

# Table of Contents

## Energy Efficient Software System and Applications

Energy-Aware Mobile Application Development by Optimizing GCC for the ARM Architecture.....	1
<i>Mahalingam P.R. and Shimmi Asokan</i>	
Compiler Efficient and Power Aware Instruction Level Parallelism for Multicore Architecture.....	9
<i>D.C. Kiran, S. Gurunarayanan, Faizan Khaliq, and Abhijeet Nawal</i>	
MotherOnt: A Global Grid Environment for Interconnecting the Ontologies Semantically to Enable the Effective Semantic Search.....	18
<i>Rohit Rathore, Rayan Goudar, Sreenivasa Rao, Priyamvada Singh, and Rashmi Chauhan</i>	

## Wireless Communication Systems

FFMS: Fuzzy Based Fault Management Scheme in Wireless Sensor Networks.....	30
<i>Prasenjit Chanak, Indrajit Banerjee, Tuhina Samanta, and Hafizur Rahaman</i>	
Evaluation of WSN Protocols on a Novel PSoC-Based Sensor Network.....	39
<i>Rakhee, P. Sai Phaneendra, and M.B. Srinivas</i>	
Improving Lifetime of Structured Deployed Wireless Sensor Network Using Sleepy Algorithm.....	47
<i>Jis Mary Jacob and Anita John</i>	
Cellular Automata Approach for Spectrum Sensing in Energy Efficient Sensor Network Aided Cognitive Radio.....	54
<i>Jaison Jacob, Babita R. Jose, and Jimson Mathew</i>	

## Green Energy Technologies

Economic Analysis of a Biomass/PV/Diesel Autonomous Power Plant.....	62
<i>Subhadeep Bhattacharjee and Anindita Dey</i>	
A Slope Compensated Current Mode Controlled Boost Converter.....	69
<i>K.G. Remya, Chikku Abraham, and Babita R. Jose</i>	

Minimizing Energy of Scalable Distributed Least Squares Localization .....	77
<i>Diana Olivia, Ramakrishna M., and Divya S.</i>	
Multiple Fault Diagnosis and Test Power Reduction Using Genetic Algorithms .....	84
<i>J.P. Anita and P.T. Vanathi</i>	
A Novel Design of Reduced Order Controllers Using Exponential Observers for Large-Scale Linear Discrete-Time Control Systems .....	93
<i>Kavitha Madhavan and Sundarapandian Vaidyanathan</i>	
Adiabatic Technique for Designing Energy Efficient Logic Circuits .....	100
<i>Shari Jahan C.S. and N. Kayalvizhi</i>	
<b>Image and Signal Processing</b>	
Comparative Study of Recent Compressed Sensing Methodologies in Astronomical Images .....	108
<i>Nidhin Prabhakar T.V., Hemanth V.K., Sachin Kumar S., K.P. Soman, and Arun Soman</i>	
Speaker Recognition in Emotional Environment .....	117
<i>Shashidhar G. Koolagudi, Kritika Sharma, and K. Sreenivasa Rao</i>	
CBMIR: Content Based Medical Image Retrieval System Using Texture and Intensity for Dental Images .....	125
<i>B. Ramamurthy, K.R. Chandran, V.R. Meenakshi, and V. Shilpa</i>	
A Ridgelet Based Symmetric Multiple Image Encryption in Wavelet Domain Using Chaotic Key Image .....	135
<i>Arpit Jain, Musheer Ahmad, and Vipul Khare</i>	
Investigation of Quality of Metric in H.323 (VoIP) Protocol Coexisting of WLAN with WiMax Technologies of Different Network Loaded Conditions .....	145
<i>K. Sakthisudhan, G. DeepaPrabha, A.L. Karthika, P. Thangaraj, and C. MariMuthu</i>	
Kernel Based Automatic Traffic Sign Detection and Recognition Using SVM .....	153
<i>Anjan Gudigar, B.N. Jagadale, Mahesh P.K., and Raghavendra U.</i>	
Color Segmentation of 2D Images with Thresholding .....	162
<i>Hepzibah A. Christinal, Daniel Díaz-Pernil, Pedro Real Jurado, and S. Easter Selvan</i>	

Vowel Recognition from Telephonic Speech Using MFCCs and Gaussian Mixture Models . . . . .	170
<i>Shashidhar G. Koolagudi, Sujata Negi Thakur, Anurag Barthwal, Manoj Kumar Singh, Ramesh Rawat, and K. Sreenivasa Rao</i>	
A Robust Binary Watermarking Scheme Using BTC-PF Technique . . . . .	178
<i>Chinmay Maiti and Bibhas Chandra Dhara</i>	
Uniform Based Approach for Image Fusion . . . . .	186
<i>Radhika Vadhi, Veeraswamy Kilari, and Srinivaskumar Samayamantula</i>	
A Fast Image Reconstruction Algorithm Using Adaptive R-Tree Segmentation and B-Splines . . . . .	195
<i>Ravikant Verma and Rajesh Siddavatam</i>	

