

# **2017 International Conference on Internet of Things, Embedded Systems and Communications (IINTEC 2017)**

**Gafsa, Tunisia  
20-22 October 2017**



**IEEE Catalog Number: CFP17M47-POD  
ISBN: 978-1-5386-2114-1**

**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:	CFP17M47-POD
ISBN (Print-On-Demand):	978-1-5386-2114-1
ISBN (Online):	978-1-5386-2113-4

**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

# 2017 International Conference on Internet of Things, Embedded Systems and Communications (IINTEC)

## Table of contents

### WSN, WBAN and E-health

#### Novel Technique for Data Aggregation in Wireless Sensor Networks

- Shahinaz Altabbakh (Ain Shames University & Faculty of Women for Sciences, Arts and Education, Egypt)
  - pp. 1-8

#### Compressive Sensing and Matrix Completion in Wireless Sensor Networks

- Manel Kortas (University of Tunis El Manar & University of Limoges, Tunisia); Vahid Meghdadi (University of Limoges, France); Ammar Bouallegue (National School of Engineers of Tunis, Tunisia); Tahar Ezzedine (Tunis El Manar University, Tunisia); Oussama Habachi (XLIM, France); Jean Pierre Cances (University of Limoges, France)
  - pp. 9-14

#### Simulating a 3D Indoor Deployment in Wireless Sensor Networks Using an Evolutionary

#### Optimization Approach Based on MOEA/D and NSGA-III

- Sami Mnasri (Institut de Recherche en Informatique de Toulouse, Tunisia); Nejah Nasri (University of Sfax, Tunisia); Adrien van den Bossche (IRIT, Université de Toulouse, Toulouse, France); Thierry Val (IRIT, Université de Toulouse, France)
  - pp. 15-20

#### Joint Delay and Energy Minimization for Instantly Decodable Network Coding in Wireless

#### Sensor Networks

- Mariem Zayene (University of Tunis EL Manar, Tunisia & University of Limoges, France); Oussama Habachi (XLIM, France); Vahid Meghdadi (University of Limoges, France); Tahar Ezzedine (Tunis El Manar University, Tunisia); Jean Pierre Cances (University of Limoges, France)
  - pp. 21-25

#### Towards Virtual Collaborative Learning of Clinical Skills

- Mohamed Abderraouf Ferradji and Djalal Hedjazi (LasTIC laboratory, Univresity of Batna 2, Algeria)
  - pp. 26-31

### Internet of Things and Smart City

#### An IoT Domain Meta-Model and an Approach to Software Development of IoT Solutions

- Taoufik Ben Hassine (ENSI, Tunisia); Walid Khayati (Riadi ENSI, Tunisia); Henda Ben Ghézala (RIADI Laboratory, Tunisia)
  - pp. 32-37

### **Towards a Water Quality Monitoring System Based on Wireless Sensor Networks**

- *Jalal Dziri (National Engineering School of Tunis, Tunisia); Tahar Ezzedine (Tunis El Manar University, Tunisia)*
- *pp. 38-41*

### **Application of Damage Detection for Bridge Health Monitoring**

- *Amira Zrelli (Enit & Enit, Tunisia); Hacen Khlaifi (University of Tunis El Manar (UTM) National Engineering School of Tunis (ENIT), Tunisia); Tahar Ezzedine (ENIT, Tunisia)*
- *pp. 42-46*

### **Xenia: Secure and Interoperable Smart Home System with User Pattern Recognition**

- *Amr Elmougy (The German University in Cairo, Egypt); Ahmed Khalaf, Hazem El Agaty, Mariam Mazen, Noureldin Saleh and Mina Samaan (German University in Cairo, Egypt)*
- *pp. 47-52*

## **WSN and VANET**

### **Improvement of the LEACH Protocol in Load Balancing and Energy-Association**

#### **Conservation**

- *Rahma Gantassi, Abdelbari Ben Yagouta and Bechir Ben Gouissem (University of Tunis EL MANAR (UTM), National Engineering School of Tunis (ENIT), Tunisia)*
- *pp. 53-59*

### **Compromises Between Energy Consumption and Quality of Service Metrics in Wireless Sensor Networks with Mobile Sink**

- *Abdelbari Ben Yagouta, Rahma Gantassi and Bechir Ben Gouissem (University of Tunis EL MANAR (UTM), National Engineering School of Tunis (ENIT), Tunisia)*
- *pp. 60-66*

### **New K-means Algorithm for Clustering in Wireless Sensor Networks**

- *Salim El khediri (National Engineering School Of Sfax, Tunisia); Adel Dallali and Walid Fakhet (University of Gafsa, Tunisia); Abdennaceur Kachouri (Laboratoire d'Electronique et des Technologies de l'Information, Tunisia)*
- *pp. 67-71*

