Index

3G devices 106

A
Active Attack from Both Ends 306
Active Attack to Inject Traffic 306
adaptive modulation and coding techniques (AMC) 87
Aggregation-Aware Spectrum Assignment (AASA) 109
ALPHA project 265
Analog-to-Digital Converter (ADC) 180
Application-oriented Software on General-purpose-processors for Advanced Radio Development (ASGARD) 182
Arbitrary relay channel 16
Artificial Neural Networks 279, 303, 360
Authorized Shared Access (ASA) 154
Autonomia framework 209
Autonomic Nervous System 204, 207

B
Backtracking 54, 56, 60-61
Bayesian concepts 340, 343, 346
broadband seamless wireless-wireline access networks 265
Broadcast Relay Channels (BRCs) 17
Byzantine Attacks 316, 325, 331, 335

C
capacity outage 18-19, 27
Central Cognitive Plane 292-293
channel access phase 250
channel selection strategies 30-31, 34-39, 44
Cloud Radio Access Network (C-RAN) 133
CogNet 206, 223
cognitive engine 114, 124, 130-131, 177, 187, 206, 288-289, 292-295, 297
Cognitive Information Service (CIS) 289-290, 298
Cognitive Medium Access Control (MAC) Protocol 296
cognitive pilot channel (CPC) 159, 167-168
Cognitive Radio Network Testbed (CORNET) 176
Complete Partitioning (CP) 66
Complete Sharing (CS) 66
context-aware mobile and wireless networking (CAMoWiN) 64
Converged Network Infrastructure Enabling Resource Optimization and Flexible Service (CONFES) 263
cooperação and negotiation plane 289, 297
coopérative diversity 2-6, 9, 11-12, 15, 18, 23-29, 194
coopérative networking 1-2, 9, 11, 14, 16-17, 21-22, 176
Cooperative Power Control Algorithm 113, 120, 123, 127, 130

data dissemination 30-34, 40-41, 44, 46-47, 49
degraded relay channel 16
Delay motivated On-demand Routing Protocol (DORP) 236
DEPTHS system 339
deterministic behavior 178
Digital Signal Processors (DSPs) 173
Direct Interlayer Communication (DIC) 292
distributed algorithmic solutions 172
Dynamic Spectrum Access (DSA) 73, 79, 171-172, 301
dynamic spectrum sharing (DSS) 303
dynamic topology 248, 256
Index

E
effective capacity theory 81, 83, 86, 88, 99
Electronic Communications Committee (ECC) of the European Conference of Postal and Telecommunications Administrations (CEPT) 145
evolution 304-307, 310, 312, 328, 332
Evolved Packet Systems (EPS) 266
eXtensible Markup Language (XML) 175, 177, 284

F
femtocells 68, 100, 103, 185, 195, 197
frame error rate (FER) 251
frequency spacing 179
fuzzy Item Response Theory (FIRT) 342

G
Genetic Algorithms (GA) 56
Global System for Mobile Communications (GSM) 304
GRAPPLE system 339

H
harmful interference 34, 41-42, 82, 111, 145-147, 150, 152, 156, 163, 317
heterogeneity 45, 79, 248, 256
“Hole196” vulnerability 308
hybrid 14, 20, 23, 26, 58, 66-69, 71, 83, 89-90, 96-97, 99, 118

I
in-band signaling 206, 290, 294
innovative radio design techniques 106
Intelligent Transportation Systems (ITS) 162
interlayer signaling pipe 291, 293-294
Interleaved Spectrum 51, 169
item response theory (IRT) 339

J
Jing 79, 342, 355
Joint Radio Resource Management (JRRM) 50-52, 64, 80
Joint Tactical Radio System (JTRS) 311

L
Licensed Shared Access (LSA) 154
Linear Dispersion (LD) space time codes 16
load balancing 29, 35, 47, 203, 207, 213, 220, 223
Long Term Evolution Advanced (LTE-A) 108

