

2021 IEEE Latin-American Conference on Communications (LATINCOM 2021)

**Santo Domingo, Dominican Republic
17 – 19 November 2021**



**IEEE Catalog Number: CFP2107H-POD
ISBN: 978-1-6654-4036-3**

**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:	CFP2107H-POD
ISBN (Print-On-Demand):	978-1-6654-4036-3
ISBN (Online):	978-1-6654-4035-6
ISSN:	2330-989X

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

TABLE OF CONTENTS

PHASE-NOISE COMPENSATION FOR QPSK-ROF-OFDM SIGNALS WITH THE EXTREME LEARNING MACHINE ALGORITHM FOR MULTILAYER PERCEPTRON	1
<i>David Zabala-Blanco; Cesar A. Azurdia-Meza; Ali Dehghan Firoozabadi; Pablo Palacios Játiva; Marco Flores-Calero; Ismael Soto; Shaharyar Kamal</i>	
INTERFERENCE MODEL FOR MACRO-FEMTOCELL NETWORKS	7
<i>Jorge Yanez; Rebeca Estrada</i>	
LLR METRICS FOR 4096-QAM SOFT-DECISION: IMPLEMENTATION IN IEEE 802.11BE (WI-FI 7).....	13
<i>Roger Pierre Fabris Hoefel</i>	
TOWARDS DRL-BASED ROUTING AND SPECTRUM ASSIGNMENT IN OPTICAL NETWORKS: LESSONS TO BE LEARNED FROM MARKOV DECISION PROCESSES	19
<i>Ronald Romero Reyes; Thomas Bauschert</i>	
INCA: A MECHANISM FOR TRAFFIC IDENTIFICATION AND CHAINING IN THE DATA PLANE.....	25
<i>Guilherme Matos; Leandro C. De Almeida; Luis Miguel Contreras; Fábio Luciano Verdi</i>	
MULTIANTENNA-COGNITIVE-RADIO-BASED BLIND SPECTRUM SENSING UNDER CORRELATED SIGNALS	31
<i>Fátima Sayury Queralt Queda Alves; Lucas Dos Santos Costa; Rausley A. A. De Souza</i>	
TV WHITE SPACES IN SMART GRIDS: CASE STUDY IN LA GUAJIRA	37
<i>Yaciro Cabezas Burbano; Hernán Paz Penagos</i>	
EXTREME LEARNING MACHINE BASED CHANNEL ESTIMATOR AND EQUALIZER FOR UNDERGROUND MINING VLC SYSTEMS	43
<i>Pablo Palacios Játiva; Raimundo Becerra; Cesar A. Azurdia-Meza; David Zabala-Blanco; Ismael Soto; Milton Román Cañizares</i>	
PERFORMANCE COMPARISON OF DATABASE SERVER BASED ON SOC FPGA AND ARM PROCESSOR.....	49
<i>Víctor Asanza; Rebeca Estrada; Jocelyn Miranda; Leiber Rivas; Danny Torres</i>	
ANALYSIS OF AIR POLLUTION UTILIZING VIRTUAL SENSOR MODELS	55
<i>Gabriel Oliveira Campos; Leandro Aparecido Villas; Felipe Domingos Da Cunha</i>	
SURROGATE MODEL FOR ADAPTIVE CONTROL OF OPTICAL AMPLIFIER OPERATING POINT BASED ON MACHINE LEARNING.....	61
<i>Leandro M. De Freitas; Erick De A. Barboza; Carmelo J. A. Bastos-Filho; Joaquim F. Martins-Filho</i>	
SIGNATURE SPATIAL MODULATION USING DUAL-POLARIZED ANTENNAS	67
<i>Negin Kazemipourleilabadi; Mutlu Koca; Hikmet Sari</i>	
RUNC AND KATA RUNTIME USING DOCKER: A NETWORK PERSPECTIVE COMPARISON.....	73
<i>Henrique Zanela Cochak; Guilherme Piêgas Koslovski; Maurício Aronne Pillon; Charles Christian Miers</i>	
MLOOF: MULTI-LEVEL ONLINE OFFLOAD FRAMEWORK FOR IOT DEVICES AND SMARTPHONES.....	79
<i>Leandro Noman Ferreira; José Marcos Nogueira; Daniel F. Macedo</i>	
EASY-AUTH: GRAPHICAL PASSWORD AUTHENTICATION USING A RANDOMIZATION METHOD.....	85
<i>Mudarabilli Harshini; Padigala Lakshman Sai; Singam Chennamma; Thanuja; Alavalapati Goutham Reddy; Hyun Sung Kim</i>	
ANALYSIS OF THE SELECTION OF RELAYING SCHEME IN VANET	91
<i>Xian Liu</i>	
CROSSTALK AND FRAGMENTATION-AWARE ALGORITHM FOR SPACE-DIVISION MULTIPLEXING ELASTIC OPTICAL NETWORKS	97
<i>Edson Rodrigues; Helder M. N. Da S. Oliveira; Nelson L. S. Da Fonseca</i>	
SECURITY IN AN IOT SYSTEM WITH CORRELATED AND NON-IDENTICAL EAVESDROPPERS.....	103
<i>Xian Liu</i>	
SECURE CONTACTLESS MOBILE PAYMENT SYSTEM	109
<i>Victor Njebiu; Michael Kimwele; Richard Rimiru</i>	
SURVIVABLE ROUTING, MODULATION, AND SPECTRUM ASSIGNMENT BY MEANS OF ANT COLONY OPTIMIZATION.....	115
<i>Leandro Alvarez De Lima; Gustavo Sousa Pavani</i>	