### **Formal Modeling and Verification of a Wireless Body Area Network (WBAN) Protocol: STDMA Protocol**

- *Roua Ben Hammouda (Higher Institute of Computer Science, Tunisia); Imen Ben Hafaiedh (Higher Institute of Computer Science & LIP2 Laboratory, Tunisia)*
- *pp. 72-77*

### **Performance Comparison of Position Based Routing Protocols for VANETs**

- *Abduladhim Ashtaiwi (American University of the Middle East, Kuwait); Abdusadik Saoud (Libyan Academy, Libya)*
- *pp. 78-84*

## **Wireless and Optical Communications**

### **Sparsity Adaptive Subspace Pursuit Based Channel Estimation Algorithm for OFDM Based Massive MIMO Systems**

- Rabii Mateur (ENIT, Tunisia); Moufida Hajjaj (SUP'COM, Tunisia); Ridha R. Bouallegue, B. (Ecole Supérieure des Communications de Tunis, Tunisia)
- pp. 85-88

### **Hybrid Precoding Based on Iterative Weighted Thresholding Approach in MmWave MIMO Transmitters Using Sub-Connected Strategy**

- Ameni Mejri (National Engineering School of Tunis & SYS'COM Laboratory, Tunisia); Moufida Hajjaj (SUP'COM, Tunisia); Salem Hasnaoui (National School of Engineering of Tunis, Tunisia); Ridha Bouallegue (Innov'COM @ Sup'Com, Tunisia)
- pp. 89-94

### **An LP-based Algorithm for Decoding Terminated LDPC Convolutional Codes**

- Hayfa Ben Thameur (Higher School Of Communications Of Tunis (SUP'COM), University Of Carthage, Tunisia); Bertrand Le Gal (University of Bordeaux, France); Nadia Khouja (Grescom Laboratory Sup'Com Tunis & École Supérieure de Communications de Tunis, Tunisia); Fethi Tlili (Ecole Supérieure de Communications de Tunis, Tunisia); Christophe Jego (IMS CNRS Laboratory & IPB ENSEIRB-MATMECA, France)
- pp. 95-100

### **Design Channel Add Drop Filter Based on Photonic Crystal Cavity Resonator on GaAs Substrate**

- Kheareddine Khemiri (Université de Tunis El Manar, ENIT SysCom, Tunisie, Tunisia)
- pp. 101-104

### **Supporting Multi-Domain Congestion Control by a Lightweight PEP**

- Attila Mihály and Szilveszter Nádas (Ericsson Research, Hungary); Sándor Molnár and Zsolt Krämer (Budapest University of Technology and Economics, Hungary); Robert Skog (Ericsson AB, Sweden); Marcus Ihlar (Ericsson, Sweden)
- pp. 105-110

## **Real-Time & Multi-Core Embedded Systems**

### **An Optimal Scheduling Algorithm for Data Parallel Hardware Architectures**

- Imen Amari, Asma Rebaya and Kaouther Gasmi (National School of Engineering of Tunis University of Tunis El Manar, Tunisia); Salem Hasnaoui (National School of Engineering of Tunis, Tunisia)
- pp. 111-117

### **Automatic Paralellization of Simulink Models for Multicore Embedded Systems Development**

- Kaouther Guesmi (Tunisia, Tunisia); Imen Amari (National School of Engineering of Tunis University of Tunis El Manar, Tunisia)
- pp. 118-123

### **Performance Analysis of an Efficient Technique for Ordering Programs into Multiple Processors Architectures**

- Asma Rebaya, Kaouther Gasmi and Imen Amari (National School of Engineering of Tunis University of Tunis El Manar, Tunisia); Salem Hasnaoui (National School of Engineering of Tunis, Tunisia)
- pp. 124-128

### **Phosphorus: An Ultra Low Footprint and Energy Consumption 3D NoC Architecture**

- *Nejib Mediouni (ENIT, Tunisia); Salem Hasnaoui (National School of Engineering of Tunis, Tunisia)*
- *pp. 129-133*

### **Computer and Communications Security**

#### **Monitoring of Clock Synchronization in Cyber-Physical Systems: A Sensitivity Analysis**

- *Elena Lisova, Elisabeth Uhlemann, Johan Åkerberg and Mats Björkman (Malardalen University, Sweden)*
- *pp. 134-139*

#### **A New Method of Video-Surveillance Data Analytics for the Security in Camera Networks**

- *Bassem HadjKacem (University of Sfax, Tunisia); Walid Ayedi (University of Technology of Troyes, France); Mohamed Abid (CES-ENIS, Tunisia); Hichem Snoussi (University of Technology of Troyes, France)*
- *pp. 140-145*

