KONECT
The Koblenz Network Collection

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Four Degrees of Separation

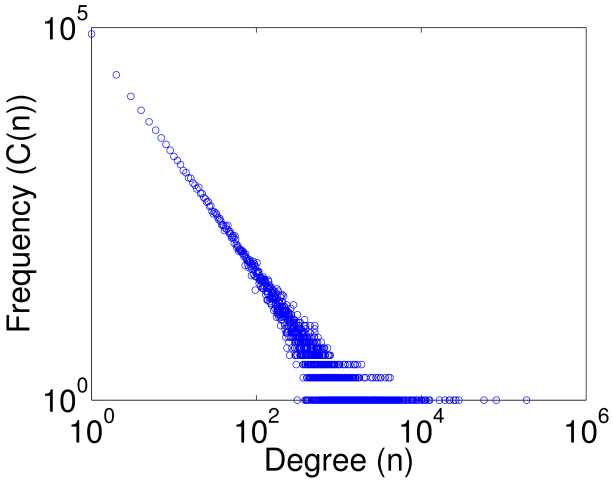
(Backstrom, Boldi, Rosa & Ugander, best paper WebSci'12)

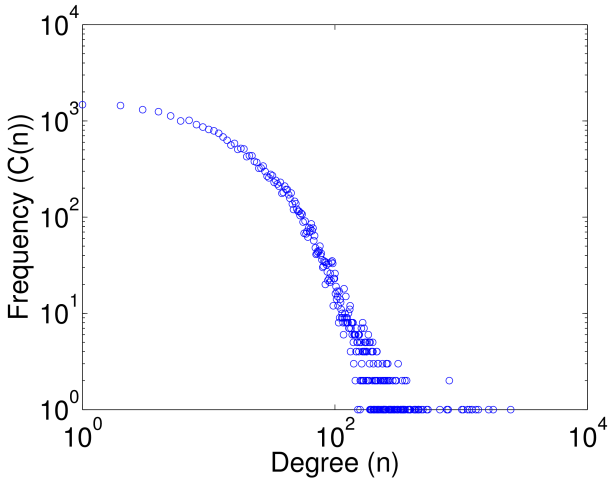
"The average distance on the Facebook graph is 4.74"

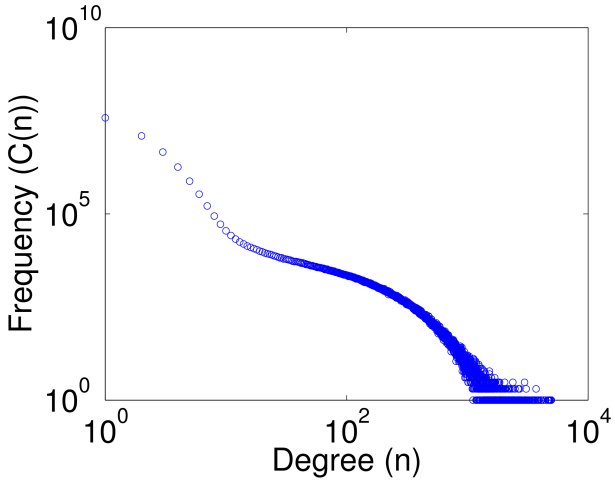
⇒ What is the average distance in other social networks?

So, You think You Have a Power Law, Do You? Well Isn't That Special?

(Shalizi http://cscs.umich.edu/~crshalizi/weblog/491.html)