## Bioinformatics and Emerging Technologies

A Novel Algorithm for Hub Protein Identification in Prokaryotic Proteome Using Di-Peptide Composition and Hydrophobicity Ratio . . . . .	204
<i>Aswathi B.L., Baharak Goli, Renganayaki Govindarajan, and Achuthsankar S. Nair</i>	
Synchronization of Hyperchaotic Liu System via Backstepping Control with Recursive Feedback . . . . .	212
<i>Suresh Rasappan and Sundarapandian Vaidyanathan</i>	
New Feature Vector for Recognition of Short Microbial Genes . . . . .	222
<i>Baharak Goli, Aswathi B.L., Chinu Joy, and Achuthsankar S. Nair</i>	
Fault Resilient Galois Field Multiplier Design in Emerging Technologies . . . . .	230
<i>Mahesh Poolakkaparambil, Jimson Mathew, and Abusaleh Jabir</i>	

## Secure and Reliable Systems

A Novel Security Architecture for Biometric Templates Using Visual Cryptography and Chaotic Image Encryption . . . . .	239
<i>Divya James and Mintu Philip</i>	
A New Fault-Tolerant Routing Algorithm for MALN-2 . . . . .	247
<i>Nitin and Durg Singh Chauhan</i>	
Multilanguage Block Ciphering Using 3D Array . . . . .	255
<i>C. Nelson Kennneddy Babu, M. Rajendiran, B. Syed Ibrahim, and R. Pratheesh</i>	

A Novel Invisible Watermarking Based on Cascaded PVD Integrated  
LSB Technique ..... 262  
*J.K. Mandal and Debashis Das*

Fault Tolerant High Performance Galois Field Arithmetic Processor .... 269  
*Vinu K. Narayanan, Rishad A. Shafik, Jimson Mathew, and  
Dhiraj K. Pradhan*

**Mathematical Modeling and Scientific Computing**

Numerical Study on Separation of Analytes through Isotachophoresis ... 282  
*S. Bhattacharyya and Partha P. Gopmandal*

Finite Dimensional Realization of a Guass-Newton Method for Ill-Posed  
Hammerstein Type Operator Equations ..... 293  
*Monnanda Erappa Shobha and Santhosh George*

Projection Scheme for Newton-Type Iterative Method for Lavrentiev  
Regularization ..... 302  
*Suresan Pareth and Santhosh George*

Modelling the Wind Speed Oscillation Dynamics ..... 311  
*K. Asokan and K. Satheesh Kumar*

Some Modelling Aspects of Aggregation Kernels and the Aggregation  
Population Balance Equations ..... 319  
*Nageswara Rao Narni, Gerald Warnecke, Jitendra Kumar,  
Mirko Peglow, and Stefan Heinrich*

Mixed Covering Arrays on Hypergraphs..... 327  
*Yasmeen and Soumen Maity*

Kalman Filter and Financial Time Series Analysis..... 339  
*M.P. Rajan and Jimson Mathew*

Fuzzy Properties on Finite Type of Kac-Moody Algebras ..... 352  
*A. Uma Maheswari and V. Gayathri*

**Pervasive Computing and Applications**

Enabling Location Privacy in Pervasive Computing by Fragmenting  
Location Information of Users ..... 364  
*Jeeva Susan Jacob and Preetha K.G.*

R-norm Intuitionistic Fuzzy Information Measures and Its  
Computational Applications ..... 372  
*Rakesh Kumar Bajaj, Tanuj Kumar, and Nitin Gupta*

Soft Computing Techniques for Distillation Column Composition Control .....	381
<i>Subhadeep Bhattacharjee and Bhaswati Medhi</i>	
Efficient Segmentation of Characters in Printed Bengali Texts .....	389
<i>Ayan Chaudhury and Ujjwal Bhattacharya</i>	
A GIS Based Approach of Clustering for New Facility Areas in a Digitized Map .....	398
<i>J.K. Mandal, Anirban Chakraborty, and Arun Kumar Chakrabarti</i>	
Enhanced Rule Accuracy Algorithm for Validating Software Metrics ....	406
<i>Abdul Jabbar and Sarala Subramani</i>	
Ontology Based Retrieval for Medical Images Using Low Level Feature Extraction .....	413
<i>Priyamvada Singh, Rohit Rathore, Rashmi Chauhan, Rayan Goudar, and Sreenivasa Rao</i>	
Ontology Based Automatic Query Expansion for Semantic Information Retrieval in Sports Domain .....	422
<i>Rashmi Chauhan, Rayan Goudar, Rohit Rathore, Priyamvada Singh, and Sreenivasa Rao</i>	
Privacy Preserving Technique in Data Mining by Using Chinese Remainder Theorem .....	434
<i>P. Rajesh, G. Narasimha, and Ch. Rupa</i>	
<b>Author Index</b> .....	443