#### **A Secure Fog-based Communication Scheme**

- *Arij Ben Amor (University of Tunis-Elmanar, Tunisia); Mohamed Abid (University of Gabes, Tunisia); Aref Meddeb (National School of Engineering, University of Sousse, Tunisia)*
- *pp. 146-151*

### **Microwaves, Antennas & Propagation**

#### **An Electrical Model to L-Slot Square Patch Antenna**

- *Chaouki Guesmi (FST, Tunisia); Said Ghnimi (Electronics Laboratory, Sciences Faculty of Tunis, Tunisia); Olfa Aouni (University of Tunis El Manar, Faculty of Sciences of Tunis, Tunisia); Ali Gharsallah (Electronic Laboratry, Tunisia)*
- *pp. 152-156*

#### **Study of Perfect Imaging by Coupled Negative Refractive Index Lenses Using WCIP Method**

- *Taieb Elbellili (Tunisie, Tunisia); Medkarim Azizi (Faculty of Sciences Tunis, Tunisia)*
- *pp. 157-161*

#### **Novel Design of Ultra Low-cost Paper-based Antenna for High Data-Rate Communications**

#### **Systems**

- *Abdel Ali Hiba and Rachida Bedira (FST, Tunisia); Ali Gharsallah (Electronic Laboratry, Tunisia); Hichem Trabelsi (Electronic Laboratry FST, Tunisia)*
- *pp. 162-165*

#### **Contribution to the Study of the Shielding Effectiveness by an Iterative Method (FWCIP)**

- *Rafika Mejri (National Engineering School of Tunis, Tunisia); Taoufik Aguili (School of Engineering, Tunisia)*
- *pp. 166-170*

#### **Tunable Schiffman Phase Shifter for Continuous Beam Steering Antenna**

- *Rawia Wali (University of Tunis El Manar, Faculty of Sciences of Tunis, Tunisia); Lotfi Osman (Higher School of Communication of Tunis - University of Carthage & Faculty of Sciences of Tunis - University of Tunis El Manar, Tunisia); Tchanguiz Razban (University of Nantes, France); Yann Mahe (Lunam Université - Université de Nantes, IETR, France)*

- pp. 171-176

## **Embedded and Run-Time Systems**

### **An Activity Description Language for Activity Recognition**

- Ines Sarray, Annie Ressouche, Sabine Moisan and Jean-Paul Rigault (*Université Côte d'Azur, INRIA, France*); Daniel Gaffé (*Université Côte d'Azur, LEAT, France*)
- pp. 177-182

### **On the Stabilization of a TCP/AOM Systems with Time Delay by the Joint Use of the Tau-Decomposition and the D-Decomposition Methods**

- Sami ELmadssia (*University of Gafsa, Saudi Arabia*), Walid Dhifallah (*Higher Institute of Technology and applied Sciences of Gafsa, Tunisia*)
- pp. 183-188

### **PSO-Based Optimal Design of In-Wheel Permanent Magnet Motor**

- Lassaad Zaaraoui (*CES Laboratory, Engineering School of Sfax Sfax, Tunisia*); Ali Mansouri (*Engineering School of Sfax, Tunisia*); Trabelsi Hafedh (*Engineering school of Sfax, Tunisia*)
- pp. 189-194

### **Novel Trends in Automotive Networks: Performance Evaluations Based on Network Queuing Theory**

- Azer Hasnaoui, Ikbel Mejri, Manel Takrouni and Marwa Gdhaifi (*National Engineering School of Tunis, Tunisia*); Tahar Ezzedine (*Tunis El Manar University, Tunisia*); Salem Hasnaoui (*National School of Engineering of Tunis, Tunisia*)
- pp. 195-200

## **Artificial intelligence**

### **Neural Network Based Congestion Detection Protocol**

- Takoua Mekni (*ENIT, Tunisia*); Kaouther Ibn Taarit and Moufida Ksouri (*National Engineering School of Tunis, Tunisia*)
- pp. 201-205

### **Concatenate Text Embeddings for Text Classification**

- Machhour Hamid (*ENSIAS, Mohammed V University RABAT, Morocco*); Kassou Ismail (*ENSIAS, Mohammed V Souissi University, Morocco*)
- pp. 206-210

### **New Advances in Stability, Estimation and Control of Networked Systems with time delay**

- Qing-Guo WANG (*Institute for Intelligent Systems, University of Johannesburg, South Africa*); Zhuo-Yun NIE (*School of Information Science and Engineering, National Huaqiao University, China*); Dan ZHANG (*Department of Automation, Zhejiang University of Technology, China*); Lei Wang (*School of Automation Science and Electrical Engineering, Beihang University, China*)
- pp. 211-218