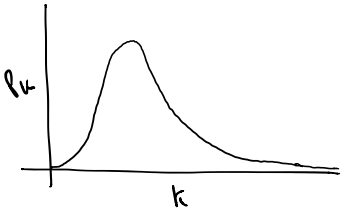
Degree distribution

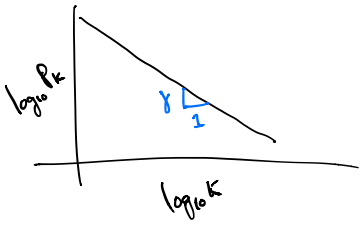
①

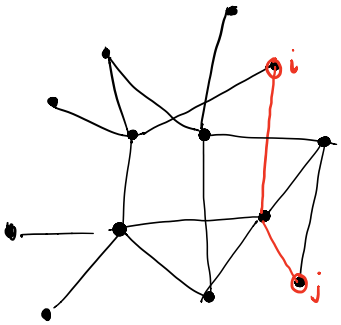
$$P_k = e^{-\langle k \rangle} \frac{\langle k \rangle^k}{k!}$$

$$P_k \propto k^{-\gamma}$$

"NetBeans" ← Java







2 d_{ij} path length between nodes i, j

3 $\langle d_{ij} \rangle$ average path length

4 d_{max} network diameter

5 * Betweenness centrality = # of shortest paths go across each node (Run "avg path len")

Degree centrality $= k_i$

D Edge betweenness (Gnat gephi)

D Recursive centrality (Klernberg)

β G Harmonic Closeness $d_{cl} = \left[\sum_{ij} d_{ij}^{-1} / \binom{n}{2} \right]^{-1}$ "avg distance"

G Eccentricity

7 G Eigenvector centrality

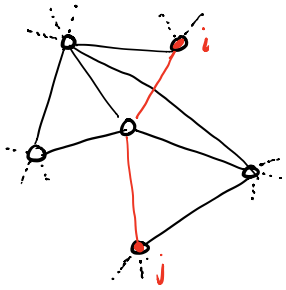
8 G # connected components

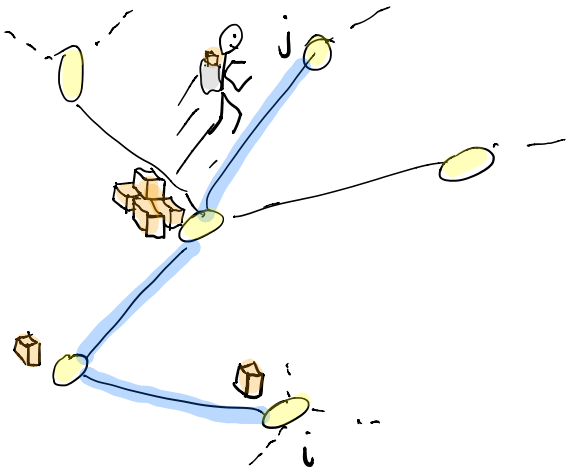
9 G Page rank

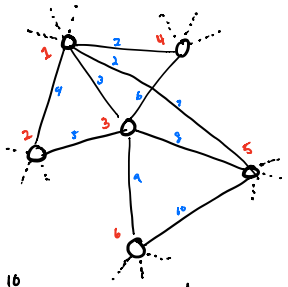
10 Modularity + Structure Detection

11-12 G Graph Density

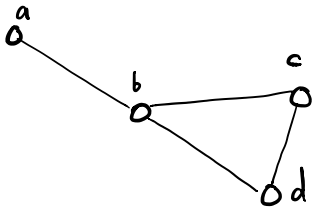
13 Motifs

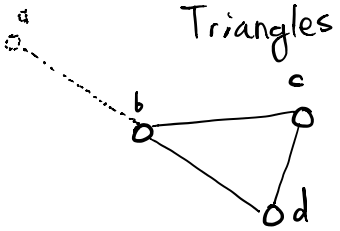






$\frac{10}{(6-1)!} = 10/5! = 1/12 \sim .08$





Triangles

Triples