

Nitin Afzalpulkar · Vishnu Srivastava
Ghanshyam Singh · Deepak Bhatnagar
Editors

Proceedings of
the International
Conference on Recent
Cognizance in Wireless
Communication &
Image Processing

ICRCWIP-2014



Springer

Contents

A Novel Image Zooming Technique Using Wavelet Coefficients	1
Himanshu Jindal, Singam Singh Kasana and Sharad Saxena	
Analysis of Operational Transformation Algorithms	9
Santosh Kumawat and Ajay Khunteta	
A Digital Image Watermarking Technique Using Cascading of DCT and Biorthogonal Wavelet Transform	21
Arvind Kumar, Pragya Agarwal and Ankur Choudhary	
Multi-domain Image Enhancement of Foggy Images Using Contrast Limited Adaptive Histogram Equalization Method	31
Garima Yadav, Saurabh Maheshwari and Anjali Agarwal	
Comparison of Various Reliability Measures of a Computer System with the Provision of Priority	39
Ashish Kumar and Monika Saini	
Dual-Band Filter Using DGS for X-Band Applications	51
Suman Kumari, Amit Singh Bhadouria and Mihilesh Kumar	
A Review on Performance Evaluation of Routing Protocols in MANET	59
Shruti Thapar and Anshuman Kalla	
Retinal Nerve Fiber Layer Analysis in Digital Fundus Images: Application to Early Glaucoma Diagnosis	69
Dharmanna Lamani, T.C. Manjunath, M. Mahesh and Y.S. Nijagunarya	
Design, Development of MC-CDMA, and Reduction of ISI for Different Modulation Techniques	81
Arun Kumar and Manisha Gupta	

xvii

Contents

xiv

Design and Analysis of a Nano-Fiber with All-Normal and Flat Dispersion for Supercontinuum Generation	201
Than Singh Saini, Ajeet Kumar and Ravindra Kumar Sinha	
Investigation of Semiconductor Optical Amplifier for DWDM System with 50 GHz Channel Spacing	209
Aruna Rani and Sanjeev Dewra	
Automatic License Plate Recognition System Using Raspberry Pi	217
Vijayaraghavan Sundararaman, T.G. Vijayalakshmi, G.V. Swathi and Sambit Mohapatra	
Multiple Sink Data Aggregation	223
Krishna Joshi, T.P. Sharma, Shadab Siddiqui and Shahin Fatima	
Handwritten Devnagari Script Database Development for Off-Line Hindi Character with Matra (Modifiers)	233
Maninder Singh Nehra, Neeta Nain and Mushtaq Ahmed	
Part-of-Speech Tagging of Hindi Corpus Using Rule-Based Method	241
Deepa Modi and Neeta Nain	
A Survey on Security Analysis in Cloud Computing	249
Suryambika, Abhishek Bajpai and Shruti Singh	
Copper Nanofilm Antenna Design and Development: For X-Band Wireless Sensor Applications	263
Rajendra R. Patil, R.M. Vani and P.V. Hunagund	
Vein Biometric Template Security Using Overlapped Shares Accounting for Minimum Storage	271
Ruchika Solanki, Saurabh Maheshwari, Vineet Khanna and Kalpana Sharma	
Miniaturization of MEMS-Based Smart Patch Antennas for Biomedical Applications	279
Shankar Bhattacharjee and Santanu Maity	
Authentication of Primary User at Physical Layer Through Approximation in Cognitive Radio	287
Mazzammil Hussain and Suditi Choudhary	
Data-Based Correlation Scheme	297
Krishna Joshi, Shadab Siddiqui and Shahin Fatima	
A Comparative Analysis of Different LFSR-Based Ciphers and Parallel Computing Platforms for Development of Generic Cipher Compatible on both Hardware and Software Platforms	305
Trishla Shah, Darshana Upadhyay and Priyanka Sharma	

