List of symbols

e (n)	Estimation error
d (n)	Desired response
y (n)	Actual filter output
W	Tap – weight vector for filter, synaptic weights of the neuron
x(n)	Tap input vector
E	Expectation operator
J (W), ξ **(W,n)**	Cost function
μ	Step-size parameter
J(∞)	Final value of mean square error
Jmin	Minimum value of mean square error
Jex(∞)	Excess mean squared error
L	Block of pixels from image, group of samples from a signal.
Z (n)	Time-averaged signal
Y (n)	Band passed ECG
x (n)	Differentiated ECG
v(i)	Induced local field of neuron
y(i)	Output of neuron
k	Kernel
μ_j	n-dimensional parameter associated with the j^{th} hidden unit of RBFNN
σ_j	Standard deviation for jth hidden node of RBFNN
$\Delta w_{kj}(n)$	Change in connection weight between jth and kth neuron at time n
Wkj(n +1)	New value of synaptic weight between jth and kth neuron at n+1 time
x_{test}	Test vector
$T_{j,I(x)}(t)$	Gaussion Neighbourhood for winning Neuron I(x)
D_i	Euclidian Distance
H	Size of neighbourhood in Kohonen Grid
d_{ci}	Distance from the current node U_i to the winner U_c
α, η	Learning rate
c(x)	Encoder for the input vector x
x′(c)	Decoder of c(x)
Y	Filter output
U	Left singulat matrix
M	Data matrix with each row corresponds to input channel and columns correspond to successive sampling instances in time

V	Right singular matrix
Σ	Diagonal matrix whose diagonal entries are the singular values of M
r	Rank of M
C	Approximation to Σ^2
X+	Pseudo inverse of matrix **X**
X(n)	Vectors that stand for the input samples of the filter dimension : M X N
g(u)	The input-output relationship of the neurons in the left part of network
f(u)	The input-output relationship of the neurons in the right part of network
Ri	Input Resistance for continuous time Hopfield NN
Ci	Input capacitance for continuous time Hopfield NN
U(t)	Input voltage vector of the left part input voltage vector of the left part of Hopfield NN
Q(t)	Input voltage vector of the right part of the left part of Hopfield NN
B	The bias current vector of right part of the left part of Hopfield NN
$\mathbf{b_i}$	Bias of i^{th} node
$\mathbf{\theta_i}$	Threshold available at i^{th} node
$\varphi_h(.)$	Activation functions of neuron in hidden layer
$\varphi_o(.)$	Activation functions of neuron in output layer
$\mathbf{X_i}$	Input vector to the Neural Network
I	Number of input layer neurons
M	Number of test patterns for training of MLPANN
$\mathbf{W_i}$	Matrix for Synaptic weights of MLPANN for input layer size: **HXI**
H	Number of hidden layer neurons
$\mathbf{b_i}$	is the bias term for i^{th} hidden node
α	Momentum factor
Xo	Output vector of size **HXM**
Wo	Matrix for Synaptic weights for hidden layer size: **OXH**
O	Number of output layer neurons (Here 1).
$\mathbf{b_o}$	Bias term for o^{th} output node.
$\mathbf{e_j(n)}$	Difference between actual output and expected output at the j^{th} node, at instant n.
$\mathbf{y_i(n)}$	Input from i^{th} hidden neuron to the neuron j at output layer at time instant n.
α	Momentum factor
η	Learning rate
$\delta_j(n)$	Value of δ calculated at j^{th} output node
L	Dimension of input vector for vector quantization

K	Number of output (competing) nodes
B	Number of bits used to represent input sample.
f	Frequency of winning for a given node
T	Sampling rate