Algorithms

Below is a list of the algorithms created so far from each CNS CIShell-powered tool. There are two lists, one organizes the algorithms by their function in the tools and the other organizes the algorithms alphabetically. Some pages are currently somewhat sparse, as of March 2011.

If you would like to view an index of algorithms in a particular CNS CIShell-powered tool, see the Sci2 Algorithm Index, the NWB Manual, or the EpiC Manual.

Source code for these algorithms is browsable in the CNS Center repository, see Document & Developer Resources (direct link to repository is currently down. Should be available soon as of March 2011).

Algorithms organized by function

Data Preparation

- Remove ISI Duplicate Records
- Remove Rows with Multitudinous Fields
- Extract Directed Network
- Extract Bipartite Network
- Extract Paper Citation Network
- Extract Author Paper Network
- Extract Co-Occurrence Network
- Extract Word Co-Occurrence Network
- Extract Co-Author Network
- Extract Reference Co-Occurrence (Bibliographic Coupling) Network
- Extract Document Co-Citation Network
- Detect Duplicate Nodes
- Update Network by Merging Nodes
- Convert to Generic Publication

Database

ISI

- Merge Identical ISI People
- Suggest ISI People Merges
- Merge Document Sources
- Match References to Papers
- Extract Authors
- Extract Documents
- Extract Keywords
- Extract Document Sources
- Extract Authors by Year
- Extract References by Year
- Extract Original Author Keywords by Year
- Extract New ISI Keywords by Year
- Extract Authors by Year for Burst Detection
- Extract Documents by Year for Burst Detection
- Extract Original Author Keywords by Year for Burst Detection
- Extract New ISI Keywords by Year for Burst Detection
- Extract References by Year for Burst Detection
- Extract Longitudinal Summary
- Extract Co-Author Network
- Extract Author Citation Network
- Extract Document Citation Network (Core Only)
- Extract Document Citation Network (Core and References)
- Extract Document Source Citation Network (Core Only)
- Extract Document Source Citation Network (Core and References)
- Extract Document Co-Citation Network (Core Only)
- Extract Document Co-Citation Network (Core and References)
- Extract Document Source Co-Citation Network (Core Only)
- Extract Document Source Co-Citation Network (Core and References)
- Extract Author Co-Citation Network
- Extract Author Bibliographic Coupling Network
- Extract Document Bibliographic Coupling Network
- Extract Document Source Bibliographic Coupling Network
- Extract Weighted Document-Document Network

NSF

Preprocessing

General

Temporal

Geospatial

Topical

Networks

Analysis

Temporal

Geospatial

- Geocoder
- Congressional District Geocoder
- Yahoo! Geocoder
- Bing Geocoder

Topical

- Burst Detection

Networks

- Network Analysis Toolkit (NAT)

Unweighted & Undirected

- Node Degree
- Degree Distribution
- K-Nearest Neighbor (Java)
- Watts-Strogatz Clustering Coefficient
- Watts Strogatz Clustering Coefficient over K
- Diameter
- Average Shortest Path
- Shortest Path Distribution
- Node Betweenness Centrality
- Weak Component Clustering
- Global Connected Components
- Extract K-Core
- Annotate K-Coreness
- Blondel Community Detection
- HITS

Weighted & Undirected

- Clustering Coefficient
- Nearest Neighbor Degree
- Strength vs Degree
- Degree & Strength
- Average Weight vs End-point Degree
- K-Nearest Neighbor (Java)
- Strength Distribution
- Weight Distribution
- Randomize Weights
- PageRank
- Node Betweenness Centrality
- Blondel Community Detection
- HITS
- MST-Pathfinder Network Scaling
- Fast Pathfinder Network Scaling

Unweighted & Directed

- Node Indegree
- Node Outdegree
- Indegree Distribution
- Outdegree Distribution
- K-Nearest Neighbor
- Single Node In-Out Degree Correlations
- Dyad Reciprocity
- Arc Reciprocity
- Adjacency Transitivity
- Node Betweenness Centrality
- Weak Component Clustering
- Strong Component Clustering
- Extract K-Core
- Annotate K-Coreness
- HITS
- PageRank

Weighted & Directed

- HITS
- PageRank
- Fast Pathfinder Network Scaling
- Blondel Community Detection

Network

- Stochastic
- Bipartite Network Graph

R

- Create an R Instance
- Run Rgui
- Send a Table to R
- Get a Table from R

Scientometrics

- Remove ISI Duplicate Records
- Remove Rows with Multitudinous Fields
- Detect Duplicate Nodes
- Update Network by Merging Nodes
- Extract Directed Network
- Extract Paper Citation Network
- Extract Author Paper Network
- Extract Co-Occurrence Network
- Extract Word Co-Occurrence Network
- Extract Co-Author Network
- Extract Reference Co-Occurrence (Bibliographic Coupling) Network
- Extract Document Co-Citation Network

Readers

Facebook Reader

- Facebook Access Token
- Facebook Friends Data
- Facebook Mutual Friends

Flickr Reader

- Flickr Reader Algorithm

Google Citation Reader

- Google Citation User ID Search Algorithm
- Attach Citation Indices from Google Scholar
- Attach Citation Table from Google Scholar

Twitter Reader

- Twitter Reader Algorithm

XML to CSV Converter

- XML to CSV Converter Algorithm

Algorithms organized alphabetically

- Adjacency Transitivity
- Aggregate Data
- Annotate K-Coreness
- Annotate K-Coreness (Unweighted & Directed)
- Arc Reciprocity
- Attach Citation Indices from Google Scholar
- Attach Citation Table from Google Scholar
- Average Shortest Path
- Average Weight vs End-point Degree
- Barabási-Albert Scale-Free
- Bing Geocoder
- Bipartite Network Graph
- Blondel Community Detection
- Burst Detection
- Can
- Chord