



RECENT ADVANCES in CIRCUITS, SYSTEMS, SIGNAL and TELECOMMUNICATIONS

**Editor:**

Professor Lifeng Xi, Computer Science College,  
Zhejiang Wanli University of China

**HOST and SPONSOR:**

Zhejiang Wanli University, Ningbo, China

# RECENT ADVANCES in CIRCUITS, SYSTEMS, SIGNAL and TELECOMMUNICATIONS

Proceedings of the 3rd WSEAS International Conference on  
CIRCUITS, SYSTEMS, SIGNAL and TELECOMMUNICATIONS (CISST'09)

Ningbo, China, January 10-12, 2009

Electrical and Computer Engineering Series  
A series of Reference Books and Textbooks

ISBN: 978-960-474-042-0  
ISSN: 1790-5117

Published by WSEAS Press  
[www.wseas.org](http://www.wseas.org)



# **RECENT ADVANCES in CIRCUITS, SYSTEMS, SIGNAL and TELECOMMUNICATIONS**

**Proceedings of the 3rd WSEAS International Conference on  
CIRCUITS, SYSTEMS, SIGNAL and TELECOMMUNICATIONS  
(CISST'09)**

**Ningbo, China  
January 10-12, 2009**

Electrical and Computer Engineering Series  
A Series of Reference Books and Textbooks

Published by WSEAS Press  
[www.wseas.org](http://www.wseas.org)

ISSN: 1790-5117  
ISBN: 978-960-474-042-0

# **RECENT ADVANCES in CIRCUITS, SYSTEMS, SIGNAL and TELECOMMUNICATIONS**

**Proceedings of the 3rd WSEAS International Conference on  
CIRCUITS, SYSTEMS, SIGNAL and TELECOMMUNICATIONS  
(CISST'09)**

**Ningbo, China  
January 10-12, 2009**

Electrical and Computer Engineering Series  
A Series of Reference Books and Textbooks

Published by WSEAS Press

[www.wseas.org](http://www.wseas.org)

**Copyright © 2009, by WSEAS Press**

All the copyright of the present book belongs to the World Scientific and Engineering Academy and Society Press. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the Editor of World Scientific and Engineering Academy and Society Press.

All papers of the present volume were peer reviewed by two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.

See also: <http://www.worldses.org/review/index.html>

ISSN: 1790-5117

ISBN: 978-960-474-042-0



World Scientific and Engineering Academy and Society

# **RECENT ADVANCES in CIRCUITS, SYSTEMS, SIGNAL and TELECOMMUNICATIONS**

**Proceedings of the 3rd WSEAS International Conference on  
CIRCUITS, SYSTEMS, SIGNAL and TELECOMMUNICATIONS  
(CISST'09)**

