xxi

LIST OF SYMBOLS AND ABBREVIATIONS

ANPC	-	Active Neutral Point Clamped
ANFIS	-	Adaptive Neuro Fuzzy Inference System
AC	-	Alternate Current
A_1 to A_9	-	Approximation coefficients
AI	-	Artificial Intelligence
ANN	-	Artificial Neural Network
Vav	-	Average Voltage
BP	-	Back Propagation
BFA	-	Bacterial Foraging Algorithm
$\psi(t)$	-	Basic Wavelet
fc	-	Carrier Frequency
CHB	-	Cascaded H-bridge
CBs	-	Circuit Breakers
CWT	-	Continuous Wavelet Transform
CSI	-	Current Source Inverters
Vdc	-	DC Voltage
D_1 to D_9	-	Detailed coefficients
DCC	-	Diode Clamped Converter
DC	-	Direct Current
DTC-SVM	-	Direct Torque Control-Space Vector Modulation
DFT	-	Discrete Fourier Transform
$C_0(n)$	-	Discrete time signal
DWT	-	Discrete Wavelet Transform
DVR	-	Dynamic Voltage Restorer
EMTP	-	Electro Magnetic Transients Program
EMC	-	Electromagnetic Compatibility

FFT	-	Fast Fourier Transform
F	-	Feature Extraction
h(n) & g(n)	-	Filter coefficients
FC	-	Flying capacitor
FCEV	-	Fuel Cell Electric Vehicle
FL	-	Fuzzy Logic
GA	-	Genetic Algorithm
GP	-	Grid Partition
$d_1(n)$	-	High pass version of the original signal
HVDC	-	High Voltage Direct Current
HCMLI	-	Hybrid Cascaded Multilevel Inverter
IM	-	Induction Motor
X	-	Input
IGBT	-	Insulated Gate Bipolar Transistor
IGCT	-	Integrated Gate Commutated Thyristor
IPM	-	Interior Permanent Magnet
KVA	-	Kilovolt Ampere
KW	-	Kilowatt
H	-	Learning Rate
Z_L	-	Load Impedance
$C_1(n)$	-	Low pass version of the original signal
LV-IGBT	-	Low voltage Insulated Gate Bipolar Transistor
MATLAB	-	Matrix Laboratory
MSE	-	Mean Square Error
MV-IGBT	-	Medium voltage Insulated Gate Bipolar Transistor
MVA	-	Megavolt Ampere
MF	-	Membership Function
MOSFET	-	Metal Oxide Semiconductor Field Effect Transistor

m	-	Modulation Index
MRA	-	Multi Resolution Analysis
MLP	-	Multilayer Perceptron
MLID	-	Multilevel Inverter Drive
MRSD	-	Multi-Resolution Signal Decomposition
NN	-	Neural Network
NPC	-	Neutral point clamped
N	-	Number of Discrete Samples.
OC	-	Open Circuit
y	-	Output
PDPWM	-	Phase Disposition Pulse Width Modulation
PSPWM	-	Phase Shifted Pulse Width Modulation
PWM	-	Pulse Width Modulation
RBF	-	Radial Basis Function
ω	-	Range of Angular Frequencies
R-L Load	-	Resistive-Inductive Load
Vrms	-	Root Mean Square value of the Voltage
f_s	-	Sampling Frequency.
T	-	Sampling Time.
SDCS	-	Separate DC Source
SC	-	Short Circuit
f(t)	-	Signal or Function
SPWM	-	Sinusoidal Pulse Width Modulation
STD_MRA	-	Standard Deviation Multi Resolution Analysis
SSSC	-	Static Synchronous Series Compensator
S	-	Switch
3ϕ	-	Three Phase
Δt	-	Time Increment between Samples.
THD	-	Total Harmonic Distortion

Trimf	-	Triangular membership function
UPS	-	Uninterruptible Power Supplies
VLSI	-	Very Large Scale Integration
VA	-	Volt Ampere
VFI	-	Voltage Fed Inverter
VSI	-	Voltage Source Inverters
WPT	-	Wavelet Packet Transform
W	-	Weight