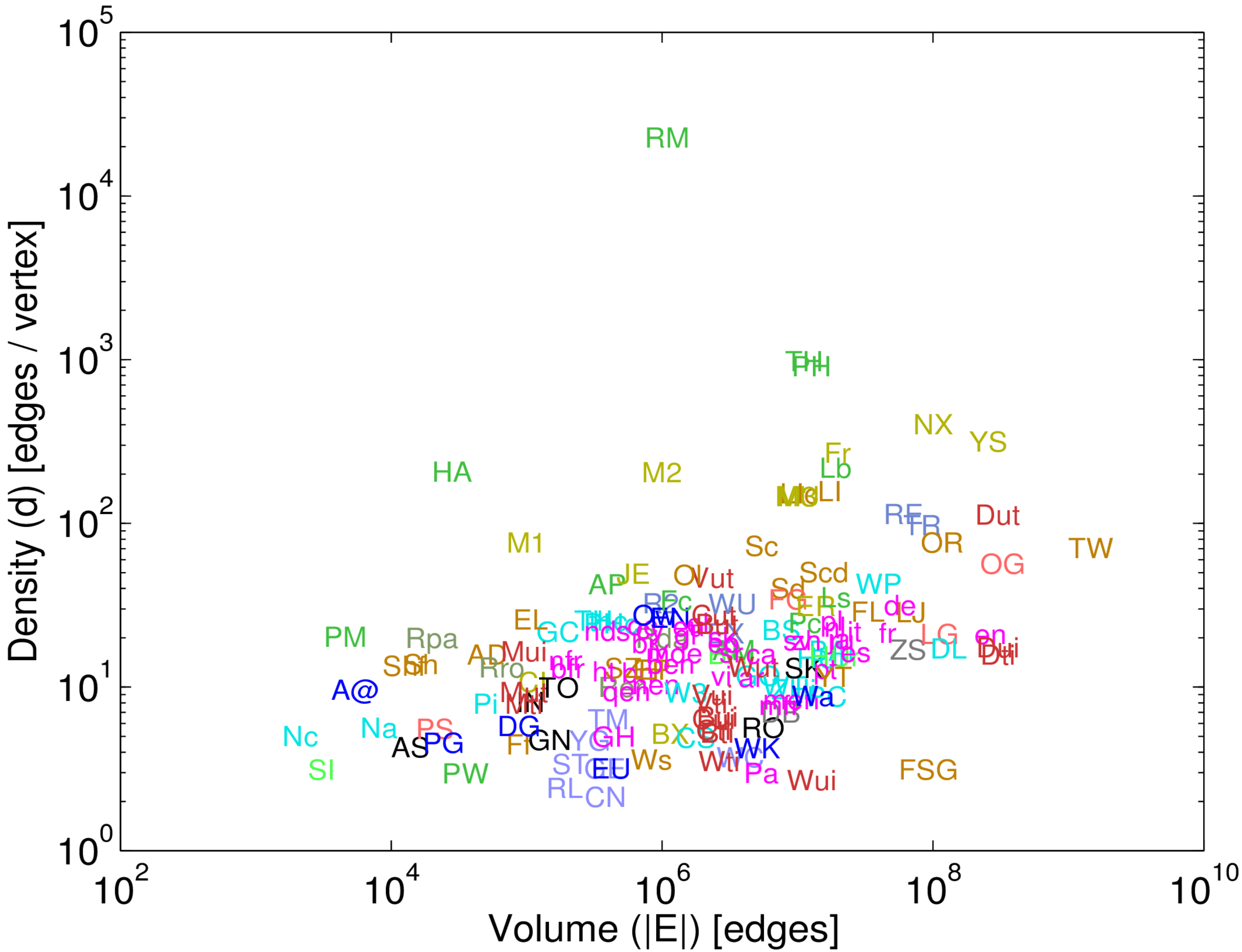




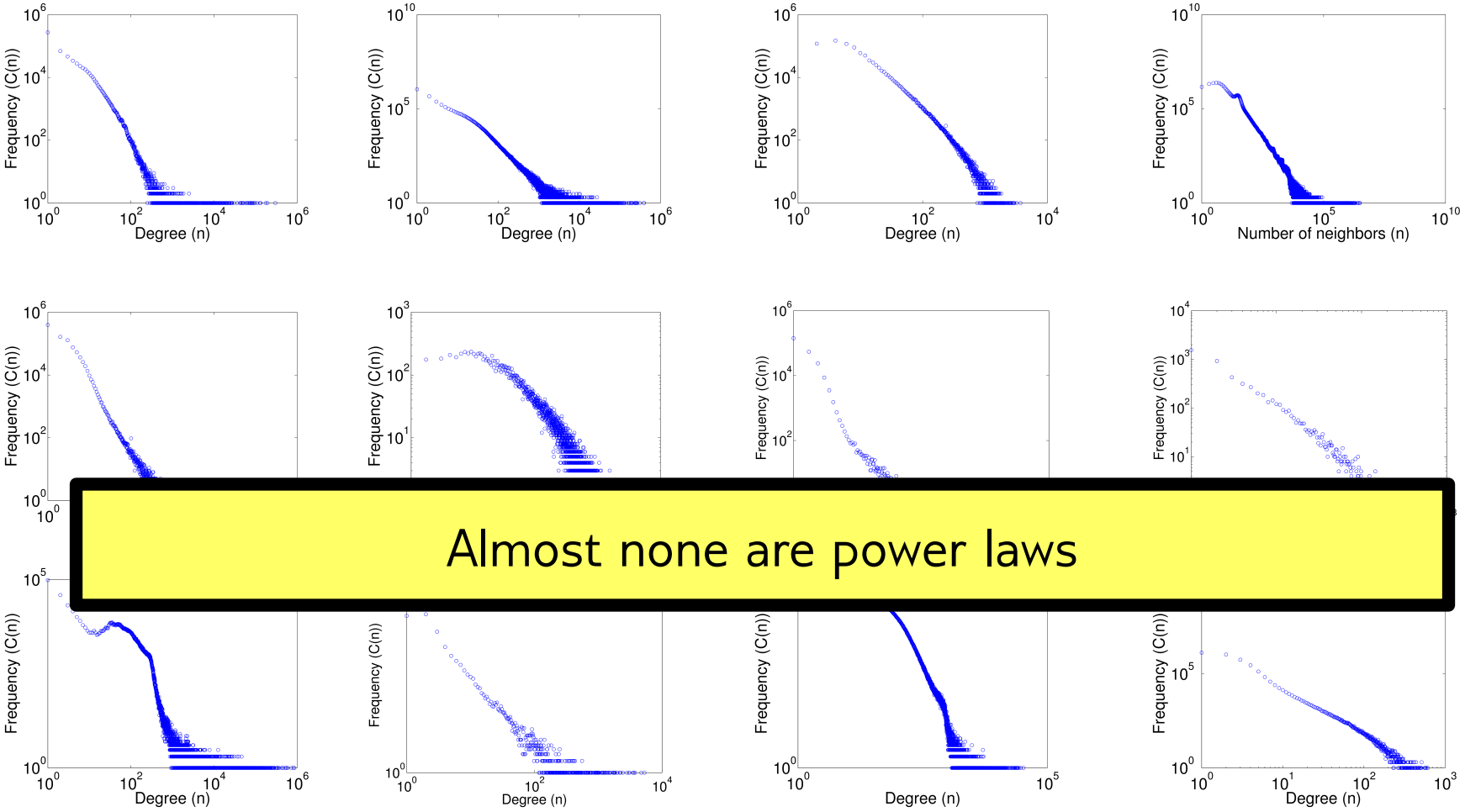
⇒ How many networks really are power laws?

150 Networks

authorship communication
co-occurrence features folksonomy
interaction physical ratings reference
semantic social text