xviii

Contents

A Compact Dual Wide Band Patch Antenna with Modified Ground Plane	93
Priyanka Jain, Shagun Maheshwari and Archana Agarwal	
Contention Sensitive Routing for Mobile Ad Hoc Networks	99
Richa Sharma, Neha Janu and Chhagan Doot	
An Analytical Approach for Accurate Design of MSPA Using Dielectric Constant Engineering (DCE)	107
Monika Mathur, Ghanshyam Singh and S.K. Bhatnagar	
Design of CAN-Based Enhanced Event Data Recorder and Evidence Collecting System	115
Pankaj H. Chandankhede and M.M. Khanapurkar	
Detection of Brain Tumor in MRI Images, Using Fuzzy C-Means Segmented Images and Artificial Neural Network	123
Parveen and Amritpal Singh	
Multiple Inputs Combinational Logic Minimization by Minterms Set	133
Sahadev Roy, Rajesh Saha and Chandan Tilak Bhunia	
Design and Simulation of 16 × 8 Synchronous SRAM in 90 nm CMOS Technology	141
Vipul Bhatnagar, Pradeep Kumar and Sujata Pandey	
A Voltage-Mode Nonlinear-Synapse Neural Circuit for Bi-partitioning of Graphs	151
Mohd Samar Ansari	
CNFET-Based Resistive Sensor Interface with Voltage/Current-Mode Readouts	159
Mohd Samar Ansari and S.K. Tripathi	
Design of CMOS Ring Oscillators with Low Phase Noise and Power Dissipation for Data Transmission in RF Range	167
Dhruva Ghosh, Malay Ranjan Tripathy and Sujata Pandey	
A Novel Hybrid Method for Segmentation of Ultrasound Images	175
Yogendra Singh Poonia, Ramesh Kumar Sunkaria, Deepti Mittal and Dipesh Kumar Patidar	
Temperature Sensor Using a SMF-PCF-SMF Heterostructure	187
Rekha Mehra and Heena Shahani	
Investigation of Channel Drop Filter Based on Two Dimensional Photonic Crystal Structure	193
Ritu Sharma, Mayur Kumar Chhipa and Lalit Kumar Dasad	

xx

Contents

Generation of Automatic Variable Key to Make Secure Communication	317
Bishal Kumar Singh, Subhasish Banerjee, Manash P. Dutta and C.T. Bhunia	
Vector Evaluated Genetic Algorithm-Based Distributed Query Plan Generation in Distributed Database	325
Vikash Mishra and Vikram Singh	
A Novel MEMS-Based Frequency Tunable Rectangular Patch Antenna	339
Rajesh Saha, Santanu Maity and Lipi Sarkar	
Design and Optimization of Band-Stop Filter Using Metamaterial Structures for K-Band Applications	347
Ngasepam Monica Devi and Santanu Maity	
Low-Cost Crash Protection System for Heavy Motor Vehicles	353
Vishwajit Nandi, Rijita Poddar, Rajesh Saha and Sahadev Roy	
Effect of Parasitic Elements on Non-inverting Buck-Boost Converter Used in PV System	359
Subramanya Bhat and H.N. Nagaraja	
Effective Medium Approximation for Defining the Unavoidable Resistance of Solar Cell Front Contact	367
S. Maity, P. Chakraborty, R. Raushan, C.T. Bhunia and P.P. Sahu	
A Novel Low-Power Design Approach to Exploit the Power Usage of AMBA APB Bridge	373
Kiran Rawat, Kamika Sahni, Sujata Pandey and Ziauddin Ahmad	
Solar Wind and Diesel Hybrid Energy System: A Review	381
R.A. Gupta, Bhim Singh and Bharat Bhushan Jain	
Analysis and Optimization of Stability for 6T SRAM Cell Using 180 nm Technology	391
Nidhi Tiwari, Srishiti Gusain, Surabhi Chakravorty, Ankita Nirankari and Apoorva Khundelwal	
Harvesting Electric Field Energy for Powering Wireless Sensors of Smart Grid	399
Anil Boyal, Akanksha Deo, Amit Kr. Pandey and Amit Limba	
Chalcogenide (LiGaSe ₂ , LiGSe, LiGaS ₂): A Perfect Material to Design Highly Nonlinear PCFs for Supercontinuum Generation	409
Sandeep Vyas, Manish Tiwari, Takasumi Tanabe and Ghanshyam Singh	