**Ningbo, China  
January 10-12, 2009**

**Editor:**

Professor Lifeng Xi, Computer Science College, Zhejiang Wanli University, CHINA

**International Program Committee Members:**

Alexander Zemliak, MEXICO  
Weilian Su, U.S.A.  
Gorazd Kandus, SLOVENIA  
AbdulRahman Al-Othman, KUWAIT  
Chandra Sekhar Paidimarry, INDIA  
Yuan-shyi peter Chiu, TAIWAN  
Guergana Mollova, AUSTRIA  
Zhao zhengjie Zhang jilong, CHINA  
Irma Siller-Alcala, MEXICO  
Masoud Saeed, IRAN  
Mikhail Arkhipov, MEXICO  
Yumi Takizawa, JAPAN  
Ciprian Racuciu, ROMANIA  
Singa wang Chiu, TAIWAN  
Kanwarjit singh Sandhu, INDIA  
George Szentirmai, USA  
Michael Peter Kennedy, IRELAND  
Paresh C. Sen, CANADA  
Michel Gevers, BELGIUM  
James S. Thorp, USA  
Irwin W. Sandberg, USA  
Asad A. Abidi, USA  
Andreas Antoniou, USA  
Antonio Cantoni, AUSTRALIA  
Lotfi Zadeh, USA  
Armen H. Zemanian, USA  
Guanrong Chen, HONG KONG  
Edgar Sanchez-Sinencio, USA  
Jim C. Bezdek, USA  
A. J. van der Schaft, the NETHERLANDS  
Istvan Nagy, Hungary  
Wasfy B. Mikhael, USA  
M. N. S. Swamy, CANADA  
M. Araki, JAPAN  
Abbas El Gamal, USA  
Franco Maloberti, Italy  
Alan N. Willson Jr., USA  
Yoji Kajitani, JAPAN  
Mohammed Ismail, USA  
Kemin Zhou, USA  
Ruey-Wen Liu, USA  
Nabil H. Farhat, USA  
John I. Sewell, UK  
Jerry M. Mendel, USA  
Magdy A. Bayoumi, USA  
Bertram E. Shi, HONG KONG  
M. Omair Ahmad, CANADA  
N. K. Bose, USA  
Igor Lemberski, LATVIA  
Alfred Fettweis, GERMANY  
Brockway McMillan, USA  
H. J. Orchard, USA  
Jacob Katzenelson, ISRAEL  
Vincent Poor, USA  
Abraham Kandel, USA  
Bor-Sen Chen, CHINA  
C. S. George Lee, USA  
Hamid R. Berenji, USA  
Kevin M. Passino, USA  
Lawrence O. Hall, USA  
Ronald R. Yager, USA  
Witold Pedrycz, CANADA  
Agoryaswami J. Paulraj, USA  
Ahmed H. Tewfik, USA  
Alan V. Oppenheim, USA  
Alfonso Farina, ITALY  
Alfred O. Hero, USA  
Ali H. Sayed, USA  
Anders Lindquist, SWEDEN  
Arthur B. Baggeroer, USA  
Arye Nehorai, USA  
Benjamin Friedlander, USA  
Bernard C. Levy, USA  
Bhaskar D. Rao, USA  
Bin Yu, USA  
Boualem Boashash, AUSTRALIA  
Brian D. O. Anderson, AUSTRALIA  
Bruce A. Francis, CANADA  
C. Richard Johnson, USA  
C. Sidney Burrus, USA  
Charles M. Rader, USA  
Desmond P. Taylor, NEW ZEALAND  
Donald L. Duttweiler, USA  
Donald W. Tufts, USA  
Douglas L. Jones, USA  
Earl E. Swartzlander, USA  
Ed F. Deprettere, the NETHERLANDS  
Edward A. Lee, USA  
Edward J. Powers, USA  
Ehud Weinstein, ISRAEL  
Eli Brookner, USA  
Ezio Biglieri, Italy  
Faye Boudreaux-Bartels, USA  
Georgios B. Giannakis, USA  
Gonzalo R. Arce, USA  
H. Vincent Poor, USA  
Hagit Messer, ISRAEL  
Joos Vandewalle, BELGIUM  
Jose C. Principe, USA  
Jose M. F. Moura, USA  
K. J. Ray Liu, USA  
Kaushik Roy, USA  
Kenneth Rose, USA

