

# **2017 First International Conference on Embedded & Distributed Systems (EdiS 2017)**

**Oran, Algeria  
17-18 December 2017**



**IEEE Catalog Number: CFP17O07-POD  
ISBN: 978-1-5386-3726-5**

**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:	CFP17O07-POD
ISBN (Print-On-Demand):	978-1-5386-3726-5
ISBN (Online):	978-1-5386-3725-8

**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

# PROCEEDINGS OF EDIS 2017

First international conference on Embedded and Distributed Systems

---



# Contents

<b>Preface</b>	<b>ix</b>
<b>Welcome from the organisers</b>	<b>ix</b>
<b>Organisers</b>	<b>xi</b>
<b>Keynote I: L. Bellatreche</b>	<b>3</b>
<b>Session 1: Embedded and Cyber Physical Systems</b>	
<i>Samir Tigane, Kahloul Laïd and Samir Bourekkache</i>	
Generalized Stochastic Petri Nets with Rewritable Topology . . . . .	7
<i>Ayman A. Atallah, Ghaith Bany Hamad and Otmane Ait Mohamed</i>	
Automotive Safety Verification Under Temporal Failure of Adaptive Cruise Control System Using Statistical Model Checking . . . . .	13
<i>Ghaith Bany Hamad and Otmane Ait Mohamed</i>	
System Level SEUs Propagation Analysis via Data Flow-Based Reduction and Quantitative Model Checking . . . . .	19
<i>Sarah Chabane, Ameur-Boulifa Rabéa and Mezghiche Mohamed</i>	
Formal Framework for Automated Analysis and Verification of Distributed Reactive Applications . . . . .	25
<b>Session 2: Information retrieval, Machine learning, Data Mining</b>	
<i>Nassira Chekkai, Mohamed Ait Hamadouche, Mohammed Amin Tahraoui, Salim     Chikhi, Hamamache Kheddouci, Souham Meshoul and Amira Bouaziz</i>	
CSCF: Clustering based-Approach for Social Collaborative Filtering . . . .	33
<i>Kheira Lakel, Fatima Bendella and Samira Benkhadda</i>	
Named entity recognition for Psychological domain: challenges in docu- ment annotation for the Arabic Language . . . . .	39
<i>Kabli Fatima, Hamou Reda Mohamed and Abdelmalek Amine</i>	
New Classification System for Protein sequences . . . . .	44
<i>Tahar Rafa and Samir Kechid</i>	
An event-based user profile for a personalized information retrieval . . . .	50

<b>Keynote II: M. Boubekur</b>	<b>59</b>
--------------------------------	-----------

<b>Keynote III: B. Goossens</b>	<b>63</b>
---------------------------------	-----------

**Poster presentations**

<i>Nadjib Benaouda and Ammar Lahlouhi</i>	
Ant-based Delay-Bounded and Energy-Efficient Data Aggregation in Wireless Sensor Networks . . . . .	
<i>Nadjla Bettayeb, Mhania Guerti and Naeem Ramzan</i>	
A Forward-Backward Dynamic Programming Search for Arabic Unit Selection Speech Synthesis . . . . .	
<i>Bilal Saoud and Abdelouahab Moussaoui</i>	
Finding community structure in networks . . . . .	
<i>Kada Akermi, Samira Chouraqui and Boudjemaa Boudaa</i>	
Trajectory Tracking of Autonomous Vehicle at High Speed using Adaptive Dynamic Sliding Mode Control . . . . .	
<i>Nadir Mahammed, Sidi Mohamed Benslimane and Nesrine Hamdani</i>	
Solving a business process combinatorial multi-objective optimization issue with MA-NSGAI . . . . .	
<i>Ihssene Menhour, M'Hamed Bilal Abidine and Belkacem Fergani</i>	
A Combined Classification Method KNN-SVM to Activity Recognition using Samsung Galaxy SII . . . . .	
<i>Abderrahmane Kouadria, Mohammad Yahya H. Al-Shamri and Omar Nouali</i>	
Two-level hybridization between demographic and collaborative recommender systems . . . . .	
<i>Redouane Bouchekir and Mohand Cherif Boukala</i>	
Automated Compositional Verification for Probabilistic Systems Through Implicit Learning . . . . .	
<i>Krobba Ahmed, Debyeche Mohamed and Krobba Ahmed</i>	
Robust Speaker Recognition over Channel Transmission Noise using Gammaton Feature based on Mixture Linear Prediction . . . . .	
<i>Khadidja Gaffour, Mohammed Kamal Benhaoua, Amit Kumar Singh, Abou El Hassan Benyamina, Pierre Boulet and Toufik Djeradi</i>	
Survey of Network-on-Chip Simulators . . . . .	
<i>Said Limam, Riad Mokadem and Ghalem Belalem</i>	
Satisfying Availability and Performance Requirements while Ensuring Profit of Cloud Providers . . . . .	
<i>Azzouz Boufedah Badissi, Abdesselam Babouri and Mohamed Benmohammed</i>	
New MAC protocol for Wireless Body Area Network . . . . .	
<i>Hamdane Mohamed Elkamel, Berramla Karima and Allaoua Chaoui</i>	
Using MDA With Model Checking to Ensure the Development of Consistent AADL Models . . . . .	

