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| --- | --- | --- | --- |
| **Type name** | **formula** | **Description** |  |
| Betweenness |  | The ratio of all the shortest paths passing through a node and the total number of shortest paths in the network. | V: the set of all nodes and is the number of shortest path between vertices *s* and *t*. (*u*): number of shortest path between *s* and *t* passing through nodes *u*. |
| Closeness |  | A centrality measure of a vertex and is defined as the average geodesic distance to all other vertices | n: the number of nodes in the network; dist(*u*,*v*):the shortest path distance between nodes *u* and *v*. |
| Eigenvector Centrality |  | The eigenvector component corresponding to largest eigenvalue of adjacency matrix | A*ij*: the strength of the physical correlation between nodes *i* and *j*; *λ*: largest eigenvalue of A; x*i* : eigenvector centrality of node *i*. |
| Eccentricity |  | The shortest path distance of the node to the farthest node in the network. |  |
| Degree |  | Number of edges incident to a vertex. | A*uv*: the number of contacts between nodes *u* and *v*. |
| Clustering Coefficient |  | A measure of the closeness the neighbors of a vertex | λ(*u*) is the neighbors of u connected by an edge |
| Average Nearest Neighbor Degree |  | The average of the degree of its immediate neigh bours. | N(*u*): the neighbors of *u*. |

**Residue interaction network characteristic**