Testing Document

This program takes a single Netdraw .VNA file as an command line argument. It parses the information from the file line by line and creates a graph with the collected vertex and arc data specified by the .VNA file. The program then collects and outputs basic statistics on the graph.

\*This document does not include results for **mean geodesic distance** and **graph diameter** metrics

Sample .vna files included

[SCC-Test.vna](../SCC-Test.vna)

[celegansneural.vna](../celegansneural.vna)

Testing Results:

--------------------------------------------------------

Graph SCC-Test.vna

--------------------------------------------------------

|V| = 41

|A| = 67

Density = 0.04085365853658537

Degree distribution: minimum average maximum

inDegree(v) 0 1.634 4

outDegree(v) 0 1.634 4

Number of Strongly Connected Components: 12

Number of Members in Largest Strongly Connected Component: 8

Percent Vertices in Largest Strongly Connected Component: 19.51219512195122

Reciprocity: 0.11940298507462686

Degree Correlation: -0.3333333333333333

number of paths: 6

number of triads: 6.0

Clustering Coefficient: 1.0

**Real World Networks**

--------------------------------------------------------

Graph celegansneural.vna

--------------------------------------------------------

|V| = 297

|A| = 2345

Density = 0.026674401674401674

Degree distribution: minimum average maximum

inDegree(v) 0 7.896 134

outDegree(v) 0 7.896 39

Number of Strongly Connected Components: 57

Number of Members in Largest Strongly Connected Component: 239

Percent Vertices in Largest Strongly Connected Component: 80.47138047138047

Reciprocity: 0.16801705756929639

Degree Correlation: 0.08609081205353478

number of paths: 302

number of triads: 1010.0

Clustering Coefficient: 3.3443708609271523

--------------------------------------------------------

Graph political-blogs.vna

--------------------------------------------------------

|V| = 1490

|A| = 19025

Density = 0.0085751889696702

Degree distribution: minimum average maximum

inDegree(v) 0 12.768 337

outDegree(v) 0 12.768 256

Number of Strongly Connected Components: 688

Number of Members in Largest Strongly Connected Component: 793

Percent Vertices in Largest Strongly Connected Component: 53.22147651006711

Reciprocity: 0.24252299605781866

Degree Correlation: 0.8431170077994604

number of paths: 4226

number of triads: 32335.0

Clustering Coefficient: 7.651443445338382

--------------------------------------------------------

Graph wiki-Vote.vna

--------------------------------------------------------

|V| = 7115

|A| = 103689

Density = 0.0020485375110809584

Degree distribution: minimum average maximum

inDegree(v) 0 14.573 457

outDegree(v) 0 14.573 893

Number of Strongly Connected Components: 5816

Number of Members in Largest Strongly Connected Component: 1300

Percent Vertices in Largest Strongly Connected Component: 18.271257905832748

Reciprocity: 0.0564572905515532

Degree Correlation: 1.1110578594101619

number of paths: 5356

number of triads: 196827.0

Clustering Coefficient: 36.74887976101569

**Random Graphs**

*\*comparison to C. Elegans network*

------------------------------------------------------------------------

g-297-2345.vna

------------------------------------------------------------------------

|V| = 297

|A| = 2345

Density = 0.026674401674401674

Degree Distribution: minimum average maximum

inDegree 2 7.896 18

outDegree 2 7.896 19

Number of Strongly Connected Components: 1

Percent Vertices in Largest Strongly Connected Component: 100.000

Reciprocity: 0.028997867803837955

Degree Correlation: -0.07936507936507936

number of paths: 14

number of triads: 157.0

Clustering Coefficient: 11.214285714285714

*\*comparison to Political Blogs network*

------------------------------------------------------------------------

g-1490-19025.vna

------------------------------------------------------------------------

|V| = 1490

|A| = 19025

Density = 0.0085751889696702

Degree Distribution: minimum average maximum

inDegree 2 12.768 25

outDegree 2 12.768 30

Number of Strongly Connected Components: 1

Percent Vertices in Largest Strongly Connected Component: 100.000

Reciprocity: 0.007358738501971091

Degree Correlation: 0.047619047619047616

number of paths: 14

number of triads: 677.0

Clustering Coefficient: 48.357142857142854

*\*comparison to Wikipedia vote network*

------------------------------------------------------------------------

g-7115-103689.vna

------------------------------------------------------------------------

|V| = 7115

|A| = 103689

Density = 0.0020485375110809584

Degree Distribution: minimum average maximum

inDegree 4 14.573 30

outDegree 1 14.573 36

Number of Strongly Connected Components: 1

Percent Vertices in Largest Strongly Connected Component: 100.000

Reciprocity: 0.0017552488692146708

Degree Correlation: -0.03409090909090909

number of paths: 6

number of triads: 1010.0

Clustering Coefficient: 168.33333333333334

An interesting find is that while the random graphs had the same number of |V| and |E|, the results were entirely different than the original real world graphs. For some reason my degree correlation and clustering coefficient metrics did not match the results given online.

Due to the looming deadline, and running out of time, I did not have the time to recheck and correct my methods.

[Return to Index](index.html)