Nikolaos Kanakis</i>	
<b>EXTENDING THE FORWARD ERROR CORRECTION PARADIGM FOR MULTI-HOP WIRELESS SENSOR NETWORKS .....</b>	<b>104</b>
<i>Andreas Brokalakis ; Ioannis Chondroulis ; Ioannis Papaefstathiou</i>	
<b>FAST EVALUATION OF HOMOMORPHIC ENCRYPTION SCHEMES BASED ON RING-LWE .....</b>	<b>109</b>
<i>Cyrielle Feron ; Vianney Lapotre ; Loic Lagadec</i>	
<b>FEDERATED PUBLISH/SUBSCRIBE SERVICES .....</b>	<b>114</b>
<i>Eirik Bertelsen ; Gabriel Berthling-Hansen ; Trude H. Bloebaum ; Christian Duvholt ; Einar Hov ; Frank T. Johnsen ; Eivind Morch ; Andreas H. Weisethaunet</i>	
<b>HORIZONTAL ADDRESS-BIT DEMA AGAINST ECDSA .....</b>	<b>119</b>
<i>Ievgen Kabin ; Zoya Dyka ; Dan Kreiser ; Peter Langendoerfer</i>	
<b>IDENTIFYING VULNERABILITIES IN APT ATTACKS: A SIMULATED APPROACH .....</b>	<b>126</b>
<i>Mathew Nicho ; Adelaiye Oluwasegun ; Faouzi Kamoun</i>	
<b>IMPROVING FLEXIBILITY IN WIRELESS SENSOR NETWORKS VIA API. AN APPLICATION IN ENVIRONMENTAL MONITORING .....</b>	<b>130</b>
<i>M. J. Espinosa-Gavira ; A. Jimenez-Pro ; J. J. Gonzalez-De-La-Rosa ; A. Aguera-Perez ; O. Florencias-Oliveros ; J. C. Palomares-Salas ; J. M. Sierra-Fernandez</i>	
<b>INTERNET-WIDE SCANNERS CLASSIFICATION USING GAUSSIAN MIXTURE AND HIDDEN MARKOV MODELS .....</b>	<b>134</b>
<i>Giulia De Santis ; Abdelkader Lahmadi ; Jerome Francois ; Olivier Festor</i>	
<b>LOCALIZATION OF SENSORS IN INDOOR WIRELESS NETWORKS: AN OBSERVATION MODEL USING WIFI RSS .....</b>	<b>139</b>
<i>Daniel Alshamaa ; Farah Mourad-Chehade ; Paul Honeine</i>	
<b>LOCATION PRIVACY IN VIRTUAL CELL-EQUIPPED ULTRA-DENSE NETWORKS .....</b>	<b>144</b>
<i>Emanuele Catania ; Aurelio La Corte</i>	
<b>MANER: MANAGED DATA DISSEMINATION SCHEME FOR LORA IOT ENABLED WILDLIFE MONITORING SYSTEM (WMS) .....</b>	<b>148</b>
<i>Eyuel D. Ayele ; Nirvana Meratnia ; Paul J. M. Havinga</i>	
<b>MAPREDUCE APPROACH TO BUILD NETWORK USER PROFILES WITH TOP-K RANKINGS FOR NETWORK SECURITY .....</b>	<b>155</b>
<i>Alvaro Parres-Peredo ; Ivan Piza-Davila ; Francisco Cervantes</i>	
<b>MEASURES TO ADDRESS THE LACK OF PORTABILITY OF THE RF FINGERPRINTS FOR RADIOMETRIC IDENTIFICATION .....</b>	<b>160</b>
<i>Gianmarco Baldini ; Raimondo Giuliani ; Claudio Gentile ; Gary Steri</i>	
<b>MOBILITY-BASED TRACKING USING WIFI RSS IN INDOOR WIRELESS SENSOR NETWORKS .....</b>	<b>165</b>
<i>Daniel Alshamaa ; Farah Mourad-Chehade ; Paul Honeine</i>	
<b>MODELLING OF S-MAC FOR HETEROGENEOUS WSN .....</b>	<b>170</b>
<i>Canek Portillo ; Jorge Martinez-Bauset ; Vicent Pla</i>	