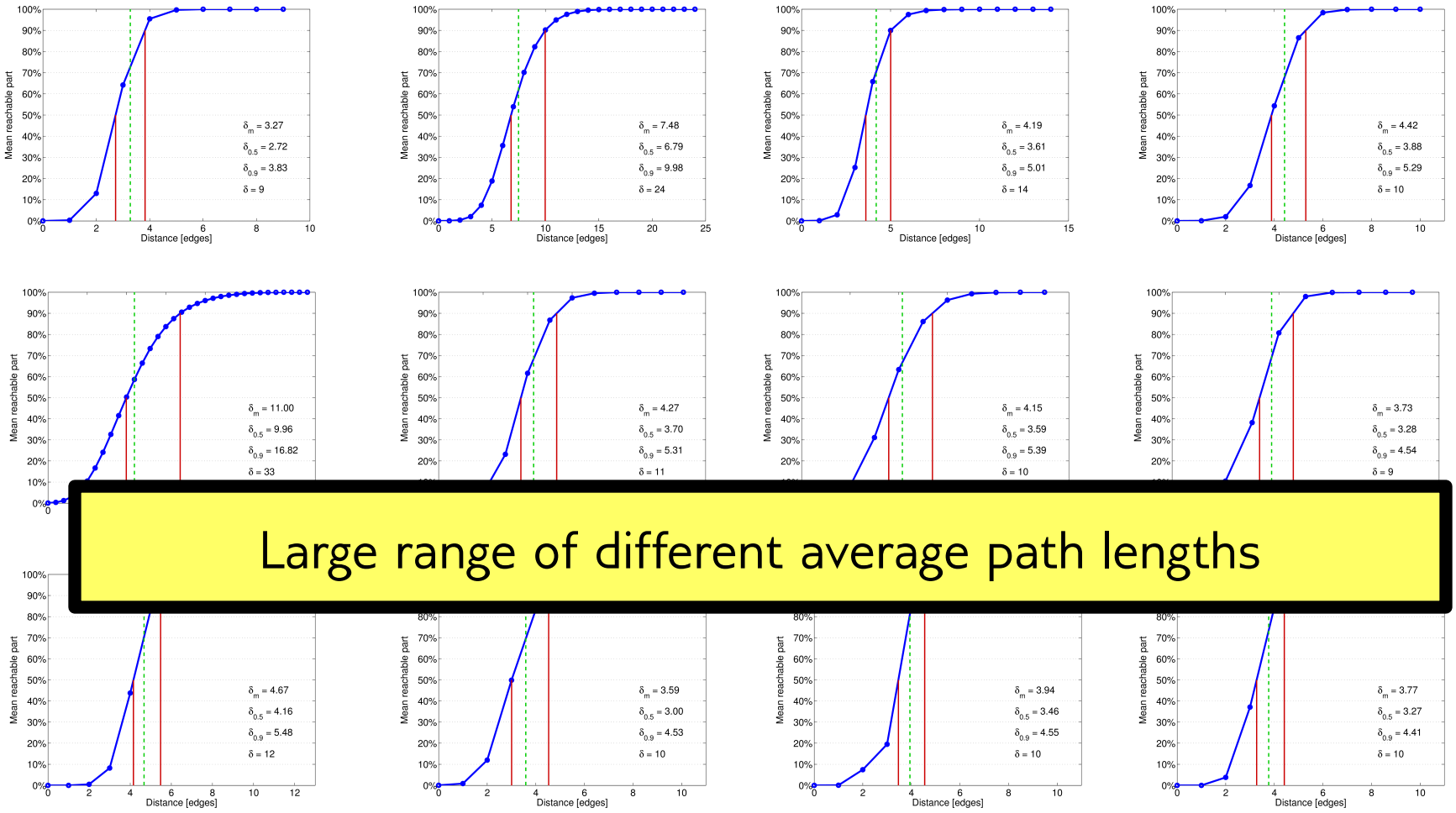

Density (d) [edges / vertex]
Volume (|E|) [edges]
10^0
10^1
10^2
10^3
10^4
10^5
10^2
10^4
10^6
10^8
10^{10}
RM
HA
M2
NX
YS
M1
Dut
OR
TW
OG
WP
PM
Rpa
A@
Nc
Na
SI
PW
DG
