

Erdos-Renyi random network

Data and Networks (Part II)

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Consider an Erdos-Renyi network with $N = 3000$ nodes, connected to each other with probability $p = 10^{-3}$.

1. What is the expected number of links, $\langle L \rangle$?
2. In which regime is the network?
3. Calculate the probability p_c so that the network is at the critical point.
4. Given the linking probability $p = 10^{-3}$, calculate the number of nodes N^{cr} so that the network has only one component.
5. For the network in (4), calculate the average degree $\langle k \rangle$ and the average distance between two randomly chosen nodes $\langle d \rangle$.
6. Calculate the degree distribution p_k of this network (approximate with a Poisson degree distribution)