<b>MULTI-PROVIDER SECURE VIRTUAL NETWORK EMBEDDING .....</b>	<b>176</b>
<i>Francois Boutigny ; Stephane Betge-Brezetz ; Herve Debar ; Gregory Blanc ; Antoine Lavignotte ; Ion Popescu</i>	
<b>OBLIVIOUS TRANSFER PROTOCOLS BASED ON COMMUTATIVE ENCRYPTION .....</b>	<b>181</b>
<i>Jen-Chieh Hsu ; Raylin Tso ; Yu-Chi Chen ; Mu-En Wu</i>	
<b>ON THE CRAMER-RAO LOWER BOUNDS OF RANGING BASED ON IR-UWB TOA ESTIMATION IN WIRELESSBODY AREA NETWORKS .....</b>	<b>186</b>
<i>Jihad Hamie ; Ali Hamieh ; Joumana Younis ; Moussa Ammar ; Ahmad Ahmad-Kassem ; Ahmad Skaiky ; Ali Hamie ; Abbass Nasser ; Hani Abdallah</i>	
<b>ON THE DETECTION AND HANDLING OF SECURITY INCIDENTS AND PERIMETER BREACHES - A MODULAR AND FLEXIBLE HONEYTOKEN BASED FRAMEWORK .....</b>	<b>190</b>
<i>Daniel Fraunholz ; Daniel Krohmer ; Frederic Pohl ; Hans Dieter Schotten</i>	
<b>PENETRATION AND SECURITY OF OPENSSSH REMOTE SECURE SHELL SERVICE ON RASPBERRY PI 2 .....</b>	<b>194</b>
<i>Hesham H. Alsaadi ; Monther Aldwairi ; May Al Taei ; Mansoor Albuainain ; Maktoom Alkubaisi</i>	
<b>PERFORMANCE ANALYSIS OF MOBILE CELLULAR NETWORKS WITH MMPP CALL ARRIVAL PATTERNS .....</b>	<b>199</b>
<i>S. Lirio Castellanos-Lopez ; Felipe A. Cruz-Perez ; Genaro Hernandez-Valdez ; Jose Raul Miranda-Tello</i>	
<b>POLICY-CONTROLLED SIGNATURE FROM NTRU LATTICE .....</b>	<b>205</b>
<i>Zi-Yuan Liu ; Jen-Chieh Hsu ; Raylin Tso ; Tzong-Chen Wu</i>	

<b>PRE-COMPUTING APPROPRIATE PARAMETERS: HOW TO ACCELERATE SOMEWHAT HOMOMORPHIC ENCRYPTION FOR CLOUD AUDITING .....</b>	<b>210</b>
<i>Louis Tajan ; Moritz Kaumanns ; Dirk Westhoff</i>	
<b>PRIVACY PRESERVING QUERIES ON DIRECTED GRAPH .....</b>	<b>216</b>
<i>Sara Ramezani ; Tommi Meskanen ; Valtteri Niemi</i>	
<b>PROSOCIALLEARN: A PROSOCIAL GAMES MARKETPLACE .....</b>	<b>221</b>
<i>Francesco D'Andria ; Jose Miguel Garrido ; Michael Boniface ; Stefano Modafferi ; Simon Crowle ; Lee Middleton ; Konstantinos C. Apostolakis ; Kosmas Dimitropoulos ; Petros Daras</i>	
<b>SDN-BASED MOBILITY MANAGEMENT: HANDOVER PERFORMANCE IMPACT IN CONSTRAINED DEVICES .....</b>	<b>226</b>
<i>Flavio Meneses ; Carlos Guimares ; Daniel Corujo ; Rui L. Aguiar</i>	
<b>SELECTIVELY ACCESSING LIGHT FIELD FACE IMAGES OVER INFORMATION CENTRIC NETWORKING .....</b>	<b>231</b>
<i>Jose Quevedo ; Carlos Guimares ; Rui Ferreira ; Alireza Sepas-Moghaddam ; Luis Malhadas ; Rui L. Aguiar ; Paulo L. Correia ; Daniel Corujo</i>	
<b>SLICE DISTANCE: AN INSERT-ONLY LEVENSHTAIN DISTANCE WITH A FOCUS ON SECURITY APPLICATIONS .....</b>	<b>236</b>
<i>Zeeshan Afzal ; Johan Garcia ; Stefan Lindskog ; Anna Brunstrom</i>	