**Session 3: Computer architectures**

- Rabab Bouziane, Erven Rohou and Abdoulaye Gamatie*  
 Compilation in the Presence of Non Volatile Memory . . . . . 143
- Pierre-Yves Péneau, David Novo, Florent Bruguier, Gilles Sassatelli and Abdoulaye Gamatie*  
 Performance and Energy Assessment of Last-Level Cache Replacement Policies . . . . . 149
- Habib Chawki Touati and Fateh Boutekkouk*  
 A Weighted Minimal Fully Adaptive Congestion Aware Routing Algorithm for Network on Chip . . . . . 155

**Session 4: Signal processing and classification**

- Imene Soussi and Mohamed Ouslim*  
 The Use of an efficient QRS Detection Algorithm for the compression of ECG Signals with large QRS waves . . . . . 163
- Meddah Mounir, Amrouche Abderrahmane and Abdelmalik Taleb-Ahmed*  
 Thresholding Based on Sequential Monte-Carlo for DCT Speech Enhancement . . . . . 169

**Session 5: Embedded and Cyber Physical Systems II**

- Khalil Ibrahim Hamzaoui, Pierre Boulet, Mohammed Berrajaa, Giuseppe Lipari and Mostafa Azizi*  
 An Experimental Methodology for Modeling the Energy Consumption of Mobile . . . . . 177
- Wahiba Menarsri, Abdellah Skoudarli and Aichouche Belhadj*  
 Implementation of parallel-pipeline H.265 CABAC decoder on FPGA Devices . . . . . 183
- Khelf Mohamed and Ouslim Mohamed*  
 Parallel computing in heterogeneous machines based on the CPU donation approach . . . . . 189
- Soraya Cheriguene, Nabihha Azizi, Amel Ziani, Zemmal Nawel and Hayet Djelali*  
 New Computer Aided Diagnosis System for Glaucoma diagnosis based on Twin Support Vector Machine . . . . . 195

**Session 6: Multi-objective optimization Heuristics and Metaheuristics**

- Fatiha Merazka*  
 VQ Codebook Design using Hybrid Ant Colony Algorithm for Speech Line Spectral Frequencies . . . . . 203

Contents

<i>Ait Abderrahim Imene and Loukil Lakhdar</i>	
Hybrid PSO-TS Approach for solving Quadratic Three-Dimensional Assignment Problem . . . . .	209
<i>Metahri Dhiyaeddine and Hachemi Khalid</i>	
Optimization of Free-Fall-Flow-Rack Automated Storage and Retrieval System Dimensions . . . . .	214
<i>Lamiche Chaabane</i>	
A Cooperative Solver for Single Machine Total Weighted Tardiness Scheduling Problem . . . . .	220
<b>Keynote IV: G. Lipari</b>	<b>227</b>
<b>Session 7: Model Driven Engineering and Web services</b>	
<i>Karima Berramla, El Abbassia Deba, Benyamina Abou El Hassan and Benhamahouch Djilali</i>	
Formal Concept Analysis for specification of model transformations . . . .	231
<i>Hanane Benouda, Mostafa Azizi, Mimoun Moussaoui and Redouane Esbai</i>	
Automatic code generation within MDA approach for cross-platform mobile apps . . . . .	237
<i>Nadia Ben Seghier and Okba Kazar</i>	
A New Framework for Web Service Discovery in Distributed Environments	242
<b>Session 8: Multi-objective optimization Heuristics and Metaheuristics</b>	
<i>Anas Mokhtari, Mostafa Azizi and Mohammed Gabli</i>	
Optimizing Management of Cloud Resources Towards Best Performance for Applications Execution . . . . .	251
<i>Manel Houimli and Kahloul Laïd</i>	
Multi-Objective optimization and formal specification of reconfigurable manufacturing system using adaptive NSGA-II . . . . .	256
<i>Sidali Hocine Farhi and Dalila Boughaci</i>	
SLS method for the frequent subgraph mining problem (FSM) . . . . .	262