INDEX

Acoustic Channel Modelling, 4
Acoustic Echo Cancellation, 4, 32
Acoustic Interface, 12
Adaptive Algorithm, 42
Adaptive Combination of Filters, 6, 146, 158
Adaptive Filter, 41
Adaptive Noise Canceller, 161
Affine Combination of Filters, 149
Affine Projection Algorithm, 57, 62, 69, 162
All-Zero Kernel, 178
Artificial Neural Network, 42, 102, 111

Black Box, 110
Block-Based Collaborative FLAF, 183
Blocking Matrix, 161

Channel Diversity, 28
Channel Invertibility, 27
Chebyschev Expansion, 121
Clipping Nonlinearity, 99, 101, 135, 186
Collaborative Adaptive Filtering, 146, 178
Collaborative Filtering Architecture, 178
Collaborative FLAF, 181
Combined Adaptive Filtering, 146, 162
Combined Adaptive Noise Canceller, 161
Computational Intelligence, 19, 42
Convex Combination of Filters, 149, 162, 180
Cover's Theorem, 114

Delay-and-Sum Beamformer, 161
Distant-Talking, vii
Distributed Microphone Array, 12
Double Talk, 30, 91

Double Talk Detector, 30, 91
Dynamic Adaptive Filter, 44, 45
Dynamic Nonlinearity, 123

Echo Return Loss Enhancement, 35
EG± Algorithm, 62
Enclosure Vibration Nonlinearity, 31, 98
Energy Conservation Relation, 126, 130
Excess Mean Square Error, 168

Far-end Signal, 33
Filter-by-Filter Combined Architecture, 163
FIR Filter, 25
Forgetting Factor, 54
Frequency Selectivity, 26
Functional Link Adaptive Filter, 110, 112, 114
Functional Link Expansion Order, 121
Functional Link Memory Order, 126
Functional Links, 112

General Properties, 66
Generalized Sidelobe Canceller, 158, 161
Grey Box, 110

Hammerstein Nonlinear Model, 111, 112
Hands-free Speech Communications, vii
Hardware Limitations, 29
Human-Machine Interaction, 14

IIR Filter, 25
Immersive Communications, vii, 20, 25, 33, 193
Improved PAPA, 70
Improved PNLMS Algorithm, 61, 69, 70
Improved Proportionate NLMS Algorithm, 82
Instantaneous Nonlinearity, 123
Intelligent Acoustic Interface, 3, 14, 193
Intelligent Circuit, 42
Intelligent Switching Circuit, 179
Intermodulation Distortion, 36

Kalman Gain, 57

Learning Algorithm, 42
Least Mean Square Algorithm, 52
Least Perturbation Property, 66
Legendre Expansion, 122
Linear Adaptive Filter, 44
Loudspeaker Nonlinearity, 31, 36, 98, 100, 101, 106

Machine Listening, 22
Mean Square Error, 47
Minimum Mean Square Error, 49
Minimum-Phase System, 27
Mixing Parameter, 149, 163
Multi-Stage Combined Architecture, 165
Multipah Delay Spread, 26

Natural Gradient Adaptation, 67
Near-end Signal, 33
Nonlinear Acoustic Echo Cancellation, 98
Nonlinear Adaptive Filter, 44
Nonlinear System Identification, 112
Nonlinear Transformation, 99
Nonlinearity, 31, 36, 98, 100, 110, 180, 183
Nonstationarity, 30
Normalized Least Mean Square Algorithm, 30, 53, 60, 68, 82
Normalized Misalignment, 37, 188
Normalized Natural Gradient Algorithms, 68

Organized Microphone Array, 12

PNLMS++ Algorithm, 61
Projection Order, 58, 64
Proportionality Factor, 70
Proportionate Adaptive Algorithm, 60, 63
Proportionate Adaptive Algorithms, 28, 59, 69
Proportionate APA, 62, 70, 83
Proportionate Block APA, 72, 85
Proportionate NLMS Algorithm, 61, 69

Recursive Least Squares Algorithm, 30, 54
Regularization Parameter, 54
Reverberation Time, 27
Riccati Equation, 57

Shift-Invariance, 24
Sparse AIR, 28, 60
Spatial Sound Reproduction, 22
Spline Function, 99, 105, 111
Split FLAF, 134, 183, 186
Static Adaptive Filter, 44
Steepest Descent Algorithm, 49
Step Size Parameter, 49, 51, 53
Stochastic Gradient Algorithm, 51
Supervised Adaptive Filter, 43
System-by-System Combined Architecture, 163

Time-Varying System, 25
Trigonometric Expansion, 120

Under-Modelling, 30, 63, 74, 89
Uniform Linear Array, 174
Unsupervised Adaptive Filter, 43

Variable Step Size Parameter, 63, 73
Volterra Filter, 5, 99, 101, 111, 139
VSS Proportionate Algorithms, 73, 88

White Box, 110
Wiener Filter, 45
Wiener Nonlinear Model, 111
Wiener-Hopf Equation, 48