2022 IEEE International Symposium on Measurements & Networking (M&N 2022)

Padua, Italy
18-20 July 2022

IEEE Catalog Number: CFP22MSN-POD
ISBN: 978-1-6654-8363-6

Copyright © 2022 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:	CFP22MSN-POD
ISBN (Print-On-Demand):	978-1-6654-8363-6
ISBN (Online):	978-1-6654-8362-9
ISSN:	2639-507X

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

Six Months in the Life of a Cellular Tower: Is 5G Exposure Higher than pre-5G One? 1
Luca Chiaraviglio, Chiara Lodovisi, Daniele Franci, Settimio Pavoncello, Tommaso Aureli

Not All Web Pages Are Born the Same Content Tailored Learning for Web QoE Inference 7
Pedro Casas, Sarah Wassermann, Nikolas Wehner, Michael Seufert, Tobias Hossfeld

An Efficient Bi-Polar Near-Field Far-Field Transformation for Flat AUTs 13
Francesco D'Agostino, Flaminio Ferrara, Claudio Gennarelli, Rocco Guerriero, Massimo Migliozzi

Subframes Discrimination and Time Synchronization Methods in LTE-V2X System 18
Jie Xu, Aiqun Hu

On the Utilization of Equivalent Sampling in Undersampled Asynchronous Camera Communication Protocols 24
Gyula Simon, Gergely Vakulya, Márk Rátosi

Using a Soft Growing Robot as a Sensor Delivery System in Remote Environments: A Practical Case Study 30
Stanislao Grazioso, Annarita Tedesco, Roberto Sabella, Salvatore Fusco, Mario Selvaggio, Luigi Duraccio, Egidio De Benedetto, Antonio Lanzotti, Leopoldo Angrisani

Autoencoder for Network Anomaly Detection 35
Won Park, Nicolas Ferland, Wenting Sun

Some Notes on the Impact of the Use of Dynamic Spectrum Sharing (DSS) on Maximum-Power Extrapolation Techniques for Human Exposure Assessment to Electromagnetic Fields 41
Sara Adda, Tommaso Aureli, Tiziana Cassano, Daniele Franci, Marco D. Migliore, Nicola Pasquino, Settimio Pavoncello, Fulvio Schettino, Maddalena Schirone

Development of a Cooperative Localization System using a UWB Network and BLE Technology 47
Valerio Brunacci, Alessio De Angelis, Gabriele Costante

Networks of EMF Area Monitor for Distributed Human Exposure Monitoring: Assessment of Performances in Simulated Realistic Scenarios 53
Renzo Azaro, Roberto Franchelli, Alessandro Gandolfo

The ICNIRP 2020 Guidelines and Standardization Update of Serbian EMF Radiation Exposure Limits 58
Nikola Djuric, Dragan Kljajic, Teodora Gavrilov, Nadja Markovic Golubovic, Snezana Djuric

Computational and Experimental Characterization of EMF Exposure at 3.5 GHz using Electro-Optical Probes 64
Annamaria Sârbu, David Vatamanu, Simona Miclaus, George Mihai, Mirela Sorecau, Emil Sorecau, Paul Bechet

Acoustic Monitoring of Environmental Noise Based on Sampling Approach 69
Consolatina Liguori, Vincenzo Paciello, Alessandro Ruggiero, Domenico Russo, Paolo Sommella, Giuseppe Di Leo

IEEE 1451: Communication Among Smart Sensors using MQTT Protocol 74
Marco Carratú, Vincenzo Gallo, Vincenzo Paciello

Impedance Adaptation Technique to Improve Pipeline Communication Distance 80
Paolo Caruso, Domenico Di Caro, Salvatore Dello Iacono, Vincenzo Paciello

Extending the FLExible Network Tester (Flent) for IEEE 802.11s WLAN Mesh Networks 86
Michael Rethfeldt, Tim Brockmann, Richard Eckhardt, Benjamin Beichler, Lukas Steffen, Christian Haubelt, Dirk Timmermann

