

# Contents

## Part I Communication System and Application

<b>1 Dispersion Managed Optical Links with Randomly Distributed Residual Dispersion Per Span for 960 Gbps WDM Transmission . . . . .</b>	<b>3</b>
Seong-Real Lee	
<b>2 In-Band MAC-Layer Sensing for the Cognitive Radio Networks . . . . .</b>	<b>11</b>
Xiang Gao and Hyung-Kun Park	
<b>3 Design of Circular Patch Microstrip Antenna for 2.4 GHz RFID Applications . . . . .</b>	<b>21</b>
Yuwono Rudy, Adiguna Baskoro and Achmad Dahlhan Erfan	
<b>4 Vitalization of E-Marketplace to Strengthen Trade Between Korea and China in Electronic Commerce . . . . .</b>	<b>29</b>
Sangwon Lee, Hyun-Chang Lee, Seong Jin Park, Chan Yong Jin and Seong-yoon Shin	
<b>5 Marketing and Inventory Managements in Smart Phone Environment . . . . .</b>	<b>37</b>
Seong-yoon Shin, Hyun-Chang Lee, Sangwon Lee, Chan Yong Jin and Chenlin Xu	
<b>6 Relationship Between Car Color and Car Accident on the Basis of Chromatic Aberration . . . . .</b>	<b>45</b>
Seong-yoon Shin, Yang-Won Rhee, Dai-Hyun Jang, Sangwon Lee, Hyun-Chang Lee and Chan Yong Jin	

<b>7</b>	<b>Feasibility Study of 32 Trellis-Coded OFDM Waveform for Tactical Information Communication . . . . .</b>	53
	Byounggi Kim, Cheolhun Na and Sangjin Ryoo	
<b>8</b>	<b>Quantization Error According to Bit Truncation Method in 4k-FFT Algorithm . . . . .</b>	63
	Sangjung Ra, Dongjoon Choi, Namho Hur, Sangjin Ryoo and Cheolsung Kim	
<b>9</b>	<b>Channel Compensation of Variable Symbol Timing Offset in Non-synchronized OFDM System . . . . .</b>	73
	Jae-Ho Lee, Dong-Joon Choi, Nam-Ho Hur and Whan-Woo Kim	
<b>10</b>	<b>Comparison of Job Scheduling Policies in Cloud Computing . . . . .</b>	81
	Yang Cao, CheulWoo Ro and JianWei Yin	
<b>11</b>	<b>Robust Observer Based Model Predictive Control of a 3-DOF Helicopter System. . . . .</b>	89
	Yujia Zhai	
<b>12</b>	<b>Improving Cell Phone Based Gait Identification with Optimal Response Time Using Cloudlet Infrastructure . . . . .</b>	101
	Thang Hoang, Viet Vo, Chuyen Luong, Son Do and Deokjai Choi	
<b>13</b>	<b>Logical Analysis of Discrete Event System Using Compositional Minimization . . . . .</b>	111
	Wan-Bok Lee	
<b>14</b>	<b>Accurate Indoor Positioning Technique Using RSSI Assisted Inertial Measurement . . . . .</b>	121
	Wallace Wong, Lin Shen Liew, Chean Hung Lai and Llewellyn Liu	

## **Part II Networking and Services**

<b>15</b>	<b>An Efficient Access Control Mechanism for Application Software Using the Open Authentication . . . . .</b>	133
	Seon-Joo Kim, Jin-Mook Kim and In-June Jo	
<b>16</b>	<b>Tracking Multi-Objects in Web Camera Video Using Particle Filtering. . . . .</b>	141
	Yang Weon Lee	