GN
TO
RO
WK
FSG
Wui
Pa
CN
RL
Ws
ZS
DL
Sc
Scd
FL
LJ
BX
TM

Degree Distributions



Almost none are power laws

Hop Plots



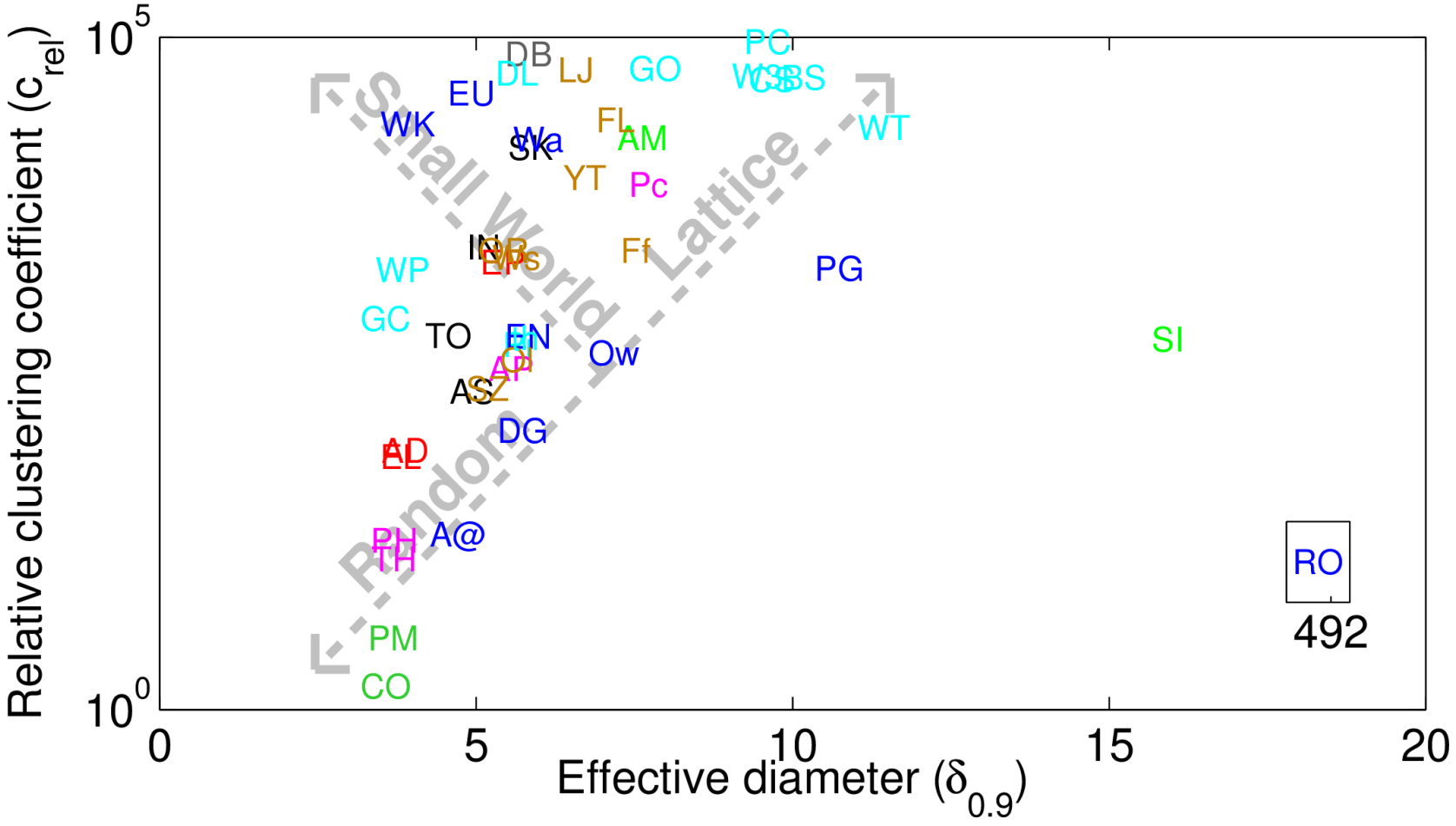
Large range of different average path lengths