Keshab K. Parhi, USA  
Kon Max Wong, CANADA  
Kung Yao, USA  
Louis L. Scharf, USA  
Martin Vetterli, USA  
Mati Wax, USA  
Meir Feder, ISRAEL  
Michael C. Wicks, USA  
Michael D. Zoltowski, USA  
Michael T. Orchard, USA  
Michael Unser, SWITZERLAND  
Miguel Angel Lagunas, SPAIN  
Moeness G. Amin, USA  
Mohamed Najim, FRANCE  
Neil J. Bershad, USA  
P. P. Vaidyanathan, USA  
Patrick Dewilde, NETHERLANDS  
Peter Willett, USA  
Petre Stoica, SWEDEN  
Phillip A. Regalia, FRANCE  
Pierre Duhamel, FRANCE  
Pierre Moulin, USA  
Pramod K. Varshney, USA  
Rabab Kreidieh Ward, CANADA  
Robert M. Gray, USA  
Rolf Unbehauen, GERMANY  
Ronald W. Schafer, USA  
Rui J. P. Figueiredo, USA  
Russell M. Mersereau, USA  
Sadaoki Furui, JAPAN  
Shun-Ichi Amari, JAPAN  
Simon Haykin, CANADA  
Soo-Chang Pei, CHINA  
Soutra Dasgupta, USA  
Stefan L. Hahn, POLAND  
Steven Kay, USA  
Takao Hinamoto, JAPAN  
Takashi Matsumoto, JAPAN  
Tapio Saramaki, FINLAND  
Tariq S. Durrani, U.K.  
Thomas F. Quatieri, USA  
Thomas L. Marzetta, USA  
Thomas S. Huang, USA  
Thomas W. Parks, USA  
Uri Shaked, ISRAEL  
V. John Mathews, USA  
Vladimir Cuperman, USA  
William A. Pearlman, USA  
Wolfgang Fichtner, SWITZERLAND  
Wu-Sheng Lu, CANADA  
Yaakov Bar-Salom, USA  
Yingbo Hua, USA  
Yong Ching Lim, SINGAPORE  
Yoram Bresler, USA  
Zhi Ding, USA  
A. A. Goldenberg, CANADA  
Angel Rodriguez-Vasquez, SPAIN  
Erol Gelenbe, USA  
F. L. Lewis, USA  
Harry Wechsler, USA  
Howard C. Card, CANADA  
Lei Xu, P. R. CHINA  
Leon O. Chua, USA  
Marco Gori, ITALY  
Narasimhan Sundararajan, SINGAPORE  
Sankar K. Pal, India  
Tamas Roska, USA  
A. Stephen Morse, USA  
Alberto Isidori, USA  
Ali Saberi, USA  
Andrew R. Teel, USA  
Antonio Vicino, ITALY  
Anuradha M. Annaswamy, USA  
Benjamin Melamed, USA  
Bruce H. Krogh, USA  
David D. Yao, USA  
Donald Towsley, USA  
Eduardo D. Sontag, USA  
Edward J. Davison, CANADA  
G. George Yin, USA  
Giorgio Picci, ITALY  
Graham C. Goodwin, AUSTRALIA  
Han-Fu Chen, CHINA  
Harold J. Kushner, USA  
Hidenori Kimura, JAPAN  
Ian Postlethwaite, UK  
Ian R. Petersen, AUSTRALIA  
Jan C. Willems, NETHERLANDS  
Jim S. Freudenberg, USA  
Karl Johan Astrom, SWEDEN  
Lennart Ljung, SWEDEN  
M. Vidyasagar, INDIA  
Mark W. Spong, USA  
Matthew R. James, AUSTRALIA  
Munther A. Dahleh, USA  
P .R. Kumar, USA  
Peter E. Caines, CANADA  
Pramod P. Khargonekar, USA  
Richard T. Middleton, AUSTRALIA  
Roberto Tempo, Italy  
Roger W. Brockett, USA  
Romeo Ortega, FRANCE  
Shankar Sastry, USA  
Stephane Lafortune, USA  
Steven I. Marcus, USA  
T. E. Duncan, USA  
Tamer Basar, USA  
W. M. Wonham, CANADA  
Weibo Gong, USA  
Xi-Ren Cao, Hong Kong  
Yu-Chi Ho, United Kingdom  
Ibrahim Al-Bahadly, NEW ZEALAND  
Saad Al-Shahrani, SAUDI ARABIA  
Shuangching Chen, JAPAN