Mach-Zehnder Interferometer: A Review of a Perfect All-Optical Switching Structure	415
A.I. Stanley, Ghanshyam Singh, James Eke and Hiroyuki Tsuda	
Design and Analysis of Different Decoders for SAC-OCDMA Systems	427
Soma Kumawat and M. Ravi Kumar	
An Efficient Trust-Based Routing Scheme by Max-Min Composition of Fuzzy Logic for MANET	435
Joydeep Kundu, Koushik Majumder and Debashis De	
Modified D-Latch Enabled BEC1 Carry-Select Adder with Low Power-Delay Product and Area Efficiency	441
Sakshi Bhatnagar, Harsh Gupta and Swapnil Jain	
Identification of Devanagari Script from Bilingual Printed Text Documents	451
Ranjana S. Zinjore and R.J. Ramteke	
Ultra-Wideband Equal Power Divider Using Stepped-Impedance Technology	463
Atul Kumar Agrawal and Deepak Bhatia	
Implementation and Performance Analysis of Enhanced SHA-192	471
Harshita and Sarvesh Tanwar	
Human Object Detection in Images Using Shift-Invariant Stationary Wavelet Transform	481
Om Prakash, Manish Khare, Nguyen Thanh Binh and Ashish Khare	
A Novel Framework for Extracting GeoSpatial Information Using SPARQL Query and Multiple Header Extraction Sources	489
Poonam Malpani, Paras Bassi, Mehul Mahrishi and Vipin Jain	
Secure Data Sharing with Data Integrity in Public Clouds Using Mediated Certificate-Less Encryption	501
Atesh Kumar, Saurabh Mishra, Priyank Dubey and Niraj Kumar	
K-N Secrete Sharing Scheme of Visual Cryptography for Hiding Image Using 2×2 Blocks Replacement	511
Ashish Sharma and Devesh Kumar Srivastava	
Stepping Stone Detection Techniques: Classification and State-of-the-Art	523
Rahul Kumar and B.B. Gupta	
CBIR Feature Extraction Using Neuro-Fuzzy Approach	535
Ajay Kumar Bansal and Swati Mathur	

Review of Circular Polarization Techniques for Design of Microstrip Patch Antenna	663
Madhuri Sahal and V.N. Tiwari	
A Proposed Modification Over Learning Vector Quantization and K-Means Algorithms for Performance Enhancement	671
Shirish Nagar and Ajay Khunteta	
Taxonomy of Recent DDoS Attack Prevention, Detection, and Response Schemes in Cloud Environment	683
Omkar P. Badve and B.B. Gupta	
Design of Compact Concentric Circular Ring Patch Antenna with Defected Ground Plane	695
Neelam Choudhary, Ajay Tiwari, Brajraj Sharma, J.S. Saini and D. Bhatnagar	
On the Bandwidth Enhancement of Modified Star-Triangular Fractal Antenna	703
Simarpreet Kaur, Rajni and Gurwinder Singh	
A Simple Miniaturized Dual Band Antenna for WiMAX/WLAN Applications	711
Nirma Kumawat and Krishna Rathore	
Fault Detection for the Cluster-Based System in Wireless Sensor Networks	719
Rimpi Goyal and Sukhwinder Singh Sran	
Gain and Bandwidth Enhancement of Single-Layered Slotted Triangular-Shaped Microstrip Patch Antenna with Stub for WLAN Applications	729
Dheeraj Bhardwaj, Gitansh Gulati, Lakshmi Bhardwaj and Komal Sharma	
Design of Dual Resonator Broadband Multilayer Electromagnetically Coupled Microstrip Antenna for X-Band Applications	741
Dheeraj Bhardwaj, Aayush Dwivedi, Nidhi Jain and Komal Sharma	
An Environment Aware Frequency Selective Headset	751
Sambit Mohapatra, G.V. Swathi and Vijayaraghavan Sundararaman	
Performance Analysis and Optimization of 40 Gbps Transmission System over 4000 km with FBG	759
Mukesh Kumar Gupta, Jyoti Agarwal, Anila Dhingra and Ghanshyam Singh	
Broadband Modified U-Shaped Patch Antenna for Wireless Communication	767
Devendra Mehra and Sanyog Rawat	