Network Statistics

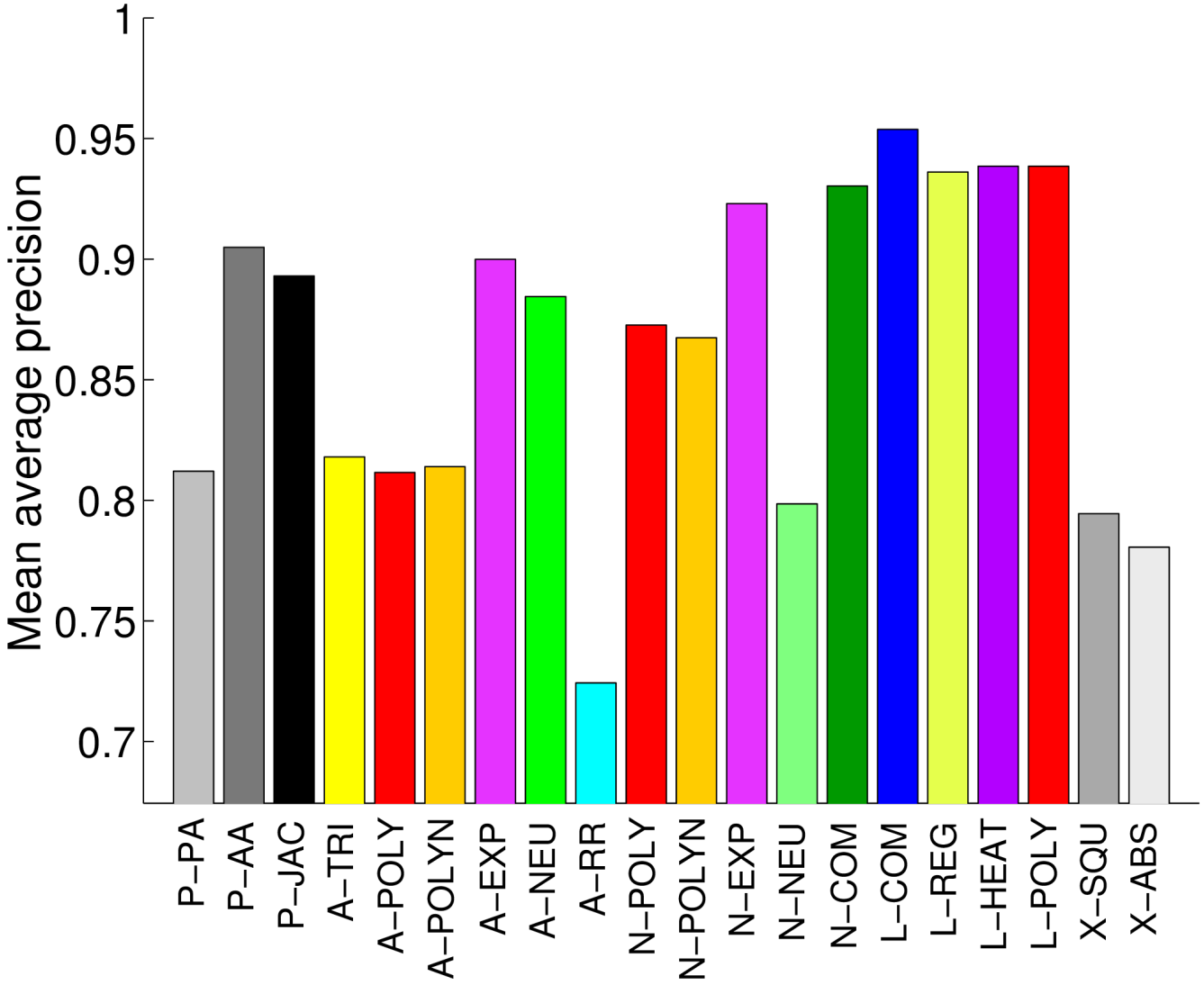
Network info

Category	Interaction
Code	**HA**
Data source	http://www.cl.cam.ac.uk/research/srg/netos/haggle/
Description	Person–person contact
Format	U Undirected
Edge weights	= Multiple
Metadata	Time
Size	274 vertices
Volume	28,244 edges
Density	206.16 edges / vertex
Fill	0.258056 edges / vertex^2
Largest connected component	274 vertices
Clustering coefficient	0.566414
Algebraic connectivity	0.992336
Spectral norm	1,231.03
Diameter	4 edges
90-percentile effective diameter	2.79 edges
Median shortest path length	1.95 edges
Mean path length	2.42 edges