Eunmi Choi, KOREA  
YounOk Choi, KOREA  
Yung-shan Chou, TAIWAN  
Chin-tun Chuang, TAIWAN  
Algimantas Citavicius, LITHUANIA  
Lawrence Deng, TAIWAN  
Octavian Dranga, AUSTRALIA  
Chen-chien Hsu, TAIWAN  
Gorazd Kandus, SLOVENIA  
Seokjoo Koh, KOREA  
Pei-Jun Lee, TAIWAN  
Jie Li, CHINA

Shieh-Shing Lin, TAIWAN  
Ming-chih Lu, TAIWAN  
Hsi-Pin Ma, TAIWAN  
Vincenzo Niola, ITALY  
Nattapong Phanthuna, THAILAND  
Harsh Sadawarti, INDIA  
Dat Tran, AUSTRALIA  
Jih-Fu Tu, TAIWAN  
Ti-ho Wang, TAIWAN  
Wei-yen Wang, TAIWAN  
Chin-Long Wey, TAIWAN  
Yanlei Zhao, CHINA

## **Preface**

On behalf of the Program and Operating Committees of the 3rd WSEAS International Conference on CIRCUITS, SYSTEMS, SIGNAL and TELECOMMUNICATIONS, we are pleased to welcome you to attend the CISST'09.

Held under the sponsorship of the WSEAS, the conference is co-organized by Zhejiang Wanli University, Ningbo, China and the Scientific Societies WSEAS, [www.wseas.org](http://www.wseas.org), IASME, [www.iasme.org](http://www.iasme.org) and NAUN [www.naun.org](http://www.naun.org).

The conference will be held on January 10-12, 2008 at Zhejiang Wanli University, Ningbo, China. The scope of the Conference covers all the aspects of Circuits, Systems, Signal and Telecommunications.

Ningbo is a seaport sub-provincial city with a population of 1,219,900 in northeastern Zhejiang province, People's Republic of China. Lying south of the Hangzhou Bay, and facing the East China Sea to the east, Ningbo borders Shaoxing to the west and Taizhou to the south, and is separated from Zhoushan by a narrow body of water.

Ningbo was one of China's oldest cities with a history dating back to 4800 B.C. the Hemudu culture. Ningbo was known as a major trading port along with Yangzhou and Guangzhou in the Tang dynasty; thereafter, the major ports for foreign trade in the Song dynasty. Ningbo was one of the five Chinese treaty ports opened by the Treaty of Nanjing (signed in 1842) at the end of the First Opium War between Britain and China. During the war, British forces took possession of the walled city of Ningbo briefly after storming the fortified town of Zhenhai at the mouth of the Yong River on October 10, 1841. In 1864 the forces of the Taiping Rebellion held the town for six months. Ningbo was once famed for traditional Chinese furniture production.

Zhejiang Wanli University (ZWU), situated in Ningbo Higher Education Zone, covers a total area of 951,809 square meters and consists of Huilong Campus and Qianhu Campus. ZWU has a very beautiful campus that is well-equipped, widely recognized by people from the education circle. In ZWU, there are Junior College, Business School, Law School, Faculty of Culture and Media, Faculty of Foreign Languages, Faculty of Art and Design, Faculty of Biological and Environmental Sciences, Faculty of Electronic and Information Engineering, Faculty of Computing and Information Technology as well as World College, Adult Education College, with 27 specialties of undergraduate (4-year program) and 30 specialties offering associate degree (3-year program), which contains such disciplines as economics, law, literature, science, engineering, agriculture and management. At present, the total number of full-time students at ZWU is over 16,000.

The accepted papers of this conference are published in this Book that will be indexed by ISI. Please, check it: [www.worldses.org/indexes](http://www.worldses.org/indexes) as well as in the CD-ROM Proceedings. They will be also available in the E-Library of the WSEAS. The best papers will be also promoted in many Journals for further evaluation.

Only in September of 2008, 21 (twenty one) books from WSEAS Press included in ISI: <http://worldses.org/indexes>. A very strong and important feature is that the WSEAS is going to give you a new username and password without expiry date for on-line access in the WSEAS Conference proceedings for ever. Several University Faculty Members and Senior Researchers that will be with us in the Conference will be invited as Members in the International Scientific Committee of the same conferences of WSEAS in 2009.

