2017 VII Brazilian Symposium on Computing Systems Engineering (SBESC 2017)

Curitiba, PR, Brazil
6-10 November 2017

IEEE Catalog Number: CFP1797R-POD
ISBN: 978-1-5386-3591-9

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:	CFP1797R-POD
ISBN (Print-On-Demand):	978-1-5386-3591-9
ISBN (Online):	978-1-5386-3590-2
ISSN:	2324-7886

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

2017 VII Brazilian Symposium on Computing Systems Engineering

SBESC 2017

Table of Contents

Welcome Message from the General Chair ix

Reviewers x

Session: Applications and Hardware Design

Systematic Literature Review on Automotive Diagnostics 1
Leonardo Presoto de Oliveira, Marco Aurélio Wehrmeister, and André Schneider de Oliveira

Planning and Evaluation of UAV Mission Planner for Intralogistics Problems 9
Thiago Rodrigo Felix Cavalcante, Iury Valente de Bessa, and Lucas Carvalho Cordeiro

Automated Generation of HDL Implementations of Dadda and Wallace Tree Multipliers 17
Lucas Gaia de Castro, Henrique Seiti Ogawa, and Bruno de Carvalho Albertini

Session: Energy-Aware Systems

Inserting DVFS Code in Hard Real-Time System Tasks 23
Diego Pinheiro, Rawlinson Gonçalves, Eduardo Valentin, Horácio de Oliveira, and Raimundo Barreto

Cache Memory Energy Efficiency Exploration for the HEVC Motion Estimation 31
Anderson Martins, Wagner Penny, Matheus Weber, Daniel Palomino, Júlio Mattos, Marcelo Porto, Luciano Agostini, and Bruno Zatt

EAVIRA: Energy-Aware Virtual Infrastructure Reallocation Algorithm 39
Denivy B. Ruck, Maurício A. Pillon, Charles C. Miers, and Guilherme P. Koslovski

Session: Wireless Sensor Networks

Space-Time Derivative-Based Prediction: A Novel Trickling Mechanism for WSN 47
César Huegel Richa, Antônio Augusto Fröhlich, and Giovani Gracioli

A Distributed Algorithm to Schedule TSCH Links under the SINR Interference Model 55
José Carlos da Silva and Flávio Assis

μSDN: An SDN-Based Routing Architecture for Wireless Sensor Networks 63
Leonardo Francisco da Silva Santos, Francisco Ferreira de Mendonça Júnior, and Kelvin Lopes Dias

Session: Multicore and Networks-on-Chip

RedScarf: A User-Friendly Multi-Platform Network-on-Chip Simulator 71
Eduardo Alves da Silva, Daniel Menegasso, Sergio Vargas Jr., and Cesar Albenes Zeferino

Potential Gains in EDP by Dynamically Adapting the Number of Threads for OpenMP Applications in Embedded Systems 79
Janaína Schwarzrock, Arthur Francisco Lorenzon, Philippe O.A. Navaux, Antonio Carlos Schneider Beck, and Edison Pignaton de Freitas

Deadline, Energy and Buffer-Aware Task Mapping Optimization in NoC-Based SoCs Using Genetic Algorithms 86
Jaison Valmor Bruch, Eduardo Alves da Silva, Cesar Albenes Zeferino, and Leandro Soares Indrusiak

Session: Development and Tools

Simbah-FI: Simulation-Based Hybrid Fault Injector 94
Anderson Luiz Sartor, Pedro Henrique Exenberger Becker, and Antonio Carlos Schneider Beck

Trace-Driven Extension for Noxim Simulator 102
Ivan Luiz Pedroso Pires, Marco Antonio Zanata Alves, and Luiz Carlos Pessoa Albini

Towards the Use of LITMUS RT as a Testbed for Multiprocessor Scheduling in Energy Harvesting Real-Time Systems 109
Lais Borin, Márcio Castro, and Patricia Della Méa Plentz