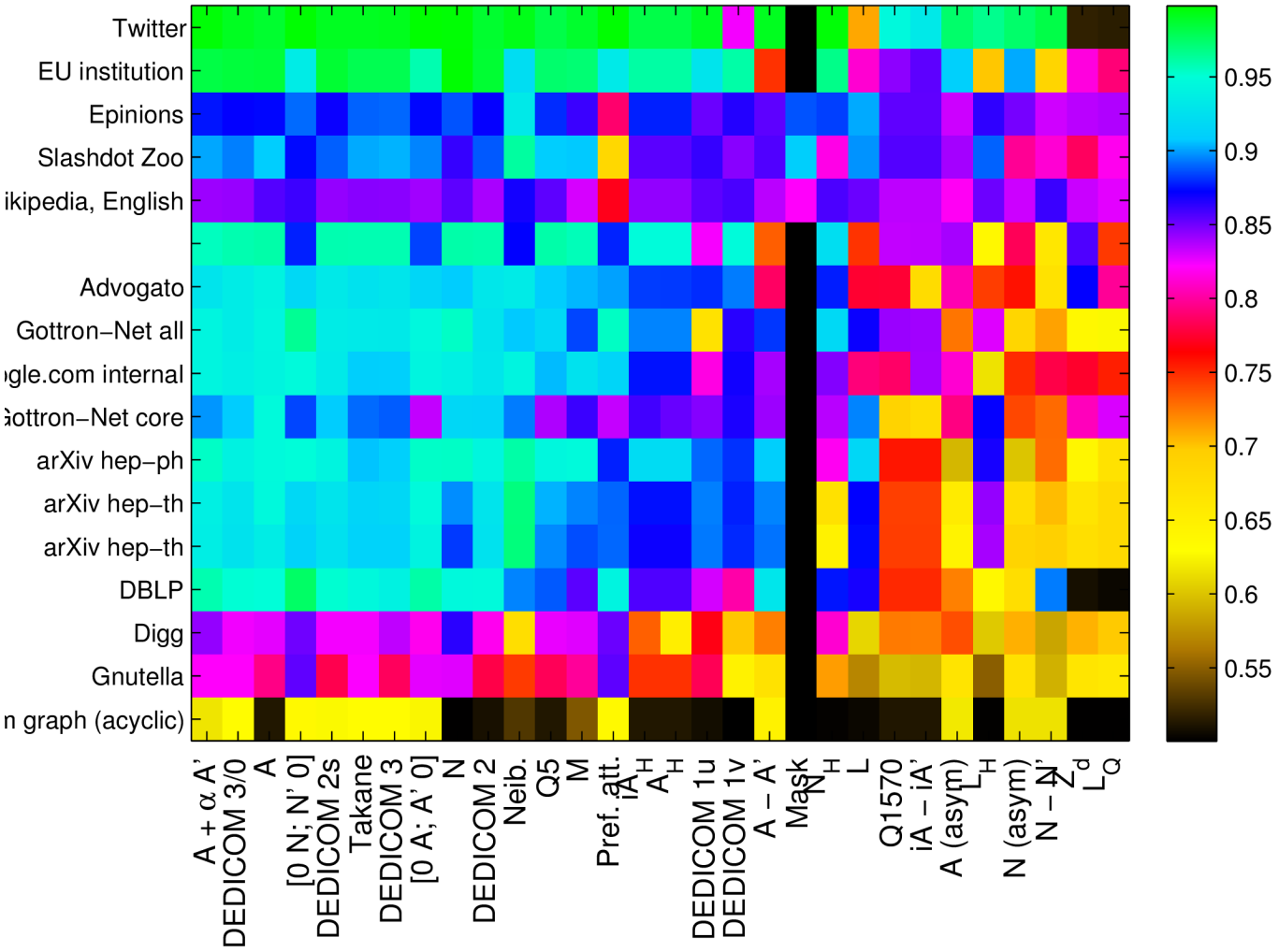
Compare Networks



Link Prediction Evaluation

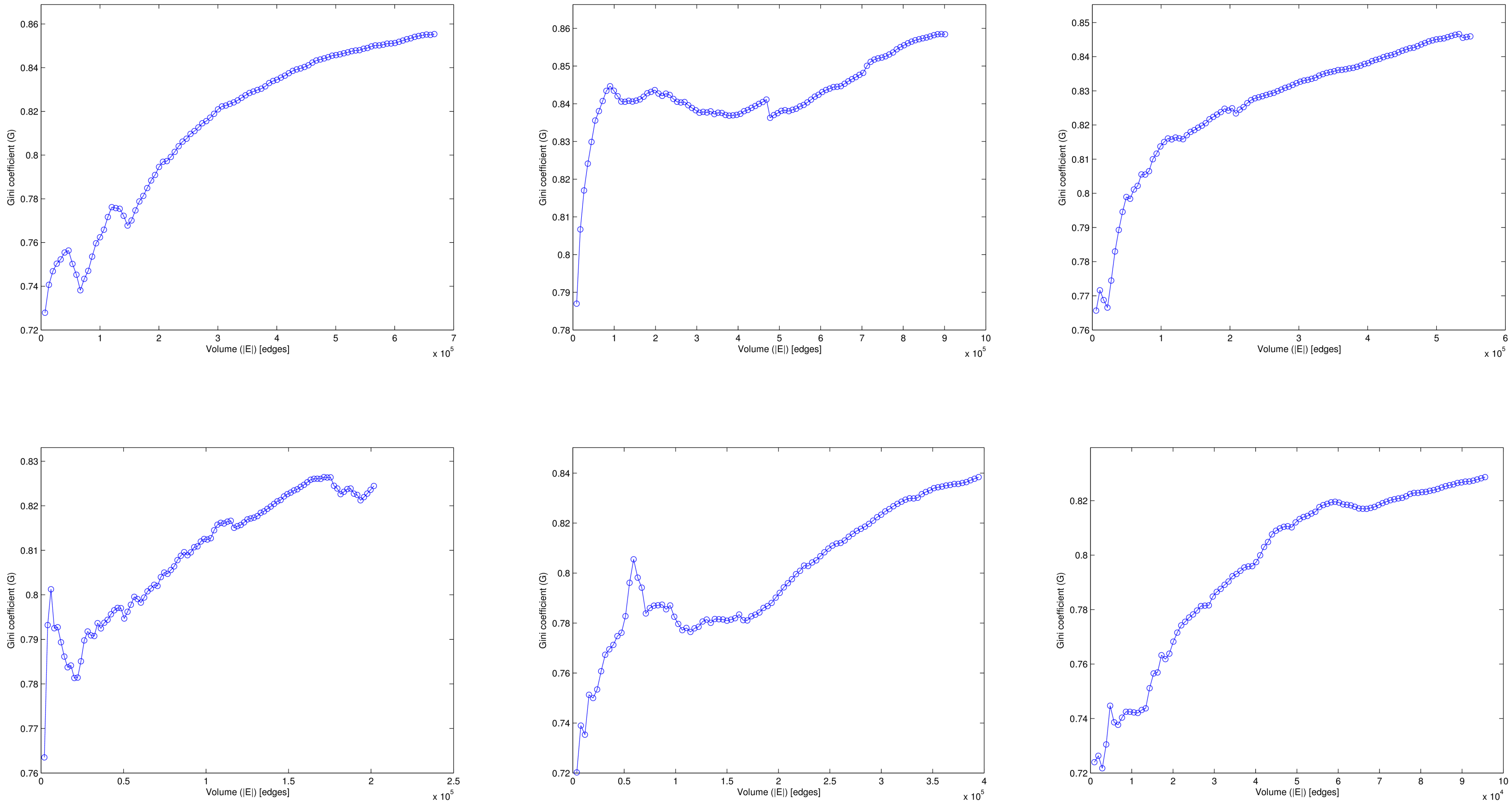


Link Prediction Comparison



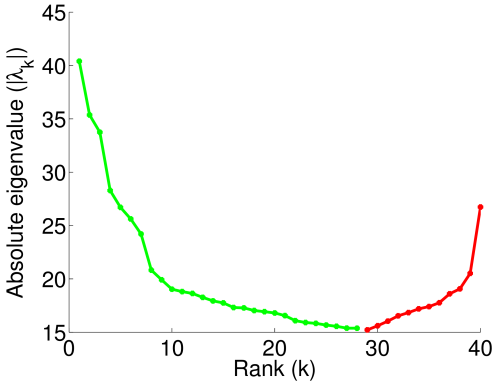
Temporal Analysis

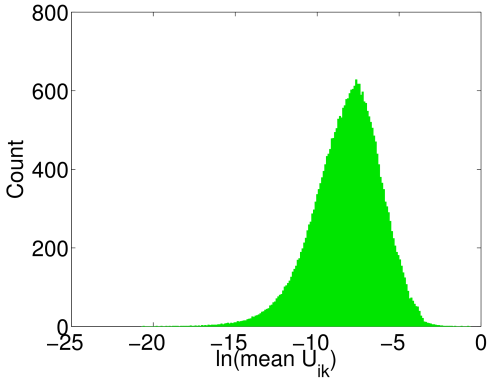
Gini coefficient of degree distribution

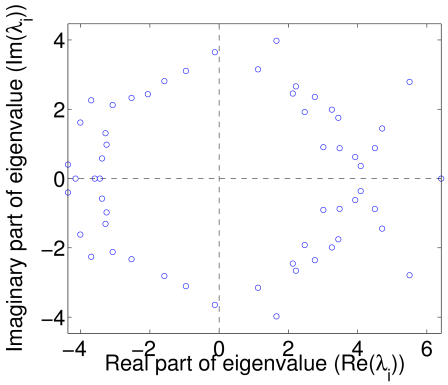