The WSEAS



# Table of Contents

<b>Improving Voice Activity Detection Used in ITU-T G.729.B</b> <i>H. Farsi, M. A. Mozaffarian, H. Rahmani</i>	11
<b>Modifying Voice Activity Detection in Low SNR by correction factors</b> <i>H. Farsi, M. A. Mozaffarian, H. Rahmani</i>	16
<b>ECG Pattern Classification Based on Generic Feature Extraction</b> <i>Hee-Soo Park, Soo-Min Woo, Yang-Soo Kim, Bub-Joo Kang, Sang-Woo Ban</i>	21
<b>Multilevel Minimum Cross Entropy Threshold Selection based on Honey Bee Mating Optimization</b> <i>Ming-Huwi Horng</i>	25
<b>Out-of-Band Cooperative Spectrum Sensing in Cognitive Radio System of Multiple Spectrum Bands</b> <i>Bub-Joo Kang, Hee-Soo Park, Yang-Soo Kim, Soo-Min Woo, Sang-Woo Ban</i>	31
<b>Intelligent Radio Monitoring System for Efficient Spectrum Management</b> <i>Hyun-Seok Yim, Yun-Ho Lee, Kyung-Seok Kim</i>	35
<b>Enhancement of Heat dissipation of Desktop Computer Chassis</b> <i>S. Kong Wang, Juin Haw Hu</i>	40
<b>A New Simulated Annealing Algorithm for Terminal Allocation</b> <i>Zengnian Zhang, Xudong Ke</i>	47
<b>Research on the Dynamic Model of Two Head Faces Elastic Spiale in Relative Rotation</b> <i>Zunyi Wang, Ligang Lu, Kun Wang</i>	51
<b>Distributed Remote Laboratory using Web Services for Embedded System</b> <i>Yin Wei-Feng, Sun Rong-Gao, Wan Zhong</i>	56
<b>A Sampling-based Scheduling Method for Distributed Computing</b> <i>Jifang Li</i>	60
<b>A Novel Hurricane Model for Software Engineering</b> <i>Xuejun Liu</i>	66
<b>Research on the Relationship of Tie Modality of Interfirm Network and Technological Innovation</b> <i>Xinmin Peng</i>	71
<b>Key Technology Research and Analysis of H.264/AVC Suitable for Wireless Network</b> <i>Yun-Peng Liu, San-Yuan Zhang, Shu-Chang Xu, Yin Zhang</i>	76
<b>Research and Application of SQLite Embedded Database Based on ARM-Linux</b> <i>Bi Chun-Yue</i>	81
<b>Mechanism Disquisition of De-rusting By Ultra-high Pressure Waterjet</b> <i>Fang Yuefeng, Wang Xiaoyong</i>	86