<b>"SPEAK, FRIEND, AND ENTER" - SECURE, SPOKEN ONE-TIME PASSWORD AUTHENTICATION .....</b>	<b>241</b>
<i>Outi-Marja Latvala ; Chengyuan Peng ; Petri Honkamaa ; Kimmo Halunen</i>	
<b>SPECTRUM SHARING IN COGNITIVE RADIO SYSTEMS .....</b>	<b>246</b>
<i>Raouia Masmoudi</i>	
<b>TOWARDS A NEW OPPORTUNISTIC IOT NETWORK ARCHITECTURE FOR WILDLIFE MONITORING SYSTEM .....</b>	<b>251</b>
<i>Eyuel D. Ayele ; Nirvana Meratnia ; Paul J. M. Havinga</i>	
<b>USING DYNAMIC OCCUPANCY PATTERNS FOR IMPROVED PRESENCE DETECTION IN INTELLIGENT BUILDINGS .....</b>	<b>256</b>
<i>Charikleia Papatsimpa ; Jean-Paul Linnartz</i>	
<b>WIRELESS VITAL SIGNAL TRACKING FOR DRIVERS USING MICRO-DOPPLER SEATBACK RADAR .....</b>	<b>261</b>
<i>Dong Kyoo Kim</i>	
<b>WORKPLACE CAPACITY DESIGN USING THE MINIMUM DOMINATING SET IN SERVER MIGRATION SERVICES .....</b>	<b>266</b>
<i>Yukinobu Fukushima ; Itsuho Goda ; Tutomu Murase ; Tokumi Yokohira</i>	
<b>BAD AI: INVESTIGATING THE EFFECT OF HALF-TONING TECHNIQUES ON UNWANTED FACE DETECTION SYSTEMS .....</b>	<b>271</b>
<i>Sajjad Dadkhah ; Mario Koeppen ; Somayeh Sadeghi ; Kaori Yoshida</i>	
<b>CHAFF-POINTS GENERATION METHOD BASED ON ADAPTIVE GENETIC ALGORITHMS AND NON-FIXED SIZE SQUARES BOUNDARIES FOR RESOURCE CONSTRAINED DEVICES .....</b>	<b>276</b>
<i>Hachemi Nabil Delllys ; Karima Benatchba ; Layth Sliman ; Yen Wei Chen</i>	
<b>INTER-APPLICATION BASED RESOURCE MANAGEMENT APPROACH FOR CLOUD INFRASTRUCTURE .....</b>	<b>280</b>
<i>Mahesh Balaji ; Aswani Kumar Cherukuri</i>	
<b>PHONE APPLICATION FOR INDOOR LOCALIZATION BASED ON BLE SIGNAL FINGERPRINT .....</b>	<b>286</b>
<i>Brahim Benaissa ; Filip Hendrichovsky ; Kaori Yishida ; Mario Koppen ; Peter Sincak</i>	
<b>STAR PROJECTION TECHNOLOGIES IN THE MODERN PLANETARIUM INDUSTRY .....</b>	<b>291</b>
<i>Alexander Adli</i>	
<b>A BLOCKCHAIN FRAMEWORK FOR INSURANCE PROCESSES .....</b>	<b>295</b>
<i>Mayank Raikwar ; Subhra Mazumdar ; Sushmita Ruj ; Sourav Sen Gupta ; Anupam Chattopadhyay ; Kwok-Yan Lam</i>	
<b>ALKYLVM: A VIRTUAL MACHINE FOR SMART CONTRACT BLOCKCHAIN CONNECTED INTERNET OF THINGS .....</b>	<b>299</b>
<i>Joshua Ellul ; Gordon J. Pace</i>	
<b>DIGITIZING, SECURING AND SHARING VEHICLES LIFE-CYCLE OVER A CONSORTIUM BLOCKCHAIN: LESSONS LEARNED .....</b>	<b>303</b>
<i>Kei Leo Brousmiche ; Thomas Heno ; Christian Poulain ; Antoine Dalmieres ; Elyes Ben Hamida</i>	
<b>EFFICIENT DISTRIBUTED ADMISSION AND REVOCATION USING BLOCKCHAIN FOR COOPERATIVE ITS .....</b>	<b>308</b>
<i>Noureddine Lasla ; Mohamed Younis ; Wassim Znaidi ; Dhafer Ben Arbia</i>	