<b>17</b>	<b>Mutual Authentication Scheme for Cloud Computing . . . . .</b>	149
	Shirly Lee, Tae Yong Kim and Hoon-Jae Lee	
<b>18</b>	<b>A Novel Algorithm for Detection of Elephant Flows: Landmark-LRU with Recycle . . . . .</b>	159
	Yunki Choi and Jinoo Joung	
<b>19</b>	<b>ISPM: An Improved Secure Payment Mechanism to Prevent the Black Hole Attack and Selfish Node in WMN . . . . .</b>	169
	Junguo Liao and Junwen Li	
<b>20</b>	<b>Analysis of Internet Banking Security Crack Through Messenger Hacking . . . . .</b>	179
	Dea-Woo Park and Kyong-Ha Roo	
<b>21</b>	<b>Routing Approach in IPv6 Ubiquitous Internet-Based Home Automation Network. . . . .</b>	189
	Ardiansyah Musa Efendi, Oh Seung Kyo, Ali Fahmi Perwira Negara, Thang Hoang and Deokjai Choi	
<b>22</b>	<b>A Network-Based IP Mobility Management Scheme with IPv4/IPv6 Dual Stack Support . . . . .</b>	199
	Kyoung-Hee Lee, Hoe-Kyung Jung, Hyun-Woo Lee, Sung-Kuen Lee and Youn-Hee Han	
<b>23</b>	<b>Network System Based on M2M for Efficient Visual Information Service . . . . .</b>	209
	Min-Ho Jeon and Chang-Heon Oh	
<b>24</b>	<b>A Study of Technical Strategy for Tourism Social Network Services from the Viewpoint of Acceptance Decision Factor . . . . .</b>	219
	Hyun-Jee Park, Young-Ha Kim and Am-Suk Oh	
<b>25</b>	<b>Web Based CDN Structure for Smart Devices . . . . .</b>	229
	Yu-Doo Kim and Il-Young Moon	

### **Part III Intelligent Information System**

<b>26</b>	<b>A New User Adaptive Pointing and Correction Algorithm . . . . .</b>	237
	Jung-Jae Jo and Young-Chul Kim	

<b>27</b>	<b>Design of Real-Time MAC Protocol for Road Traffic Status Provision Using Sensor Networks . . . . .</b>	245
	Whoijin Jung, Jae Yong Lee and Byung Chul Kim	
<b>28</b>	<b>Enhancing Document Clustering Using Reweighting Terms Based on Semantic Features . . . . .</b>	257
	Sun Park, Jin Gwan Park, Min A Jeong, Jong Geun Jeong, Yeonwoo Lee and Seong Ro Lee	
<b>29</b>	<b>Time-Delay Neural Network with 3 Frequency Bands Based on Voiced Speech Discrimination in Noise . . . . .</b>	265
	Jae Seung Choi	
<b>30</b>	<b>Linear Prediction-Based Reconstruction of Electrocardiogram with Premature Ventricular Contraction for Heart Rate Variability Analysis . . . . .</b>	273
	Nipon Theera-Umpon, Panyaphon Phiphatkhunarnon and Sansanee Auephanwiriyakul	
<b>31</b>	<b>EDISON Platform: A Software Infrastructure for Application-Domain Neutral Computational Science Simulations . . . . .</b>	283
	Jung-Lok Yu, Hoon Ryu, Hee-Jung Byun, Jongsuk Ruth Lee, Kumwon Cho and Du-Seok Jin	
<b>32</b>	<b>Application of Web Search Results for Document Classification . . . . .</b>	293
	So-Young Park, Juno Chang and Taesuk Kihl	
<b>33</b>	<b>Similarity Measure Design for Non-Overlapped Data . . . . .</b>	299
	Sanghyuk Lee	
<b>34</b>	<b>A Vehicle Recognition Using Part-Based Representations . . . . .</b>	309
	Myungseon Hwang and Hyunchul Kang	
<b>35</b>	<b>Wind Turbine Performance Monitoring Based on Hybrid Clustering Method . . . . .</b>	317
	Frank I. Elijorde, Daesun Moon, Seokil Ahn, Sungho Kim and Jaewan Lee	
<b>36</b>	<b>Intelligent Road Control and Monitoring . . . . .</b>	327
	Vladimir Hahanov, Wajeb Gharibi, Ka Lok Man, Eugenia Litvinova, Svetlana Chumachenko and Olesya Guz	

