

LIST OF SYMBOLS AND ABBREVIATIONS

Symbols

b	-	A feature subset of dermatology dataset with preprocessed data
c_1, c_2	-	acceleration constants
E_1, \dots, E_t	-	accuracy estimates
a_i	-	Actual values
a_i, b_i and c_i		adjustable parameters
A_{ji}	-	Antecedent fuzzy set
b_j^k	-	Association degree
\bar{x}_i & $\bar{x}_i^{(j)}$		Average
$\mu_{A_i}(x)$	-	Bell shaped membership function
$f(t)$	-	Best fitting formulation
C_{CHOQUET}	-	Choquet integral chromosomes
C_j	-	Class Label
E	-	Classifier error
D	-	Clinical and Histopathological features dimension
C	-	Constant
C_Φ	-	Covariance matrix
F	-	Decision function
K	-	Desired ensemble size and the pseudo random generator
λ	-	Eigen value
v	-	Eigenvector
b^*	-	Ensemble output
$\ x - x_j\ $	-	Euclidean distance

$d(p, q)$	-	Euclidean n-space
$Eval$	-	Feature selection algorithm
E	-	Feature selection ensemble
$fitness_i$	-	Fitness value of the feature
f_i	-	Forecast values
F_i	-	F-score
m_k	-	Fuzzy measure
u_{ij}	-	Fuzzy Membership degree
$\mu_{A_i}(x) \& \mu_{B_{i-2}}(y)$	-	fuzzy membership function
u_{ij}	-	Fuzzy memberships function
$(R \downarrow C)$	-	Fuzzy rough lower estimation
$i = 1, \dots, Y$	-	index of the feature evaluator
X	-	Input training data
ε	-	Insensitive loss
ε	-	Insensitive loss function
$K(t_i, t_j)$	-	Kernel function
$\mathcal{J}_{KD}(x, y)$	-	Kleene-Dienesimplicator
α_i and α_i^*	-	Lagrange multiplier coefficients
$LearnOneRule()$	-	Learn rule function
$x_j^{min} \& x_j^{max}$	-	lower and upper bounds
ϵ_{mv}	-	Majority voting error rate
Φ	-	Mapping function
W_{max}	-	Maximum value of Weight
min_a and max_a values	-	Minimum and maximum values of each attribute
W_{min}	-	Minimum value of Weight
C	-	Number of classes
M	-	Number of classes
N	-	Number of classification forecasting periods

K	-	Number of nearest neighbors
L	-	Number of rules
$f(t)$	-	Objective function of SVM
p_{best_j}	-	Optimal feature subset position vector of agent j
G_{best}	-	Optimal feature subset position vector of group
β_i	-	Orthonormal eigenvectors
Y_k	-	Pattern classification soundness degree
PCF_j	-	Penalized Certainty Factor
PCF_j	-	Penalized Certainty Factor
$k_{j,g}^{(t)}$	-	Position features vector
p_i	-	Probability values of the bee
ϕ_{ij}	-	Random integer number
ϕ_{ij}, ψ_{ij}	-	Random number
$Rand()$	-	Random rate among 0 and 1
V'	-	Regularized items
$p_1; q_1; r_1; p_2; q_2$ and r_2 .	-	Resultant parameters
R_S	-	Rule set
RW_j	-	Rule weight
$\Phi(x_i)$	-	Sample of the feature
S	-	Search algorithm such as HGPSO and HABCA
P	-	Set of partitions data from preprocessed results
$= \{p_1, \dots, p_k\}$		
$\xi_i^* \& \xi_i$	-	Slack variables
$V_{f,g}^{(t+1)}$	-	Speed vector of agent j in reproduction step
$V_{j,g}^{(t)}$	-	Speed vector of PSO
HS	-	Stochastic search algorithm
$iter_{max}$	-	The number of iterations

$iter$	-	the number of iterations at present
Th	-	Thershold
R^m	-	Training samples
w	-	weighting factor
$\{eval_1, \dots, \dots eval_k\}$	-	Y feature evaluators

Abbreviations

ANFIS	-	Adaptive neuro fuzzy inference classifier
ACO	-	ant colony optimization
ABC	-	Artificial Bee Colony
ANN	-	Artificial Neural Networks
BBN	-	Bayesian Belief Network
BENCH	-	Biclustering driven ENsemble of Classifiers
BITSGENE	-	bits per training data that is gene
CBC	-	clustering based classification
CFSTGA	-	Correlation-based Feature Selection with Taguchi-genetic algorithm
DT	-	Decision tree
DTGA	-	Decision Tree and Genetic Algorithm
DL	-	Description Length
DE	-	differential evolution
EM	-	ensemble method
EWKM	-	Entropy Weighting K-Means
EU	-	Euclidian distance
EA	-	Evolutionary Algorithm
FS	-	feature selection
FSE	-	Feature Subset Ensemble

Fuzzy ART	-	Fuzzy Adaptive Resonance Theory
FCM	-	Fuzzy c-means
FIS	-	Fuzzy Inference System
FKNN	-	Fuzzy k-Nearest Neighbor Algorithm
FRPRNN	-	Fuzzy Rough Positive Region based Nearest Neighbour
FRB	-	Fuzzy Rule based Classifier
GT	-	good-Turing
HABC	-	Hybrid Artificial Bee Colony
HGPSO	-	Hybrid Genetic Particle Swarm Optimization
IFSFFS	-	Improved F-score and Sequential Forward Floating Search
IDF	-	Inverse Document Frequency
KPCA	-	Kernel Principal Component Analysis
KMO-RSVM	-	K-Mode RSVM
KDD	-	Knowledge discovery in databases
ML	-	machine learning
MAPE	-	mean absolute percentage error
MCE	-	micro-classifier ensemble classification technique
MCE	-	Micro-classifier ensemble classification
MAR	-	Missing at random
MCAR	-	Missing completely at random
MCFS	-	Multi-Cluster Feature Selection
MOGA	-	Multi-Objective Genetic Algorithm
NMAR	-	Not missing at random
OVA	-	One-Versus-All
OSH	-	optimal separating hyper plane
PSO	-	particle swarm optimization
PmSVM	-	Power Mean SVM
PCA	-	Principal component analysis

RSM	-	Random Subspace Method
RFE	-	Recursive Feature Elimination
RFE-SVM	-	Recursive Feature Elimination Support Vector Machine
RB	-	Rule base
SOM	-	Self Organizing Map
SOTA	-	Self-Organizing Tree Algorithm
SREC	-	Simple Rule-based Ensemble Classifiers
SPEC	-	Spectral Feature Selection
SS	-	Stochastic search
SCA		strong covering algorithms
SSOM	-	Supervised Self-Organizing Map
SVM	-	Support vector machine
TF	-	Term Frequency