M
Machine Learning 137, 220, 266, 271-274, 279, 281, 284, 302, 341, 356
MAC protocols 2, 118-119, 243, 333
m@ANGEL platform 205
Memory Cycle Theory 342
Minimum Mean-Square-Error (MMSE) estimation methods 97
mixed-integer linear programming (MILP) 17
M-level Quadrature Amplitude Modulation (MQAM) scheme 93
Mobile Ad-Hoc Networks (MANETs) 30
mobile network operators 59, 62, 136-137, 263
Moodle 339, 357
Moore’s curve 199
Multiaccess Relay Channels (MARCs) 17
Multimedia Presentation Authoring System (MPAS) 338
multiple-input multiple-output (MIMO) diversity techniques 87

N
Nakagami-m block fading environment 92
Nash equilibrium 55, 89, 327
Natural Language Processing 341
Network Interface Card (NIC) 288
Network Management System (NMS) 274
Node-level signaling techniques 291
nSHIELD 301, 329, 331

O
objective function attacks (OFA) 304, 326, 331, 333
OLT (Optical Line Terminal) 265
Ontologging 341
ONU (Optical Network Unit) 265
OpenFlow 201
OpenStack 201, 223
Opportunistic Routing (OR) 235
Opportunistic Service Differentiation Routing protocol (OSDRP) 235
Opportunistic Spectrum Access (OSA) 301
Optimal and Dynamic Optical Resource Allocation (ODORA) management modules 265
Optimal and Dynamic Optical Resource Allocation Protocol (ODORAP) 265
Index

optimal power allocation scheme 87-88, 93
Orthogonal Frequency Division Multiplexing (OFDM) modulation 179
Out-of-band broadcast signaling 291
Out-of-band on-demand signaling 290

P
Parallel Processing 140, 177
Pareto optimality 55
Passive Attack 306
Passive Optical Networks (PONs) 262-263
primary user emulation attacks (PUEA) 241-242, 302, 312, 315, 324, 326, 331-332, 334
profit maximisation considerations 143
protocol layer 206, 287, 291-292

R
radio access technologies’ (RATs) 52, 64
Radio Spectrum Committee (RSC) 146
Radio Spectrum Policy Programme (RSPP) 153
Real-time Secondary Spectrum Market (RTSSM) 52, 57, 74
repetitive time-controlled experiments 176
RF jamming attacks 319

S
SACRA 72-73, 75, 105, 107, 109-111, 113-114, 120, 124, 130, 134, 136
scanning phase (SP) 250
secure radio middleware (SRM) 310
Semantic Web 341, 346, 356
Simulated Annealing (SA) 56
Singapore White Spaces Pilot Group 156
SOAP (Simple Object Access Protocol) 266
Software Communications Architecture (SCA) 310-311
Software Defined Radio (SDR) 152, 169, 173, 302
software testing methodologies 181
Space Time Coding (STC) 2, 15-16, 22, 24-25, 27
spectrum access control algorithm 113
Spectrum Aggregation 105-115, 117, 119, 131, 133-134, 138-139, 141
Spectrum Aware Mesh Routing Protocol (SAMER) 236
Spectrum-Handoff delay 248
spectrum interweave 82, 229
Spectrum Server (SS) 35
spillover-partitioning 67, 78
Stateful broadcasting protocols 32
Super Wi-Fi 111
SURF 31, 40-43

T
Table-Based Attack 307
television white spaces 51, 166
temporary space-time frequency voids 229
theory of statistical Quality of Service (QoS) guarantees 83
Thread of Execution 197
total channel utilization 35

U
Unattended Aerial Vehicle (UAV) 31
User Monitoring 343, 345-346

V
Vehicular Ad-Hoc Networks (VANETs) 30
virtual antenna array 15
virtual local area networks (VLANs) 202
Virtual Machine (VM) 203, 217
virtual private networks (VPNs) 202
VMware 202
VocaTest system 339
Voluntary Spectrum Handoff (VSH) 35

W
wavelength-division-multiplexing (WDM) optical phase modulated radio-over-fiber (RoF) 265
Wireless Mesh Networks (WMNs) 30, 227
wireless network cooperation 1
wireless networking standards 16
Wireless open-Access Research Platform (WARP) 174
wireless security standards 304
Wireless Sensor Networks (WSNs) 30, 117
Wireshark analyzers 277
WOPROF project 265, 285
World Radiocommunication Conferences (WRC) 145

X
Xen 202