Multiband and Wideband Antenna for Wi-Fi, WLAN, X-Band and Space Research Applications	543
Goswami Siddhant Arun, Deepak C. Karia and Bhushan Dhengale	
Triple Band Slotted Antenna for Wireless Applications	559
Ankur Dalmiya and Om Prakash Sharma	
A Compact Design of Modified E-shaped Ground Plane Patch Antenna for Broadband Applications	567
Sanjay Sharma and Sanyog Rawat	
Frequency Switching in Coupled Microstrip Line Loaded with Split-Ring Resonator	573
Gurwinder Singh, Rajni and Anupma Marwaha	
A New Compact Dual Band Microstrip BPF for GSM (1.8GHz) and WiMAX Using Asymmetric Stepped Impedance Resonators	581
Tasher Ali Sheikh, Jamnani Borah, Sahadev Roy and Abhishek Kumar Pandey	
Performance Analysis of ZigBee Mesh Networks Under Nodes Failure	589
Jashan Preet Kaur, Rajdeep Kaur and Gurpreet Singh Mann	
Probabilistic-Based Energy Efficient Dynamic Route Discovery in MANET's	599
Madan Mohan Agarwal, M.C. Govil and Anuj Kumar Jhankal	
A Survey Paper on Computational Intelligence Approaches	609
S. Taruna and Nidhi Bhartiya	
Simulation of p-GaN/In_xGa_(1-x)N/n-GaN Solar Cell for Maximum Efficiency	619
Manoj Thosar, R.K. Khanna and Ashwini Joshi Thosar	
Assessing the Severity of Attacks in Wireless Networks	627
Jeril Kariakose, V. Amruth, R. Jaya Krishna and Devesh Kumar Srivastava	
SD and TCH Blocking KPI Improvement Without Adding TRX Unit in BTS in GSM Network	635
Jitendra Vaswani and Gaurav Sharma	
Design and Analysis of Right-Angled EBG Structure	645
Ajay Yadav, Dinesh Sethi, Priyanka Rabi and R.K. Khanna	
High-Speed Packet Encoded Error Correction Technique for Wireless HD Video Streaming	657
C.P. Latha, M.B. Manjunatha and A. Mohsin Khan	

Performance Improvement of Epidemic Routing Protocol of Delay Tolerant Networks Using Improved Buffer Management	773
Harminder Singh Bindra	
Elliptically Slotted Self-affine 8-Shaped Fractal Multiband Antenna	783
Rohit Gurjar, Ravi Singh and Saurabh Kumar	
Design of Compact Triangular Patch Antenna for WiMax Applications	791
Manisha Gupta and Vinita Mathur	
Post-accident Assistance Using On-Board Diagnostics and Smartphones	797
Arghya Biswas and Abhishek Pal	
Digital Image Forensics and Counter Anti-forensics	805
Neha Singh and Sandeep Joshi	
Can We Use Mass-Based Similarity Measure in Classification?	813
Ashish Kumar, Roheet Bhatnagar and Sumit Srivastava	
CNT-Based Biomedical Sensor for Cancer Detection	821
Argha Sarkar, B. Madhuri, Shivam Kumar and Santanu Maity	
Effective Role of Thrashing in Load Balancing During VM Live Migration	829
Pradeep Kumar Tiwari and Sandeep Joshi	
Real-Time Abandoned Object Detection Using Video Surveillance	837
Aditya Gupta, V.R. Stapucic, K.D. Kulat and Neeraj Bokde	
Request Allocation and Resource Management Techniques in Cloud Computing	845
Swati Khemka and Mehul Mahrishi	
Blind Image Watermarking of Variable Block Size for Copyright Protection	853
Anut M. Joshi, Monica Bapna and Manisha Meena	
Compact Goblet-Shaped Single Band-Notched UWB Antenna	861
Rajesh Kumar Raj, Krishna Rathore, Bhavana Peswani, Roopkishor Sharma and H.R. Chaudhary	
An Application of Firefly Algorithm for Clustering in Wireless Sensor Networks	869
Arshad Nadeem, T. Shankar, Rakesh Kumar Sharma and Sourabh K. Roy	
Microstrip Antenna with Defected Ground Structure (DGS) for Multiband Operation	879
Vinay Sharma and Rajesh Kumar Vishwakarma	