**Part IV Multimedia and Digital Convergence**

- 37 Improvement in Waterproof Effect of Speaker Enclosure . . . . .** 339  
Han-Kil Kim, Seung-Eui Yang and Hoe-Kyung Jung
- 38 An Adjustment Method of a Convergence Point for Zoom-In on a Dual Lens Stereoscopic Camera . . . . .** 349  
JongSoo Ha, ChaeHoon Ban, DaeWoong Kim and Tatsuro Ishii
- 39 Reliability-Based Selective Encoding in Pixel-Domain Wyner-Ziv Residual Video Codec . . . . .** 359  
Jin-soo Kim and Jae-Gon Kim
- 40 A Mobile Navigation System with Vibration Flow . . . . .** 369  
Sang-Youn Kim and Gilho Song
- 41 A Design and Development of Korean Traditional Board Game on Android Environment . . . . .** 379  
Yang-Jib Kim, Seung-Woo Kang and Teuk-Seob Song
- 42 Study on the Librarian Helper Robot System Implementation . . . . .** 389  
Sang-Gug Park

**Part V Semiconductor and Communication Services**

- 43 Device Degradation Under High Gate and Drain Bias Stress in IGZO Transistors . . . . .** 401  
Hyun Jun Jang, Seung Min Lee and Jong Tae Park
- 44 2D Analysis of Breakdown Voltages for Device Dimension of Double Gate MOSFET Using Nonlinear Doping Profile . . . . .** 409  
Hakkee Jung and Dongsoo Cheong
- 45 Analysis on Off-Current of Double Gate MOSFET for Composition of Forward and Backward Current . . . . .** 419  
Hakkee Jung and Jongin Lee
- 46 A HW/SW Co-Design Implementation of Viola-Jones Algorithm for Driver Drowsiness Detection . . . . .** 427  
Kok Choong Lai, M. L. Dennis Wong and Syed Zahidul Islam

- 47 Analysis of Subthreshold Characteristics for Doping Concentration of DGMOSFET Using Series Form of Potential . . . . .** 437  
Jihyeong Han, Hakkee Jung, Ohshin Kwon and Choonshik Park
- 48 A Parasitic-Insensitive Charge Transfer Circuit for Capacitive Sensing Based on Switched Capacitor Integrator . . . . .** 445  
Hyeop-Goo Yeo, Eu-Sung Jung and Seung-Min Jung
- 49 Calculation 15-Fold Integrals by Method of Optimal Coefficients for Small Values of the Numbers of Knots Quadrature Formulas . . . . .** 453  
Saule Zamanova
- 50 Effect of the Filler on the Physico-Mechanical Properties of the Polyimide Composite Materials . . . . .** 461  
A. D. Muradov, G. S. Suyundikova and A. G. Kunsafina
- 51 Strong Self-Pulsations in a Multi-Electrode Distributed Feedback Laser Integrated With an Electro-Absorption Modulator . . . . .** 467  
Jun-Hyung Cho, Seo Weon Heo and Hyuk-Kee Sung
- 52 Radiation Modification of the Structure of Nanosized Metal Powders . . . . .** 471  
M. Zh. Buranbaev, B. A. Aliev, U. P. Koztaeva, G. Partizan, Zh. Entibekov, Zh. Nakysbekov and M. Aitzhanov
- 53 Effect of Low-Temperature Annealing on the Optical Properties of Composite Material, the System “Polyimides:  $\text{YBa}_2\text{Cu}_3\text{O}_{6.7}$ ” . . . . .** 477  
A. D. Muradov, S. S. Kumarova and Zh. K. Sakhiyeva
- 54 Preparation and Application of PZT Films in Microelectronics . . . . .** 483  
S. Timishenkov, V. Vodopyanov, Yu Stepanova, Yu Cherkasova and N. Korobova
- 55 Study of the Stress–Strain State in the Bare Crystals in Technology Implementation of Internal Mounting . . . . .** 491  
Timoshenkov Sergey, Dolgovykh Yu, A. Titov, K. Tikhonov and D. Vertyanov