Formal Verification of AADL Models Using UPPAAL 117
Fernando Silvano Gonçalves, David Pereira, Eduardo Tovar, and Leandro Buss Becker

Notification-Oriented Programming Language and Compiler 125
Adriano Francisco Ronszcka, Cleverson Avelino Ferreira,
Paulo Cézar Stadzisz, João Alberto Fabro, and Jean Marcelo Simão

Session: Distributed Systems, IoT, and Performance Evaluation

IoT and HPC Integration: Revision and Perspectives 132
Leonardo de Souza Cimino, José Estevão Eugênio de Resende,
Lucas Henrique Moreira Silva, Samuel Queiroz Souza Rocha,
Matheus de Oliveira Correia, Guilherme Souza Monteiro,
Gabriel Natã de Souza Fernandes, Silvia Grasiella Moreira Almeida,
André Luiz Barroso Almeida, André Luiz Lins de Aquino,
and Joubert de Castro Lima

Activity Prediction in a Smart Environment Using Bayesian Network and Multi-Agent System 140
Murilo de Oliveira Provenzi and Marcelo Götz

Comparing Performance and Energy Consumption of Android Applications: Native Versus Web Approaches 147
Kellerson Kurtz, Marcelo Noguez, Felipe Zanini, Paulo R. Ferreira Jr.,
and Lisane Brisolara

Session: Work-in-Progress (WiP)

UEFI BIOS Accessibility for the Visually Impaired 155
Rafael Rodrigues Machado and Gustavo Maciel Dias Vieira

A Digital Implementation of Eddystone Standard Using IBM 180nm Cell Library 161
Rodrigo V.M. Pereira, Fernando R. de Sousa, Eduardo A. Bezerra,
and Marcelo D. Berejuck

Time Synchronization under Temperature and Distance Variations 167
Matheus Martins Susin, Lucas Francisco Wanner, Davi Resner,
and Antônio Augusto Fröhlich

Hardware-in-the-Loop Simulation Low-Cost Platform 173
Paulo Bertoldi Renaux, Robson Ribeiro Linhares,
and Douglas Paulo Bertrand Renaux

Development of a WirelessHART - EnOcean Adapter for Industrial Applications 181
Felipe D'Agostini Arcari, Celso Costa, Carlos Eduardo Pereira,
João Cesar Netto, Guilherme Torres, Matheus Souza, and Ivan Müller

A Weighted Broadcast Routing Algorithm for WirelessHART Networks 187
Gustavo Künzel, Gustavo Pedroso Cainelli, and Carlos Eduardo Pereira

Using the Nanvix Operating System in Undergraduate Operating System Courses 193
Pedro Henrique de Mello Morado Penna, Márcio Bastos Castro, Henrique Cota de Freitas, Jean-François Méhaut, and João Caram

A Service-Oriented Architecture with Data Virtualization Support for Cloud-Based Wireless Sensor Networks 199
Ronald Jared Romero Reyes, Francisco Ferreira de Mendonça Júnior, and Kelvin Lopes Dias

Performance Evaluation of Cryptography on Middleware-Based Computational Offloading 205
Bruno Silva, Atrícia Sabino, Warley Junior, Eduardo Oliveira, Francisco Júnior, and Kelvin Dias

Reducing Computational Costs of an Embedded Classifier to Determine Leather Quality 211
Fausto Sampaio, Lucas Costa da Silva, Pedro Pedrosa Rebouças Filho, and Elias Teodoro da Silva Junior

Enhancing Robot Capabilities of Environmental Perception through Embedded GPU 217
Marco Antonio Simoes Teixeira, Nicolas Dalmedico, Higor Barbosa Santos, Andre Schneider de Oliveira, Lucia Valeria Ramos de Arruda, and Flavio Neves Jr.

Confidentiality and Authenticity in a Platform Based on Network-on-Chip 225
Marcos Roberto Silva and Cesar Albenes Zeferino

Author Index 231