

# Contents

## Part I Communication System and Application

- 1 Dispersion Managed Optical Links with Randomly Distributed Residual Dispersion Per Span for 960 Gbps WDM Transmission** . . . . . 3  
Seong-Real Lee
  
- 2 In-Band MAC-Layer Sensing for the Cognitive Radio Networks** . . . . . 11  
Xiang Gao and Hyung-Kun Park
  
- 3 Design of Circular Patch Microstrip Antenna for 2.4 GHz RFID Applications.** . . . . . 21  
Yuwono Rudy, Adiguna Baskoro and Achmad Dahlan Erfan
  
- 4 Vitalization of E-Marketplace to Strengthen Trade Between Korea and China in Electronic Commerce.** . . . . . 29  
Sangwon Lee, Hyun-Chang Lee, Seong Jin Park, Chan Yong Jin and Seong-yoon Shin
  
- 5 Marketing and Inventory Managements in Smart Phone Environment** . . . . . 37  
Seong-yoon Shin, Hyun-Chang Lee, Sangwon Lee, Chan Yong Jin and Chenlin Xu
  
- 6 Relationship Between Car Color and Car Accident on the Basis of Chromatic Aberration** . . . . . 45  
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	
 <b>Part II Networking and Services</b>		
<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 Jinoou 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	
 <b>Part III Intelligent Information System</b>		
<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>	<b>245</b>
	Whoijin Jung, Jae Yong Lee and Byung Chul Kim	
<b>28</b>	<b>Enhancing Document Clustering Using Reweighting Terms Based on Semantic Features . . . . .</b>	<b>257</b>
	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>	<b>265</b>
	Jae Seung Choi	
<b>30</b>	<b>Linear Prediction-Based Reconstruction of Electrocardiogram with Premature Ventricular Contraction for Heart Rate Variability Analysis . . . . .</b>	<b>273</b>
	Nipon Theera-Umpon, Panyaphon Phiphatkhunarnon and Sansanee Auephanwiriyaikul	
<b>31</b>	<b>EDISON Platform: A Software Infrastructure for Application-Domain Neutral Computational Science Simulations. . . . .</b>	<b>283</b>
	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>	<b>293</b>
	So-Young Park, Juno Chang and Taesuk Kihl	
<b>33</b>	<b>Similarity Measure Design for Non-Overlapped Data. . . . .</b>	<b>299</b>
	Sanghyuk Lee	
<b>34</b>	<b>A Vehicle Recognition Using Part-Based Representations. . . . .</b>	<b>309</b>
	Myungseon Hwang and Hyunchul Kang	
<b>35</b>	<b>Wind Turbine Performance Monitoring Based on Hybrid Clustering Method. . . . .</b>	<b>317</b>
	Frank I. Elijorde, Daesun Moon, Seokil Ahn, Sungho Kim and Jaewan Lee	
<b>36</b>	<b>Intelligent Road Control and Monitoring. . . . .</b>	<b>327</b>
	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

<b>47</b>	<b>Analysis of Subthreshold Characteristics for Doping Concentration of DGMOSFET Using Series Form of Potential</b> . . . . .	437
	Jihyeong Han, Hakkee Jung, Ohshin Kwon and Choonshik Park	
<b>48</b>	<b>A Parasitic-Insensitive Charge Transfer Circuit for Capacitive Sensing Based on Switched Capacitor Integrator</b> . . . . .	445
	Hyeop-Goo Yeo, Eu-Sung Jung and Seung-Min Jung	
<b>49</b>	<b>Calculation 15-Fold Integrals by Method of Optimal Coefficients for Small Values of the Numbers of Knots Quadrature Formulas</b> . . . . .	453
	Saule Zamanova	
<b>50</b>	<b>Effect of the Filler on the Physico-Mechanical Properties of the Polyimide Composite Materials</b> . . . . .	461
	A. D. Muradov, G. S. Suyundikova and A. G. Kunsafina	
<b>51</b>	<b>Strong Self-Pulsations in a Multi-Electrode Distributed Feedback Laser Integrated With an Electro-Absorption Modulator</b> . . . . .	467
	Jun-Hyung Cho, Seo Weon Heo and Hyuk-Kee Sung	
<b>52</b>	<b>Radiation Modification of the Structure of Nanosized Metal Powders</b> . . . . .	471
	M. Zh. Buranbaev, B. A. Aliev, U. P. Koztaeva, G. Partizan, Zh. Entibekov, Zh. Nakysbekov and M. Aitzhanov	
<b>53</b>	<b>Effect of Low-Temperature Annealing on the Optical Properties of Composite Material, the System “Polyimides: <math>YBa_2Cu_3O_{6,7}</math>”</b> . . . . .	477
	A. D. Muradov, S. S. Kumarova and Zh. K. Sakhiyeva	
<b>54</b>	<b>Preparation and Application of PZT Films in Microelectronics</b> . . . . .	483
	S. Timishenkov, V. Vodopyanov, Yu Stepanova, Yu Cherkasova and N. Korobova	
<b>55</b>	<b>Study of the Stress–Strain State in the Bare Crystals in Technology Implementation of Internal Mounting</b> . . . . .	491
	Timoshenkov Sergey, Dolgovykh Yu, A. Titov, K. Tikhonov and D. Vertyanov	