**Part VI Imaging and Biomedical Engineering**

<b>56 A Micro-Scale Solar Energy Harvesting Circuit with MPPT Control for Self-Powered Systems . . . . .</b>	499
Eun Jung Yoon and Chong Gun Yu	
<b>57 Multi-View Stereoscopic Image Synthesis Algorithm for 3DTV . . . . .</b>	509
Hyunjun Choi, Youngho Seo, Jisang Yoo and Dongwook Kim	
<b>58 Cell Image Segmentation by Contour Following Method with Directional Angle . . . . .</b>	519
Cheolhun Na, Sangjin Ryoo, Suyeong Kim and Seongjun Kang	
<b>59 Performance Improvement of Vehicle Tracking Using Parts Features Adaboost . . . . .</b>	525
Jingyu Do, Jangskik Park and Hyuntae Kim	
<b>60 A Study on the Selection of ROI and Trace Under the Multiple Object Environments . . . . .</b>	533
Gwangseok Lee, Gangin Hur and Youngsub Kim	
<b>61 Edge Detection Using Modified Directional Coefficient Mask in AWGN . . . . .</b>	543
Chang-Young Lee and Nam-Ho Kim	
<b>62 An Intra Prediction Hardware Architecture with Low Computational Complexity for HEVC Decoder . . . . .</b>	549
Hongkyun Jung and Kwangki Ryoo	
<b>63 A Color Gamut Mapping System Using the RGB Primaries and White-Point Correction for a Wide Gamut Display Device . . . . .</b>	559
Kyounghoon Jang, Hosang Cho, Hyunjung Kang and Bongsoon Kang	
<b>64 A Region of Interest Labeling Algorithm Using Three Mask Patterns . . . . .</b>	569
Hosang Cho, Kyounghoon Jang, Changhoo Kim and Bongsoon Kang	
<b>65 Multi-Factor Authentication Process Using More than One Token with Watermark Security . . . . .</b>	579
Arjun Kumar and Hoon Jae Lee	

**Part VII Ubiquitous Sensor Network**

<b>66 Energy Based Interference Avoidance Scheme in Ubiquitous Medical Environments . . . . .</b>	591
Jin-Woo Kim, Myeong Soo Choi, Yeonwoo Lee, Beommu Kim, Seyeong Maeng, Seongmin Jeon, Shyuk Park and Seong Ro Lee	
<b>67 Technical Analysis of Stock Trading Point in Electronic Commerce . . . . .</b>	599
Jinwon Park, Sangwon Lee, Chan Yong Jin, Hyun-Chang Lee, Do Goan Kim and Seong-yoon Shin	
<b>68 ADC Design for Neural Acquisition Application . . . . .</b>	607
Ruoyuan Qu, Zhe Guo, Na Liu, Yueyang Chen and Xinghua Wang	
<b>69 Design of Microstrip Patch Antenna Using Inset-Fed Layered for Metallic Object in u-Port . . . . .</b>	615
Chan-Hong Park, Jong-Dae Park, Byeong-Ho Park, Myung-Dong Kim, Yong-Seok Choi and Hyeon-Kyeong Seong	
<b>70 An Analysis on the Effects of Cluster Leadership Rotation Among Nodes Using Least Temperature Routing Protocol . . . . .</b>	625
Nico Encarnacion and Hyunho Yang	
<b>71 Performance Analysis of Tag Identification Method Based on Multi-Reader Using Anti-Collision Algorithm . . . . .</b>	635
Bong-Im Jang, Chang-Su Kim, Hoe-Kyung Jung, Yong-Tae Kim and Gil-Cheol Park	
<b>72 Segregated Lightweight Dynamic Rate (SLDR) Control Scheme for Efficient Internet Communications . . . . .</b>	645
T. O. Ting, H. C. Ting and Sanghyuk Lee	
<b>73 Remote Sensing of Asian Dust at DaeJeon Station in NIES Lidar Network . . . . .</b>	653
Chan Bong Park, Young Woo Lee, Atsushi Shimizu and Nobuo Sugimoto	
<b>74 Transmission Range Determination with a Timeslot-Based Energy Distribution Scheme for Solar-Energy Harvesting Sensor Systems . . . . .</b>	661
Dong Kun Noh	