<b>EMPOWERING LIGHT NODES IN BLOCKCHAINS WITH BLOCK SUMMARIZATION .....</b>	<b>313</b>
<i>Asutosh Palai ; Meet Vora ; Aashaka Shah</i>	
<b>EVALUATING BLOCKCHAINS FOR IOT .....</b>	<b>318</b>
<i>Runchao Han ; Vincent Gramoli ; Xiwei Xu</i>	
<b>FORMAL VERIFICATION OF SMART CONTRACTS BASED ON USERS AND BLOCKCHAIN BEHAVIORS MODELS .....</b>	<b>323</b>
<i>Tesnim Abdellatif ; Kei-Leo Brousmiche</i>	
<b>IN-STORE PAYMENTS USING BITCOIN .....</b>	<b>328</b>
<i>Mikael Asplund ; Jakob Lovhall ; Simin Nadjm-Tehrani</i>	
<b>LESSONS LEARNED FROM IMPLEMENTING A PRIVACY-PRESERVING SMART CONTRACT IN ETHEREUM .....</b>	<b>334</b>
<i>Andreas Unterweger ; Fabian Knirsch ; Christoph Leixnering ; Dominik Engel</i>	
<b>NFB: A PROTOCOL FOR NOTARIZING FILES OVER THE BLOCKCHAIN .....</b>	<b>339</b>
<i>Haikel Magrahi ; Nouha Omrane ; Olivier Senot ; Rakia Jaziri</i>	
<b>QUANTITATIVE DESCRIPTION OF INTERNAL ACTIVITY ON THE ETHEREUM PUBLIC BLOCKCHAIN .....</b>	<b>343</b>
<i>Andra Anoaica ; Hugo Levard</i>	
<b>RECYCLING SMART CONTRACTS: COMPRESSION OF THE ETHEREUM BLOCKCHAIN .....</b>	<b>348</b>
<i>Beltran Borja Fiz Pontiveros ; Robert Norvill ; Radu State</i>	
<b>SECURITY ASSURANCE FOR SMART CONTRACT .....</b>	<b>353</b>
<i>Ence Zhou ; Song Hua ; Bingfeng Pi ; Jun Sun ; Yashihide Nomura ; Kazuhiro Yamashita ; Hidetoshi Kurihara</i>	
<b>SMALL TRANSACTIONS WITH SUSTAINABLE INCENTIVES .....</b>	<b>358</b>
<i>Fabio Pianese ; Matteo Signorini ; Souradip Sarkar</i>	
<b>SMART-CONTRACT BASED SYSTEM OPERATIONS FOR PERMISSIONED BLOCKCHAIN .....</b>	<b>363</b>
<i>Tatsuya Sato ; Yosuke Himura</i>	
<b>A FRAGMENT HASHING APPROACH FOR SCALABLE AND CLOUD-AWARE NETWORK FILE DETECTION .....</b>	<b>369</b>
<i>Johan Garcia</i>	
<b>DRONE FORENSICS: CHALLENGES AND NEW INSIGHTS .....</b>	<b>374</b>
<i>Hana Bouafif ; Faouzi Kamoun ; Farkhund Iqbal ; Andrew Marrington</i>	
<b>IOT FORENSICS: CHALLENGES FOR THE IOA ERA .....</b>	<b>380</b>
<i>Aine Macdermott ; Thar Baker ; Qi Shi</i>	
<b>MALWARE CLASSIFICATION WITH DEEP CONVOLUTIONAL NEURAL NETWORKS .....</b>	<b>385</b>
<i>Mahmoud Kalash ; Mrigank Rochan ; Noman Mohammed ; Neil D. B. Bruce ; Yang Wang ; Farkhund Iqbal</i>	
<b>REMOTE DATA ACQUISITION USING RASPBERRY PI3 .....</b>	<b>390</b>
<i>Saeed Ibrahim ; Nawwaf Al Harmi ; Ebrahim Al Naqbi ; Farkhund Iqbal ; Djedjiga Mouheb ; Omar Alfandi</i>	
<b>THE SECURITY AND TRACEABILITY OF SHARED INFORMATION IN THE PROCESS OF TRANSPORTATION OF DANGEROUS GOODS .....</b>	<b>395</b>
<i>Adnan Imeri ; Djamel Khadraoui</i>	
<b>Author Index</b>	