OMEGA DEPLOYMENT: DESIGNING THE COMMUNICATION ROADSIDE INFRASTRUCTURE FOR VEHICLES ENSURING MINIMUM QOS LEVELS OF CONNECTIVITY DURING FLUCTUATIONS OF THE VEHICLES FLOW	121
<i>Cristiano M. Silva; Leonardo Alvarenga L. Santos; Fernanda S. H. Sumika; Somayeh Mokhtari; Daniel L. Guidoni; Jose Marcos Silva Nogueira</i>	
DELAY OPTIMIZATION FOR SWITCHLESS ARINC 664 MESH NETWORKS WITH CYCLIC DEPENDENCIES	127
<i>Sedat Kaya; Bekir Güll; M. Selim Demir; Ibrahim Hökelek; Sinem Coleri; Muhammet Garip; Hüseyin Üvet</i>	
PILOT-ASSISTED PAPR REDUCTION IN PAM-DMT BASED VISIBLE LIGHT COMMUNICATION SYSTEMS	133
<i>Hussien Alrakah; Sinan Sinanovic; Wasiu O. Popoola</i>	
ADAPTING OPTICAL AMPLIFIER RESPONSE ESTIMATION TO CONSIDER NON-FLAT INPUT SIGNALS	139
<i>Allan Amaro Bezerra Da Silva; Erick De A. Barboza; Carmelo J. A. Bastos-Filho; Joaquim F. Martins-Filho</i>	
TRAINING EFFECT ON AI-BASED RESOURCE ALLOCATION IN SMALL-CELL NETWORKS	145
<i>Alexis Anzaldo; Ángel G. Andrade</i>	
COMPUTATIONAL HEURISTICS IN VEHICLE COMMUNICATION INFRASTRUCTURE OPTIMIZATION	151
<i>Lucas Diniz Silva; Cristiano M. Silva; João Fernando M. Sarubbi</i>	
SINGLE FREQUENCY NETWORK BROADCASTING WITH 5G NR NUMEROLOGY	157
<i>Majid Mosavat; Guido Montorsi</i>	
ATTACK DETECTION IN SMART HOME IOT NETWORKS USING CLUSTREAM AND PAGE-HINKLEY TEST	163
<i>Fernando H. Y. Nakagawa; Sylvio Barbon Junior; Bruno Bogaz Zarpelão</i>	
INTERFERENCE ANALYSIS FOR MULTI-CARRIER SYSTEMS OVER FAST-FADING MULTIPATH CHANNELS	169
<i>Ahmad Hamdan; Hussein Hijazi; Laurent Ros; Cyrille Siclet; Ali Al-Ghouwayel</i>	
PREDICTING VIDEO BITRATE FROM ENCRYPTED STREAMING TRAFFIC IN SDN-BASED 5G NETWORKS WITH ML	175
<i>Diego Figueiredo; Rodrigo Dutra; Ilan Sousa; Aldebaro Klautau; Pedro Batista</i>	
PHYSICAL LAYER AUTHENTICATION WITH COOPERATIVE WIRELESS COMMUNICATIONS AND MACHINE LEARNING	181
<i>Linda Senigagliaesi; Marco Baldi; Ennio Gambi</i>	
ANALYSIS OF VNF CONTROL TRAFFIC IN 5G SCENARIOS EXTENDED WITH LPWA NETWORKS	187
<i>Éden Medeiros; Priscila Solís Barreto</i>	
A NETWORK INTRUSION DETECTION SYSTEM USING DEEP LEARNING AGAINST MQTT ATTACKS IN IOT	193
<i>Fatemeh Mosaiyebzadeh; Luis Gustavo Araujo Rodriguez; Daniel Macêdo Batista; R. Hirata</i>	
CLOUD CONDITION MONITORING PLATFORM FOR STEEL ROLLING MILL MACHINES	199
<i>Noe Salvatierra; Juan Rodas; Moisés Núñez</i>	
BGP ANOMALIES CLASSIFICATION USING FEATURES BASED ON AS RELATIONSHIP GRAPHS	204
<i>Thales B. Paiva; Yaissa Siqueira; Daniel Macêdo Batista; R. Hirata; R. Terada</i>	
PREDICTING RESPONSE TIME IN SDN-FOG ENVIRONMENTS FOR IIOT APPLICATIONS	210
<i>Guilherme Werneck De Oliveira; Rodrigo Toscano Ney; Juan Luis Herrera; Daniel Macêdo Batista; R. Hirata; Jaime Galán-Jiménez; Javier Berrocal; Juan Manuel Murillo; Aldri Luiz Dos Santos; Michele Nogueira</i>	
5G TIME SYNCHRONIZATION: PERFORMANCE ANALYSIS AND ENHANCEMENTS FOR MULTIPATH SCENARIOS	216
<i>Muhammad Usman Hadi; Thomas Jacobsen; Renato Abreu; Troels Kolding</i>	
FORECASTING MOBILE NETWORK TRAFFIC BASED ON DEEP LEARNING NETWORKS	221
<i>Francisco Rau; Ismael Soto; David Zabala-Blanco</i>	
COMBINING REST AND SNMP FOR HTTP TRAFFIC OPTIMIZATION: A CASE STUDY ON GOURMET COCOA DRYING	227
<i>Jauberth Abijaude; Péricles Sobreira; Italo Pinto; Fabíola Greve</i>	
ON THE APPLICATION OF 5G TO ENERGY DISTRIBUTION COMPANIES: A BRAZILIAN CASE STUDY	233
<i>Vanessa Vasconcellos; Beatriz Batista Cardoso; Kennedy Alves Martins; Amadeu F. De Macedo; Bruno Franco Cecchetti; Marcos A. Izumida Martins</i>	
ANALYSIS OF KALMAN FILTERING FOR CLOCK SYNCHRONIZATION IN PTP-UNAWARE NETWORKS	238
<i>Camila Novaes; Igor Freire; Aldebaro Klautau; Igor Almeida; Eduardo Medeiros</i>	

