Acronyms

a.s.	almost sure convergence
ANC	active noise control
ARMA	auto regressive moving average
ARMAX	auto regressive moving average with exogenous input
AVC	active vibration control
FOE	filtered output error algorithm
GPC	generalized predictive control
CLOE	closed loop output error recursive algorithm
EFR	equivalent feedback representation
ELS	extended least squares algorithm
FOL	filtered open loop identification algorithm
G-CLOE	generalized closed loop output error algorithm
GLS	generalized least squares algorithm
IVAM	instrumental variable with auxiliary model
LHS	left hand side
MRAS	model reference adaptive system
OE	recursive output error algorithm
OEAC	output error with adjustable compensator
OEEPM	output error with extended prediction model
OEFC	output error with fixed compensator
PAA	parameter adaptation algorithm
PRBS	pseudo random binary sequence
PSMR	partial state model reference control
RHS	right hand side
RLS	recursive least squares algorithm
RML	recursive maximum likelihood algorithm
SPR	strictly positive real
X-CLOE	extended closed loop output error algorithm

List of Principal Notations

f_s	sampling frequency
T_s	sampling period
t	continuous time or normalized discrete time (with respect to the sampling period)
$u(t), y(t)$	plant input and output
$e(t)$	discrete-time gaussian white noise
$\hat{y}(t+j/t)$	j-steps ahead prediction of $y(t)$
q^{-1}	backward shift operator ($q^{-1}y(t+1) = y(t)$)
τ	time delay (continuous time systems)
s, z	complex variables ($z = e^{sT_s}$)
d	delay of the discrete-time system (integer number of sampling periods)
$A(q^{-1})$	polynomial in the variable q^{-1}
$\hat{A}(t, q^{-1})$	estimation of the polynomial $A(q^{-1})$ at instant t
$\hat{a}_i(t)$	estimation of the coefficients of the polynomials $A(q^{-1})$ (they are the coefficients of the polynomial $A(t, q^{-1})$)
θ	parameter vector
$\hat{\theta}(t)$	estimated parameter vector
$\tilde{\theta}(t)$	parameter error vector
$\phi(t)$, $\Phi(t)$	measurement or observation vector
$F, F(t)$	adaptation gain
$\hat{y}^0(t)$	*a priori* output of an adjustable predictor
$\hat{y}(t)$	*a posteriori* output of an adjustable predictor
$\varepsilon^0(t)$	*a priori* prediction error
$\varepsilon(t)$	*a posteriori* prediction error
$\nu^0(t)$	*a priori* adaptation error
$\nu(t)$	*a posteriori* adaptation error
$P(z^{-1})$	polynomial defining the closed loop poles
$P_D(z^{-1})$	polynomial defining the dominant closed loop poles
$P_F(z^{-1})$	polynomial defining the auxiliary closed loop poles
A, M, F	matrices
$F > 0$	positive definite matrix
ω_0	natural frequency of a 2nd order system
ζ	damping coefficient of a 2nd order system
$\mathbf{E}\{\cdot\}$	expectation
$R(i)$	autocorrelation or cross-correlation
$RN(i)$	normalized autocorrelation or cross-correlation