

Index

A

ad hoc networks 109, 113, 114, 117, 118, 119, 121, 122, 123, 124, 129, 132, 135, 136, 141, 142, 160, 164, 163, 178, 120, 178, 137, 178, 179, 180, 237, 263, 280, 281, 282, 305, 306, 310, 312, 313, 314, 315, 317, 318, 322, 323, 326, 327, 329

advanced driving assistance systems (ADAS) 201, 210, 215

advanced vehicle safety systems (AVS) 105

anti-lock braking system (ABS) 12, 13, 17, 18, 19, 24, 25, 39, 76, 97, 224, 242, 306

ATIS (advanced traveler information systems) 162, 163, 164, 179, 325

ATIS, decentralized 163, 164

automated highway systems (AHS) 105, 188, 189, 198, 319

automotive consortia 8

B

bottlenecks 72, 75, 180, 181, 186

brake by wire (BBW) systems 13, 17, 19, 22, 24, 39, 45

C

car communications 2, 6, 9, 69, 83, 87, 96, 98, 99, 101

CISPR 12 standard 49, 67, 314

CISPR 25 standard 49, 50, 51, 55, 81

co-operative vehicle infrastructure systems (CVIS) 201, 206, 218, 253, 261, 308

communications, car-to-car 6, 9, 96, 98, 99, 100, 101, 103, 104, 159, 265, 266, 279, 306, 307, 309, 317, 320

communications, intra-vehicle (InV) 1, 2, 3, 9, 1, 3, 4

communications, vehicle-to-infrastructure (V2I) 1, 2, 3, 4, 5, 6, 8, 9, 3, 4, 200, 201, 202, 205, 213, 217, 248

communications, vehicle-to-vehicle (V2V) 1, 2, 3, 4, 5, 6, 8, 9, 3, 4, 105, 200, 201, 202, 204, 205, 213, 216, 217, 248

consortia, LIN (Local Interconnect Network) 2, 29, 62, 63, 71, 72, 75, 76, 84, 85, 86, 87, 89, 90, 98, 104, 284, 288, 302, 319, 327

constant headway state 174

controller area network (CAN) 2, 4, 9, 10, 29, 39, 40, 42, 62, 63, 70, 71, 72, 73, 75, 76, 84, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 103, 104, 284, 286, 287, 288, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 307, 308, 309, 311, 317, 320, 323

cooperative adaptive cruise control (CACC) 201

crosstalk 65

cyber-physical systems 139, 140, 141, 159

D

data exchange 1, 2, 3, 5, 9, 123
 dedicated short range communication (DSRC)
 2, 3, 4, 5, 7, 9, 11, 64, 99, 100,
 103, 106, 112, 142, 159, 164, 181,
 250, 251, 256, 261, 263, 269, 278,
 281, 282, 304, 310, 314, 326, 327,
 328, 329
 distance routing effect algorithm for mobility
 (DREAM) 115, 121, 270, 279, 305
 drive-by-wire system 12
 drive by wire (DBW) 12
 drive by wire (DBW) systems 12, 13, 14, 17,
 22, 23, 24, 25, 26, 28, 29, 30, 31,
 39, 40, 44, 45

E

electric vehicles (EV) 13
 electro-hydraulic brake (EHB) system 13, 14
 electro-mechanical brakes (EMB) 13
 electromagnetic compatibility (EMC) 48, 49,
 50, 53, 54, 56, 57, 60, 61, 62, 67,
 61, 64, 79, 83, 87, 311, 54, 62, 65,
 67, 66, 67, 64
 electromagnetic interference (EMI) 49, 51,
 54, 55, 56, 64, 67
 electronic control units (ECUs) 1, 2, 1, 4,
 29, 43, 69, 70, 72, 75, 82, 87, 91,
 93, 95, 96, 100
 electronic noise 17, 26, 39, 49, 52, 54,
 55, 56, 57, 62, 63, 64, 65, 77, 78,
 48, 78, 66, 78, 79, 83, 86, 90, 98,
 171, 221, 223, 224, 225, 227, 229,
 232, 233, 235, 240, 243, 308, 325
 electrostatic discharge (ESD) 52, 63, 64, 54

F

fault tolerant communication 43
 fault tolerant control 25, 28, 29, 30, 38,
 39, 45
 FlexRay 2, 10, 39, 40, 41, 42, 43, 44, 63,
 64, 67, 73, 75, 88, 91, 98, 103, 287,
 292, 296, 299, 302, 311
 4-way stop problem 156

G

generalized prediction (GP)
 33, 34, 35, 37, 38, 39
 geographic information system (GIS)
 116, 220, 270, 273
 greedy perimeter stateless routing (GPSR)
 115, 116, 121, 124, 129, 132, 134,
 135, 270, 280, 316
 grid location service (GLS) 115, 121

