

Network Graph Toolkit

a collection of tools and applications for network analysis

The NGraph Toolkit consists of over thirty programs, filters, and scripts for the analysis of large networks represented as mathematical graphs. These are stand-alone programs written in C++, C shell, and Bash scripts. The core algorithms are provided by the [NGraph](#) C++ library, which is used to build some of the following applications:

- adj2g.cc: convert free form adjacency list to graph (.g) file
- adjm2g.cc: convert multi-line adjacency list to graph (.g) file
- annotate_groups.cc : replace integer in .group files with vertex labels (.v)
- cg2svg.cc: convert 3D coordinate file (.crd) and a graph (.g) file to a SVG file
- g2adj: convert graph file (.g) into a adjacency file, each node and neighbors on same line
- g2madj: convert graph file (.g) into a multi-line adjacency file
- g2dccf.cc [-u]: list degree (in & out) and clustering coefficient for each vertex
- g2degree.cc [-u]: list degree (in & out) for each vertex
- g2dot.c: convert graph (.g) file to (directed) GraphViz format (.dot)
- g2mtx.cc [-u]: convert graph (.g) file into (symmetric) Matrix Market format
- g2vertices.cc : counts the number of distinct nodes in a (integer) graph
- gprune.cc (removes terminal branches form directed graph)
- g2udot.cc: convert graph (.g) file to (undirected) GraphViz format (.dot)
- g2ug.cc : converted directed graph to (compact) undirected graph (.g) file
- g2ug.csh : script to convert multiple graph files
- gi2g1.cc: convert integer graph to contiguous 1-based integer (.g) file
- graph_summary.cc: prints out degree correlation and clustering coefficient for (.g) files
- graph_summary.csh: script for processing multiple graph files
- gs2g1.cc: convert string graph to contiguous 1-based integer (.g) file
- gtranspose: reverse edge directions on graph (.g) file
- gu2dot.c: convert graph (.g) file to (undirected) GraphViz format (.dot)
- mmio.c/mmio.h: Matrix Market I/O functions (used by g2mtx, mtx2g)
- mtx2g .c: convert Matrix Market format into graph (.g) file
- mtx2g.csh : script to process multiple mtx files
- q2g.cc [-u] : convert clique graph (one per line format, .q) into a [undirected] graph (.g) file
- subgraph.cc: given a .g graph and a vertex (subset), return the subgraph formed
- symm_diff.cc : find (word-wise) symmetric difference of two text files
- symm_diff_line.cc : find (line-wise) symmetric difference of two text files
- token.hpp : class to dispense tokens from a given string (used by adj2g, adjm2g, q2g)
- url_index : creates a list of urls, given a graph (.g) file and a URL (.t) file
- d2dd: takes a degree list and creates a discrete distribution file (.dd)

File extensions

- (d|u) : directed / undirected
- .gv : vertex list
- .ge : edge list
- .gr : degree

- .grb : degree distribution
- .gf : clustering coeff
- .go : correlation

Community Info:

- .mt : vertex set list (text labels) used to identify communities
- .mi : vertex set list (integer) used to identify communities
- .md : average distance (in directory tree) between elements in each community
- .gcm : (vertex, community) pairs list (e.g. [vertex1, community1])
- .stat : summary of URL commonality in each group

Graph formats

- *.g : simple (edge-list) format (.g, .gu, .gd) of non-negative integer vertices
- *.gs : text (string) edge-list graph format
- *.dot : GraphViz format
- *.adj : adjacency list format (vertex and neighbors on one line)
- *.mtx: Matrix Market sparse matrix (adjacency matrix) format
- *.net : [Pajek](#) format
- *.gdf : [Guess](#) format
- *.graphml : [GraphML](#) format

Graph File extensions

- [a] : annotated (nodes or edges have optional ':' followed by generic string)
- (u|d) : undirected / directed
- (i | s) : unsigned integer / string
- (0|1) : 0-based / 1-based
- *.g : edge-list graph format (assumes no loops, multiple edges, or isolated vertices)
- *.g1 : graph with contiguous 1-based vertices
- *.g0 : graph with contiguous 0-based vertices
- *.gu : undirected (compact) graph
- *.gd: directed graph
- *.gv : vertex list (one per line: node name, with optional attributes)
- *.gr : vertex and degree (undirected)
- *.gdr : vertex and degree in, out (directed)
- *.cf : clustering coefficients

For example: *.gu1 represents an undirected graph, with 1-based contiguous vertices. *) graph file tools:

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Download

- NGraph: Network Graph Toolkit
 - **C++ source code:** [ngraph_toolkit_4_5.zip](#) (9 KB)

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