**Part VI Imaging and Biomedical Engineering**

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

## Part VII Ubiquitous Sensor Network

<b>66</b>	<b>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</b>	<b>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</b>	<b>ADC Design for Neural Acquisition Application</b> . . . . .	607
	Ruoyuan Qu, Zhe Guo, Na Liu, Yueyang Chen and Xinghua Wang	
<b>69</b>	<b>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</b>	<b>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</b>	<b>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</b>	<b>Segregated Lightweight Dynamic Rate (SLDR) Control Scheme for Efficient Internet Communications</b> . . . . .	645
	T. O. Ting, H. C. Ting and Sanghyuk Lee	
<b>73</b>	<b>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</b>	<b>Transmission Range Determination with a Timeslot-Based Energy Distribution Scheme for Solar-Energy Harvesting Sensor Systems</b> . . . . .	661
	Dong Kun Noh	



**75 A New Algorithm for Solving the Energy Conservation Equation Based on ADI Method . . . . . 671**  
 Xiaofeng Niu, Zhongping Que and Weili Cheng

**76 Sensor Prioritization and Decisive Sensing: A Conservative Power Saving Scheme for BSNs . . . . . 679**  
 Frank I. Elijorde, Hyunho Yang and Jaewan Lee

**77 A Study of Optimal Path Availability Clustering Algorithm in Ad Hoc Network. . . . . 689**  
 Young-jun Oh, Dong-keun Oh and Kang-whan Lee

**78 Localized Positioning Method for Optimization Path Availability Clustering Algorithm in Ad Hoc Network. . . . . 697**  
 Young-jun Oh, Dong-keun Oh and Kang-whan Lee

**79 Performance Analysis of Routing Algorithm Based on Link Quality in Wireless Sensor Networks . . . . . 705**  
 Hyun-Jun Shin and Chang-Heon Oh

**80 Low Latency and Collision Avoidance MAC Protocol in Wireless Multimedia Sensor Networks. . . . . 715**  
 Seong Cheol Kim, Hyun Joo Park and Jun Heon Jeon

**81 A QoS and Throughput Enhancement MAC Protocol in Wireless Sensor Networks. . . . . 723**  
 Seong Cheol Kim

**Part VIII Database and Internet Application**

**82 The Proposed on Model-Based User Interface Modules . . . . . 733**  
 Chul-Hyun Hwang, Zhu Jiang, Sung-Han Kim, Seung-Yun Lee and Hoe-Kyung Jung

**83 A Study on Design and Implementation of the Web-Based Real-Time Video Communication System . . . . . 743**  
 Tae-Hak Ban, Chang-Su Kim and Hoe-Kyung Jung

**84 Comprehensive Analysis of Data Clustering Algorithms. . . . . 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, Jinoh 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	
<b>Part IX Mobile Communication</b>		
<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	

**95 IDS Scheme for Blackhole Attack on MANETs . . . . . 863**  
 Young-Dong Kim and Dong-Il Kim

**96 Physical Forensic Acquisition and Pattern Unlock  
 on Android Smart Phones . . . . . 871**  
 Yuan-Chi Tsai and Chung-Huang Yang

**Part X IT Fusion Technology**

**97 A New Distance Metric Based on Class-Space Reduction . . . . . 885**  
 Byungjoon Park and Sejong Oh

**98 A New Criterion of Mutual Information Using R-value . . . . . 895**  
 Taegoon Han, Youngbok Hong and Sejong Oh

**99 Command Fusion Based Fuzzy Controller Design  
 for Moving Obstacle Avoidance of Mobile Robot . . . . . 905**  
 Hyunjin Chang and Taeseok Jin

**100 The Consideration of GPS Jamming Signal Due to Propagation  
 Path Loss . . . . . 915**  
 Kwangsoob Ko

**101 On Development of an Open Platform for High  
 Performance Computing Services: Design of TCAD  
 Meta-Data Schema and Its Application  
 to Computational Nanoelectronics . . . . . 921**  
 Du Seok Jin, Jung-lok Yu, Jun-hyung Lee, Jongsuk Ruth Lee,  
 Kumwon Cho and Hoon Ryu

**102 Scratch Inspection of Spectacle Lens Based on Fuzzy Logic . . . . 931**  
 Kwang-Beak Kim, Doo Heon Song, Jae-Hyun Cho  
 and Young Woon Woo

**103 Microstructure Evolution of the Cu-Cr Hypereutectic Alloys  
 During Directional Solidification . . . . . 939**  
 ZhongPing Que, JeHyun Lee, WeiLi Cheng, SeunZeon Han,  
 HyungMin Jung and KwangJun Euh

**104 Development of Knocking Analysis Algorithms for Fuel  
 Reduction in CRDI Engine . . . . . 949**  
 Hwa-seon Kim, Seong-jin Jang, Jae-hyun Nam and Jong-wook Jang

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

<b>115</b>	<b>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</b>	<b>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