<b>75</b>	<b>A New Algorithm for Solving the Energy Conservation Equation Based on ADI Method . . . . .</b>	671
	Xiaofeng Niu, Zhongping Que and Weili Cheng	
<b>76</b>	<b>Sensor Prioritization and Decisive Sensing: A Conservative Power Saving Scheme for BSNs . . . . .</b>	679
	Frank I. Elijorde, Hyunho Yang and Jaewan Lee	
<b>77</b>	<b>A Study of Optimal Path Availability Clustering Algorithm in Ad Hoc Network. . . . .</b>	689
	Young-jun Oh, Dong-keun Oh and Kang-whan Lee	
<b>78</b>	<b>Localized Positioning Method for Optimization Path Availability Clustering Algorithm in Ad Hoc Network . . . . .</b>	697
	Young-jun Oh, Dong-keun Oh and Kang-whan Lee	
<b>79</b>	<b>Performance Analysis of Routing Algorithm Based on Link Quality in Wireless Sensor Networks . . . . .</b>	705
	Hyun-Jun Shin and Chang-Heon Oh	
<b>80</b>	<b>Low Latency and Collision Avoidance MAC Protocol in Wireless Multimedia Sensor Networks. . . . .</b>	715
	Seong Cheol Kim, Hyun Joo Park and Jun Heon Jeon	
<b>81</b>	<b>A QoS and Throughput Enhancement MAC Protocol in Wireless Sensor Networks . . . . .</b>	723
	Seong Cheol Kim	

## **Part VIII Database and Internet Application**

<b>82</b>	<b>The Proposed on Model-Based User Interface Modules . . . . .</b>	733
	Chul-Hyun Hwang, Zhu Jiang, Sung-Han Kim, Seung-Yun Lee and Hoe-Kyung Jung	
<b>83</b>	<b>A Study on Design and Implementation of the Web-Based Real-Time Video Communication System . . . . .</b>	743
	Tae-Hak Ban, Chang-Su Kim and Hoe-Kyung Jung	
<b>84</b>	<b>Comprehensive Analysis of Data Clustering Algorithms . . . . .</b>	753
	Deepti Gaur and Seema Gaur	

<b>85</b>	<b>The Student Safety Network Service System Using the Location-Based Services of Smartphone . . . . .</b>	763
	Chang-Su Ryu and Chang-Wu Hur	
<b>86</b>	<b>Design of an Inventory Management System for Refrigerated Warehouses on Mobile Environments . . . . .</b>	773
	ChaeHoon Ban, DongHyun Kim, DaeSoo Cho, Jinh Choi, Jindeog Kim and Sungwoo Ahn	
<b>87</b>	<b>The Design of XML-Based Software Information System Schema and Development of the Standard for Information Processing . . . . .</b>	783
	Chang-Su Kim, Min-Kyo In, Kang-Chan Lee, Seung-Yun Lee and Hoe-Kyung Jung	
<b>88</b>	<b>A Study on Learning Achievement Improvement Based on SLL Program . . . . .</b>	793
	Kie Sung Oh	
<b>89</b>	<b>A Performance Test of Query Operation on Encrypted Database . . . . .</b>	801
	Ji Hong Kim, Tony Sahama and Sung Yong Kim	
<b>90</b>	<b>Similarity Measure Design on Big Data . . . . .</b>	811
	Sanghyuk Lee and Yan Sun	

## Part IX Mobile Communication

<b>91</b>	<b>MDDI Protocol Implementation for Mobile System . . . . .</b>	823
	Seung-Han Ryu, Byeong-Kwon Lee and Hoe-Kyung Jung	
<b>92</b>	<b>Practical Signal Models for Orthogonal Code Hopping Multiplexing Systems . . . . .</b>	835
	Bang Chul Jung, Tae-Won Ban and Kil-Young Sung	
<b>93</b>	<b>Energy Efficient Data Transmission Mechanism in Wireless Sensor Networks . . . . .</b>	845
	Seong Cheol Kim, Jun Heon Jeon and Hyun Joo Park	
<b>94</b>	<b>An Enhanced Network Coding Scheme for Mobile Ad-hoc Network . . . . .</b>	853
	Kwan-Woong Kim, Yong-Kab Kim and Byun-Gon Kim	

<b>95</b>	<b>IDS Scheme for Blackhole Attack on MANETs . . . . .</b>	863
	Young-Dong Kim and Dong-Ill Kim	
<b>96</b>	<b>Physical Forensic Acquisition and Pattern Unlock on Android Smart Phones . . . . .</b>	871
	Yuan-Chi Tsai and Chung-Huang Yang	