Mesh Overlay for wM-Bus Network 92
Daniele Buonocore, Giuseppe Ciavolino, Salvatore Dello Iacono, Giuseppe Di Leo, Antonio Pietrosanto

Low-Cost SDR-Based Tool for Evaluating LoRa Satellite Communications 98
Roberto M. Colombo, Aamir Mahmood, Emiliano Sisinni, Paolo Ferrari, Mikael Gidlund

The EMF Exposure Monitoring in Cellular Networks by Serbian EMF RATEL System 104
Nikola Djuric, Dragan Kljajic, Teodora Gavrilov, Vidak Otasevic, Snezana Djuric

Waveform Monitoring with LoRaWAN: Is it Feasible? 110
Giada Giorgi, Alessandro Pozzebon, Claudio Narduzzi

Reinforcement Learning Applied to Network Synchronization Systems 116
Alessandro Destro, Giada Giorgi

Experimental Analysis of 5G Pilot Signals' Variability in Urban Scenarios 122
G. Betta, D. Capriglione, G. Cerro, G. Miele, M. D. Migliore, D. Šuka

Performance Comparison in Ultra Wide Band Positioning in Sensor Networks: Least Square Minimization Versus Grid Search Approach 128
L. Ferrigno, F. Milano, V. Pingerna, G. Cerro, M. Laracca

On Secure Communications for FSO Systems Over Generalized Turbulence Channels 134
Wafaa Mohammed Ridha Shakir, Ruwaida A. A. Abdul Kareem

On the Use of Machine Learning Approaches for the Early Classification in Network Intrusion Detection 140
Idio Guarino, Giampaolo Bovenzi, Davide Di Monda, Giuseppe Aceto, Domenico Ciuonzo, Antonio Pescapé

A Measurement of Real-World Attack Connections Toward Honeypots 146
Wuyan Sun, Chuyang Yuan, Wenjun Fan

Image Scaling Effects on Deep Learning Based Applications 152
Irida Shallari, Vincenzo Gallo, Marco Carratu, Mattias O'Nils, Consolatina Liguori, Mazhar Hussain

A Low Power System for Synchronising Buffered Air Quality Data 158
Ingram Weeks, Ben Holden, Aleksandar Stanoev

A Rule-Based Approach for Detecting Heartbleed Cyber Attacks 164
A. Amodei, D. Capriglione, L. Ferrigno, G. Miele, G. Tomasso, G. Cerro

A Machine Learning Model for Microcontrollers Enabling Low Power Indoor Positioning Systems via Visible Light Communication 170
Irene Cappelli, Federico Carli, Matteo Intravaia, Federico Micheletti, Giacomo Peruzzi

A Novel Methodology to Remotely and Early Diagnose Sleep Bruxism by Leveraging on Audio Signals and Embedded Machine Learning 176
Giacomo Peruzzi, Alessandra Galli, Alessandro Pozzebon

Hand-Arm Vibration Monitoring via Embedded Machine Learning on Low Power Wearable Devices 182
Ada Fort, Elia Landi, Riccardo Moretti, Lorenzo Parri, Giacomo Peruzzi, Alessandro Pozzebon

Stateless ARE: Action Recommendation Engine Without Network State Measurement 188
Ayse Rumeysa Mohammed, Shady A. Mohammed, David Côté, Shervin Shirmohammadi

Outdoor Sports Tracking by Means of Hybrid GPS-LoRaWAN Localization 194
Gabriele Di Renzone, Giada Giorgi, Alessandro Pozzebon

Micro-Liquid Volume Measurements Realized by Changing the Plasmonic Conditions via Specialty Optical Fibers 200
Francesco Arcadio, Domenico Del Prete, Aldo Minardo, Chiara Marzano, Luigi Zeni, Nunzio Cennamo

An Arduino-Based Plasmonic Sensor to Detect Rain and Its Analysis 204
Domenico Del Prete, Francesco Arcadio, Chiara Griffo, Dalila Cicatiello, Luigi Zeni, Nunzio Cennamo