H

headway state, constant 174
 headway state, intermediate 174
 headway state, random 174
 human-machine interface (HMI) 220
 hybrid-electric propulsion 12
 hybrid electric vehicles (HEV) 13, 14, 17

I

infotainment applications 69
 intelligent cruise control 161, 329
 intelligent transportation systems (ITS) 2, 3,
 4, 5, 7, 8, 10, 11, 105, 121, 142,
 159, 163, 179, 202, 206, 209, 262,
 310, 311, 314, 324
 interference 42, 48, 49, 51, 54, 55, 56,
 57, 58, 60, 62, 63, 64, 66, 67, 77,
 78, 79, 84, 85, 106, 107, 162, 163,
 165, 166, 167, 168, 167, 168, 169,
 170, 171, 173, 174, 175, 177, 178,
 179, 232, 235, 250, 258, 269, 305,
 306, 311, 315, 320, 321, 323
 internal combustion (IC) engine
 13, 14, 67, 309
 intersection decision systems (IDS) 105
 Intra-Vehicle (InV) 1, 9

K

Kalman filter 220, 221, 224, 225, 226, 227,
 228, 229, 230, 231, 235, 236, 240,
 245, 326

L

Ladars (Laser detection and ranging sensors)
 201, 203

location-based routing algorithm with cluster-based flooding (LORA-CBF) 121, 125, 127, 128, 129, 132, 134, 135

location aided routing (LAR) 115, 121

M

medium access control (MAC) 5, 81, 105, 106, 108, 109, 110, 109, 130, 132, 269, 273, 306, 111, 112, 113, 118, 110

merging algorithms 182, 190, 191, 192, 194, 195, 196, 191, 194

N

neighborcast 139, 151, 152, 157

nodes, exposed 166, 167

nodes, hidden 110

nodes, mobile 109, 121, 122, 127, 130, 185, 247

P

particle filter 229

platooning 22, 143, 145, 159, 160, 144, 188, 189, 208, 312, 326

power line communication (PLC) 69, 75, 76, 77, 78, 79, 81, 82, 83, 85, 87, 90

R

Radar 185, 197, 201, 309

random waypoint model (RWP) 181, 182, 184

redundancy, analytical 25, 26, 28, 30, 31, 39, 45

redundancy, dynamic 27, 28, 29

redundancy, static 27, 29

road side units (RSU) 202, 208, 247, 255

route planning 116, 140, 142, 265, 275, 277

S

sliding mode observer 30, 31, 32, 39, 46, 313

static vehicular degree (SVD) 170, 171, 172, 177

Steer by wire (SBW) 13

steer by wire (SBW) systems 13, 17, 21, 22, 24, 30, 31, 35, 36, 37, 39, 45

T

throttle by wire (TBW) systems 13, 18, 19, 39

time-period vehicular degree (TPVD) 170

traction control system (TCS) 12, 18, 19

traffic flow control 181, 187, 196

traffic light control 276

traffic network simulator (TRANS) 265

U

unlicensed national information infrastructure (UNII) 105

V

vehicular ad hoc networks (VANETs) 120, 121, 132, 141, 142, 160, 162, 163, 166, 167, 168, 169, 170, 171, 173, 135, 165, 164, 177, 166, 175, 178, 179, 180, 181, 182, 185, 196, 262, 263, 264, 265, 266, 267, 268, 269, 270, 272, 273, 274, 275, 276, 277, 278, 280, 281, 282

VANET applications 264, 265, 266, 268, 273, 278

Vehicle-to-Vehicle (V2V) 1, 9

vehicular ad hoc networks (VANETs) 142, 164, 165, 170, 173, 175, 177, 182, 184, 185, 197, 198, 205, 206, 247, 248, 249, 250, 251, 101, 178, 199, 252, 251, 255, 260, 261, 262, 263, 304, 306, 307, 308, 310, 312, 313, 316, 317, 318, 319, 322, 323, 324, 326, 327, 328, 329

vehicular degree, static (SVD) 170

vehicular degree, time-period (TVD) 170

vehicular networks 1, 2, 3, 9, 91, 98, 105, 109, 100, 110, 111, 112, 115, 116, 118, 141, 248, 249, 263, 266, 274, 275, 281, 288, 290, 292, 296, 301, 310, 322, 323

W

wireless access in the vehicular environment
(WAVE) 2, 5, 11, 103, 104, 105,
106, 107, 112, 118, 142, 159, 164,
310, 314, 328

wireless networks 81, 86, 109, 110, 119,
123, 136, 137, 142, 143, 146, 160,
168, 179, 197, 198, 269, 280, 307,
308, 315, 316, 323, 324, 328

wireless technologies 1, 3, 9, 69, 86, 141,
142

X

X-by-wire systems 46, 69, 70, 73, 74, 75,
84, 86, 87, 325

X-tainment applications 69

Y

yaw stability control (YSC)
12, 18, 19, 24, 25