## **Part X IT Fusion Technology**

<b>97</b>	<b>A New Distance Metric Based on Class-Space Reduction . . . . .</b>	885
	Byungjoon Park and Sejong Oh	
<b>98</b>	<b>A New Criterion of Mutual Information Using R-value . . . . .</b>	895
	Taegoon Han, Youngbok Hong and Sejong Oh	
<b>99</b>	<b>Command Fusion Based Fuzzy Controller Design for Moving Obstacle Avoidance of Mobile Robot . . . . .</b>	905
	Hyunjin Chang and Taeseok Jin	
<b>100</b>	<b>The Consideration of GPS Jamming Signal Due to Propagation Path Loss . . . . .</b>	915
	Kwangsoob Ko	
<b>101</b>	<b>On Development of an Open Platform for High Performance Computing Services: Design of TCAD Meta-Data Schema and Its Application to Computational Nanoelectronics . . . . .</b>	921
	Du Seok Jin, Jung-lok Yu, Jun-hyung Lee, Jongsuk Ruth Lee, Kumwon Cho and Hoon Ryu	
<b>102</b>	<b>Scratch Inspection of Spectacle Lens Based on Fuzzy Logic . . . . .</b>	931
	Kwang-Beak Kim, Doo Heon Song, Jae-Hyun Cho and Young Woon Woo	
<b>103</b>	<b>Microstructure Evolution of the Cu-Cr Hypereutectic Alloys During Directional Solidification . . . . .</b>	939
	ZhongPing Que, JeHyun Lee, WeiLi Cheng, SeunZeon Han, HyungMin Jung and KwangJun Euh	
<b>104</b>	<b>Development of Knocking Analysis Algorithms for Fuel Reduction in CRDI Engine . . . . .</b>	949
	Hwa-seon Kim, Seong-jin Jang, Jae-hyun Nam and Jong-wook Jang	

- 105 Multi-Criteria Decision Making Based on Fuzzy Measure . . . . .** 959  
Sanghyuk Lee, Yan Sun and Di Feng
- 106 Estimation of Flood Risk on the Roads Using Current Accumulated Rainfall via RSS Service of Weather Center . . . . .** 969  
Eunmi Kim, Hyun Suk Hwang and Chang Soo Kim
- 107 A Light Mobile Web Service Framework Based on Axis2 . . . . .** 977  
Zhun Shen, Ka Lok Man, Hai-Ning Liang, Nan Zhang,  
Charles Fleming, David Olalekan Afolabi, Yanyan Wu  
and Sheung-Hung Poon
- 108 Development of Real-Time Condition Check Systems for Racing Cars Using WCDMA . . . . .** 987  
Min-Seop Song, Sung-Hyun Baek and Jong-Wook Jang
- 109 Implementation of Vehicle Remote Status Verification System Using Driving Information . . . . .** 997  
Minyoung Kim and Jong-wook Jang
- 110 A Study on the System for Customer Feedback Integration Inference in B2C Service Industries. . . . .** 1007  
Min-Sik Kang and Eun-Jee Song
- 111 Production of Nanoporous Alumina and Surface Studies by Atomic Force Microscopy. . . . .** 1015  
B. E. Alpysbayeva, Kh. A. Abdullin and A. A. Karipkhanova
- 112 A Study on the Design of the Efficient Adder and Multiplier Based on Normal Basis over Finite Fields . . . . .** 1023  
Chun-Myoung Park
- 113 Diamond-Like Carbon Films Obtained by Ion-Plasma Magnetron Sputtering. . . . .** 1033  
M. J. Buranbaev, B. A. Aliyev, O. E. Kaipoldayev,  
J. A. Entibekov and R. K. Aliaskarov
- 114 Analyses of Attacks on Embedded RFID Application Under U-Healthcare System . . . . .** 1039  
Jung Tae Kim

<b>115 Performance Analysis of Smart Healthcare System Based on ISO/IEEE 11073 and HL7 .....</b>	1045
Jae-Hwan Jean, Sung-In Kang, Gwan-Hyung Kim, Oh-Hyun Kwon, Jong-Hee Lee and Am-Suk Oh	
<b>116 Random Walks, Lévy Flights, Markov Chains and Metaheuristic Optimization .....</b>	1055
Xin-She Yang, T. O. Ting and Mehmet Karamanoglu	
<b>Author Index .....</b>	1065