COMPUTATIONAL MODELING OF AGE OF INFORMATION FOR CYBER-PHYSICAL SYSTEMS.....	244
<i>Paulo César Prandel; Priscila Solis Barreto</i>	
EXPERIMENTAL DEMONSTRATION OF DIRECT-DETECTION OPTICAL FAST-OFDM USING MEMORY POLYNOMIALS.....	250
<i>Luis Carlos Vieira; Izzat Darwazah; Shirin Hussein; Chin-Pang Liu; John Mitchell</i>	
MANATEE VOCALIZATION DETECTION METHOD BASED ON THE AUTOREGRESSIVE MODEL AND NEURAL NETWORKS.....	255
<i>Edwin Rtos; Fernando Merchan; Rosa Higuero; Héctor Poveda; Javier E. Sanchez-Galan; Guillaume Ferré; Hector M. Guzman</i>	
PERFORMANCE EVALUATION OF IEEE 802.11AX FOR RESIDENTIAL NETWORKS.....	261
<i>Jorge Sandoval; Sandra Cespedes</i>	
MUTATIONAL LDPC DECODING.....	268
<i>Jan Broulim; Hovik Grigorian; Alexander Ayriyan</i>	
RAINBOW DEEP REINFORCEMENT LEARNING FOR TCP CONGESTION CONTROL.....	272
<i>Jean P. Martins; Ricardo S. Souza; Igor Almeida; Silvia Lins</i>	
EFFECTS OF LED NON-LINEAR RESPONSE AND WAVEFORM SETTINGS ON MULTI-CELL VLC SYSTEM DEPLOYMENTS.....	278
<i>Enrique M. Lizarraga; Joel Wayar; María F. Linares; Alexis A. Dowhuszko</i>	
DIFFERENTIATED RESOURCE ALLOCATION IN RESILIENT SDM-EON.....	283
<i>Rafael S. Lopes; Helder M. N. Da S. Oliveira; Nelson L. S. Da Fonseca</i>	
SECOND-ORDER STATISTICS OF RAIN ATTENUATION FOR SATELLITE LINKS LOCATED IN THE ECUADORIAN COASTAL ZONE.....	289
<i>Carlos Gencón; Jorge Brito; Boris Ramos; Michele D'Amico</i>	
PARTICLE FILTER FOR JOINT CARRIER PHASE, DOPPLER SHIFT AND DOPPLER RATE ESTIMATION AND DATA DETECTION.....	295
<i>Ahsan Waqas; Gottfried Lechner; Khoa Nguyen; Terence Chan</i>	
BLOCKLENGTH MINIMIZATION IN NOMA SYSTEMS WITH HYBRID LONG AND SHORT PACKETS.....	301
<i>Benjamin K. Ng; Chan-Tong Lam; Eddie K. L. Law</i>	
A FUZZY-GENETIC APPROACH FOR 5G/6G OPPORTUNISTIC SLICING.....	306
<i>Andson Balieiro; Marcos Falcão; Caio Souza; Kelvin Dias; Elton Alves</i>	
SYMPLECTIC TENSOR SIGNAL ALGEBRAIC FRAMEWORK FOR DELAY-DOPPLER PROCESSING IN OTFS NETWORKS.....	312
<i>Domingo Antonio Rodríguez</i>	
Author Index	