<b>A New Topological Formula and an Algorithm for Computing ST Reliability of Wireless Networks</b>	91
<i>Fei Gao, YinQiu Yang, HaoLiang Hu, JiangGang Yang</i>	
<b>Innovative Design Service Platform of Agile Virtual Enterprise Supported by Semantic Web Services</b>	95
<i>Zheng Lei-Na, Ye Tao, Pan Tie-Jun, Zhang Hua-Jun, Shao Zhong, Lou Jie</i>	
<b>The Optimal Stopping Times of American Call Options</b>	101
<i>Guangqin Li</i>	
<b>On the Improved Gauss-Seidel method for Linear Systems</b>	105
<i>Qingbing Liu</i>	
<b>Research on Personalization E-Learning System Based on Agent Technology</b>	110
<i>Zhen Liu, Yuying Liu</i>	
<b>Research and Design of Meter Reading System</b>	115
<i>Sun De-Chao, Zheng Shao-Hua</i>	
<b>Greenhouse Temperature and Humidity Intelligent Control System</b>	120
<i>Sun Rong-Gao, Wan Zhong, Sun De-Chao</i>	
<b>Research of Multi- interface Data Encryption Equipment Based on Mobile Terminal</b>	126
<i>Zhong Wan, Weifeng Yin, Ronggao Sun</i>	
<b>Real-Time Simulation of 3D Smoke on GPU</b>	130
<i>Qing Yang</i>	
<b>Research on Anycast Routing Algorithm Based on Genetic Algorithm</b>	135
<i>Zhu Chun, Jin Min</i>	
<b>Important Properties of Planar Normal Tiling</b>	140
<i>Hao Li</i>	
<b>A Pilot Study of Meaning of Information in Information Systems based on Heidegger's Work on 'Being'</b>	145
<i>Ping Cang, Sufen Wang</i>	
<b>An Efficient Conic Curve Threshold Digital Signature</b>	149
<i>Xinxia Song, Zhigang Chen</i>	
<b>Double-Loop Temperature Control of an On-Off Heating System</b>	154
<i>Chih-Yuan Lin, Chien-Yuan Juan</i>	
<b>Different Wideband Direction of Arrival (DOA) Estimation methods: An Overview</b>	159
<i>Sandeep Santosh, O. P. Sahu, Monika Aggarwal</i>	
<b>Comparison of T-Shaped Microstrip Antenna and U-Shaped Microstrip Antenna</b>	168
<i>Mohamed Ismaeel, T. Jayanthi</i>	
<b>Generic Characteristic Analysis on Traction Substation Operation</b>	172
<i>Hongsheng Su</i>	

<b>Modulation Technique for Software Defined Radio Application</b>	179
<i>Muhammad Islam, M. A. Hannan, Salina Abdul Samad, Aini Hussain</i>	
<b>Transformer Fault Diagnosis Method Based on Rough Set and Bayesian Optimal Classifier</b>	183
<i>Hongsheng Su</i>	

## Authors Index CISST 2009

Aggarwal, M.	159		Li, H.	140		Wan, Zh.	56	120	126
Ban, S. W.	21	31	Li, J. F.	60		Wang, K.	51		
Bi, Ch. Y.	81		Lin, Ch. Y.	154		Wang, S. F.	145		
Cang, P.	145		Liu, Q. B.	105		Wang, S. K.	40		
Chen, Zh. G.	149		Liu, X. J.	66		Wang, X. Y.	86		
Fang, Y. F.	86		Liu, Y. P.	76		Wang, Z. Y.	51		
Farsi, H.	11	16	Liu, Y. Y.	110		Woo, S. M.	21	31	
Gao, F.	91		Liu, Zh.	110		Xu, Sh. Ch.	76		
Hong, M. H.	25		Lou, J.	95		Yang, J. G.	91		
Hu, H. L.	91		Lu, L. G.	51		Yang, Q.	130		
Hu, J. H.	40		Mozaffarian, M. A	11	16	Yang, Y. Q.	91		
Ismaeel, M.	168		Pan, T. J.	95		Ye, T.	95		
Jayanthi, T.	168		Park, H. S.	21	31	Yim, H. S.	35		
Jin, M.	135		Peng, X. M.	71		Yin, W. F.	56	126	
Juan, Ch. Y.	154		Rahmani, H.	11	16	Zhang, H. J.	95		
Kang, B. J.	21	31	Sahu, O. P.	159		Zhang, S. Y.	76		
Ke, X. D.	47		Santosh, S.	159		Zhang, Y.	76		
Kim, K. S.	35		Shao, Zh.	95		Zhang, Z. N.	47		
Kim, Y. S.	21	31	Song, X. X.	149		Zheng, L. N.	95		
Lee, Y. H.	35		Sun, D. Ch.	115	120	Zheng, Sh. H.	115		
Li, G. Q.	101		Sun, R. G.	56	120 126	Zhu, Ch.	135		