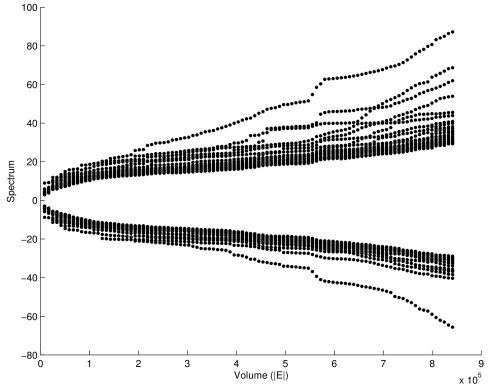
Time

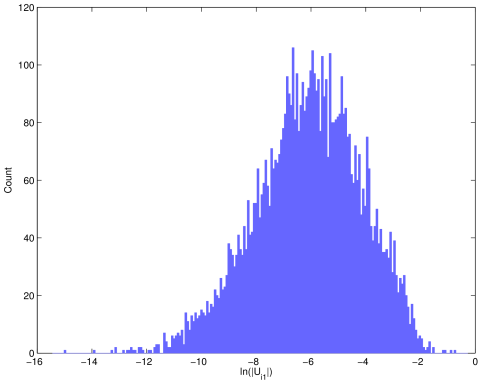
Spectral Graph Theory

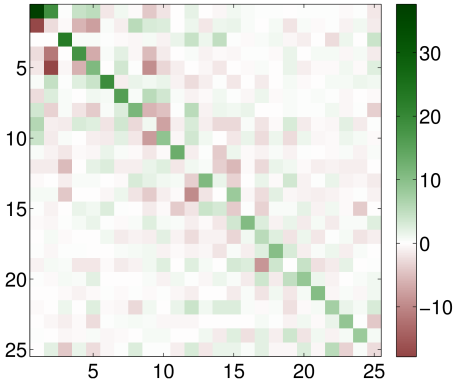












Thank You

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References

Lars Backstrom, Paolo Boldi, Marco Rosa, Johan Ugander and Sebastiano Vigna, Four Degrees of Separation, Proc. Web Science Conf. 2012.