A Dynamic Traffic Generator for Elastic 5G Network Slicing 209
Junior Momo Ziazet, Brigitte Jaumard, H. Duong, P. Khoshabi, Emil Janulewicz

A Network of Monitoring Nodes to Analyze Dimensions of Volcanic Ash Samples 215
Bruno Andò, Salvatore Baglio, Salvatore Castorina, Salvatore Graziani, Alberto Campisi, Vincenzo Marletta

On the Effect of Position Uncertainty of the UHF-RFID Reader Trajectory in SAR-Based Localization via UAV 221
Gabriele Bandini, Andrea Motroni, Alice Buffi, Mirko Marracci, Bernardo Tellini

Brillouin Scattering in Optical Tapers Drawn from Ge-Doped and F-Doped Silica Fibers 227
Ester Catalano, Raffaele Vallifuoco, Nunzio Cennamo, Luigi Zeni, Aldo Minardo

Validation of a ROS-Based Synchronization System for Biomechanics Gait Labs 232
Marco Ghidelli, Stefano Massardi, Luca Foletti, Alberto Cantón González, Matteo Lancini

Improving LoRa-REP Scalability in Emergency Scenarios by Means of Slotted Delay 237
P. Ferrari, P. Bellagente, A. Depari, D. Fernandes Carvalho, A. Flammini, M. Pasetti, S. Rinaldi, E. Sisinni

Evaluating Low-Cost Networked Energy Metering Systems: A University Campus Study 243
Christopher Vaccaro, Jorge Valverde, Alberto Cruz, Miguel Torres, Jose Cordova-Garcia

Distributed Optical Fiber Sensors for the Soil Temperature Measurement in River Embankments 249
Luca Schenato, Nicola Fabbian, Giorgia Dalla Santa, Paolo Simonini, Fabio De Polo, Giacomo Tedesco, Gianluca Marcato, Simonetta Cola

RF Measurements for Future Communication Applications: An Overview 255
D. Allal, R. Bannister, K. Buisman, D. Capriglione, G. Di Capua, M. García-Patrón, T. Gatzweiler, F. Gellersen, T. Harzheim, H. Heuermann, J. Hoffmann, A. Izbrodin, K. Kuhlmann, K. Lahbacha, A. Maffucci, G. Miele, F. Mubarak, M. Salter, T. D. Pham, A. Sayegh, D. Singh, F. Stein, M. Zeier

Design and Characterization of AESA Prototype Driven by a DTRM 261
Pasquale Beneduce, Amedeo Capozzoli, Claudio Curcio, Angelo Liseno, Giovanni Petraglia, Gaetano Prisco, Marcello Ranucci, Chiara Sonatore

Explaining Deep Learning Models for Per-Packet Encrypted Network Traffic Classification 266
Luis Garcia, Genevieve Bartlett, Srivatsan Ravi, Harun Ibrahim, Wes Hardaker, Erik Kline

EEG-Over-BLE: A Novel Low-Power Architecture for Multi-Channel EEG Monitoring Systems 272
Filippo Battaglia, Giovanni Gugliandolo, Giuseppe Campobello, Nicola Donato

An Energy-Efficient Process for Optimal Communication Synchronization in Low Power Wireless Smart Sensors 278
Helbert Da Rocha, J. L. D. Pereira, T. A. G. N. Rodrigues, J. A. Salvado, Antonio Espirito-Santo

Open Access Online Platform for Transducers Development Conforming the IEEE 1451 284
J. D. Pereira, A. Espírito-Santo

Stopping Floods with Buckets: Attack and Countermeasure for IOTA Autopeering 290
Alessandro Brighente, Mauro Conti, Gulshan Kumar, Reza Ghanbari, Rahul Saha

Measurement of VHF Satellite Antennas using the Synthetic Probe Array Technique 296
F. Saccardi, R. Tena-Sanchez, E. Tartaglino, A. Giacomini, L. J. Foged, P. Moseley, L. Rolo

Author Index