Design of a Compact Novel Planar Dual Band-Notched UWB Antenna	889
Sanjiv Tomar and Ajay Kumar	
X-Band and Ku-Band Patch Antenna for Radio Location Applications	897
Amit Singh Bhadouria, Suman Kumari and Mithilesh Kumar	
Procuring Wireless Sensor Actuator Network Security	905
Jasminder Kaur Sandhu and Sharad Saxena	
Performance Analysis of VoIP over WiMAX Networks Under Nodes Failure	917
Jinia and Jarnail Singh	
Design of Reduced Order Controller for Mechanical System	925
Jyoti Kataria, Manish Kumar Madhav and Sunny Kumar Verma	
A Survey on Black Hole Attack in MANET	933
Shruti Singh, Abhishek Bajpai and Suryambika	
Area-Efficient FPGA Model of LMS Filtering Algorithm	943
Devendra Goyal and Manish Singhal	
An Efficient Hybrid-Cascaded Framework for Emission Computed Tomography Using OSEM Image Reconstruction Algorithm	953
Shailendra Tiwari and Rajeev Srivastava	
A Review of Energy-Efficient Routing Protocols in Wireless Sensor Networks	963
Simerjeet Kaur, Rajni and Barinder Paul Singh	
A Study of Phase Shifting Surface	973
Neha Singh and Kamal Kishor Choure	
Review on Student Attendance Maintenance System: A Discontentment	987
Anshuman Kalla and Dileep Kumar Tiwari	
Author Index	999

Gain and Bandwidth Enhancement of Single-Layered Slotted Triangular-Shaped Microstrip Patch Antenna with Stub for WLAN Applications

Dheeraj Bhardwaj, Gitansh Gulati, Lakshit Bhardwaj and Komal Sharma

Abstract The paper presents a triangle-shaped patch antenna designed for WLAN systems operating in the range of 5150–5350 MHz (IEEE 802.11 a,n) and 5725–5825 MHz (IEEE 802.11 a,n). This paper presents a single-layered equilateral triangle-shaped microstrip patch antenna having rectangular slots and one stub. The simulated antenna is resonating at two resonance frequencies 5.20 and 5.76 GHz with 18.01 % impedance bandwidth and, 7.94 and 6.24 dBi directivity, respectively. The performance along with the design of the patch antenna is optimized considering different slot variance to obtain an antenna with high gain and efficient bandwidth. The E-plane and H-plane radiation pattern have also been synthesized in accordance with the other parameters. The substrate material of FR4 Lossy with relative permittivity 4.4 and loss tangent of 0.025 is used in this proposed antenna. All the simulation work is carried using IE3D software.

Keywords Microstrip antenna · Slots · Dual frequency · Stub

Dheeraj Bhardwaj (✉)
Department of Applied Physics, BIT-Mesra (Jaipur Campus),
Jaipur 302017, India
e-mail: dbhardwaj.bit@gmail.com

Gitansh Gulati
ECE, BIT Mesra, Jaipur, India
e-mail: gitanshgulati@gmail.com

Lakshit Bhardwaj
ECE, LNMIIT, Jaipur, India
e-mail: lakshit.lnmiit@gmail.com

Komal Sharma
Department of Physics, SKIT, Jaipur, India
e-mail: kbhardwaj18@gmail.com

© Springer India 2016
N. Afzalpulkar et al. (eds.), *Proceedings of the International Conference on Recent Cognizance in Wireless Communication & Image Processing*,
DOI 10.1007/978-81-322-2638-3_81