

Abbreviations

ACO	Ant Colony Optimization
ANS	Anticlockwise Negative Shift
ANUI	Average Normalized Unifiability and Isolability
APS	Anticlockwise Positive Shift
ARI	Adjusted Rand Index
AUC	Area Under the receiver operating characteristic Curve
AVI	Average Isolability
AVU	Average Unifiability
CDF	Cumulative Density Function
CEW	Community-based Edge Weight
CFGC	Fuzzy Centwr-based Graph Clustering
CLP	Community-based Link Prediction
CLP-EB	Community-based Link Prediction-Edge Betweenness
CLP-EP	Community-based Link Prediction-Edge Path
CLP-ES	Community-based Link Prediction-Edge Spanning
CNS	Clockwise Negative Shift
CPS	Clockwise Positive Shift
EA	Evolutionary Algorithm
EC	Edge Centrality
ENBC	Ego Network Based Community
EOA	Evolutionary Optimization Algorithm
ERW-Kpath	Edge Random Walk k-Path

ExtD	External Density
FastU	Fast Unfolding
FMM/H2	Fuzzy Modularity Maximization/Heuristic 2
FN	False Negative
FP	False Positive
FuzAg	Fuzzy Agglomerative
GA	Genetic Algorithm
GAFCD	Genetic Algorithm based Fuzzy Community Detection
GR-QC	General Relativity and Quantum Cosmology
HC-PIN	Hierarchical Clustering-Protein Interaction Networks
HEP-TH	High Energy Physics - Theory
jDE	Janez Differential Evolution
LeadF	Leader-Follower
LFR	Lancichinetti, Fortunato and Radicchi
LICOD	Leaders Identification for Community Detection
MDP	Membership Degree Propagation
MCDM	Multiple Criterion Decision Making
NL	Neutral Line
NMI	Normalized Mutual Information
NoC	Number of Communities
OLPSO	Orthogonal Learning Particle Swarm Optimization
PSO	Particle Swarm Optimization
PSOCA	Particle Swarm Optimization with Cognitive Avoidance)
PSO-CATV	Time Varying Particle Swarm Optimization with Cognitive Avoidance)
PSO-TVAC	Particle Swarm Optimization with Time Varying Acceleration Coefficient
PSO-TVIW	Particle Swarm Optimization with Time Varying Inertia Weight
RandW	Random Walk
RITA	Relative Inclination Towards Accuracy
RL	Regression Line

RS	Ranging Score
RW	Random Walk
SCAN	Structural Clustering Algorithm for Networks
SIS	Susceptible-Infected-Susceptible
SLR	Simple Linear Regression
TN	True Negative
TOPSIS	Technique for Order Preference by Similarity to Ideal Solution
TP	True Positive

Symbols

C	detected community structure
R	real community structure
C_i	community i
α	threshold for Reachability
β	threshold for Isolability
η	ego network
μ	mixing parameter
ψ	membership threshold
U	partition matrix
U^+	extended partition matrix
t_{max}	maximum number of iterations
δ_i	size of community that include node i
$\sigma_{st}(e_{ij})$	number of shortest paths between node i and j
$\sigma_{st}^k(e_{ij})$	number of paths having at least k length
T_s	number of spanning trees
$\delta(u, v)$	strength of connection between any two nodes u and v