



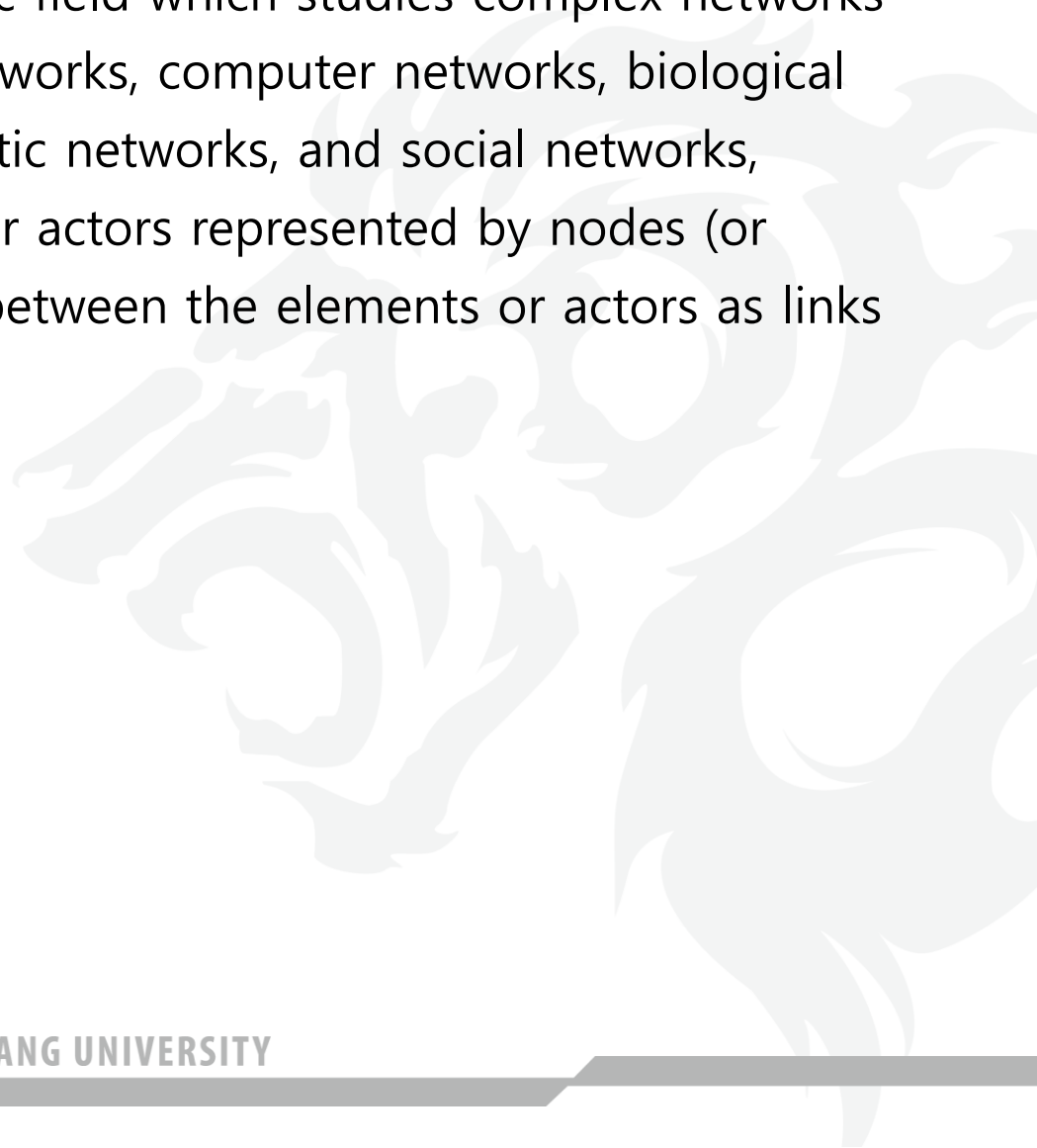
CSE2010 자료구조론

Week 9: Network Science

ICT융합학부 한진영

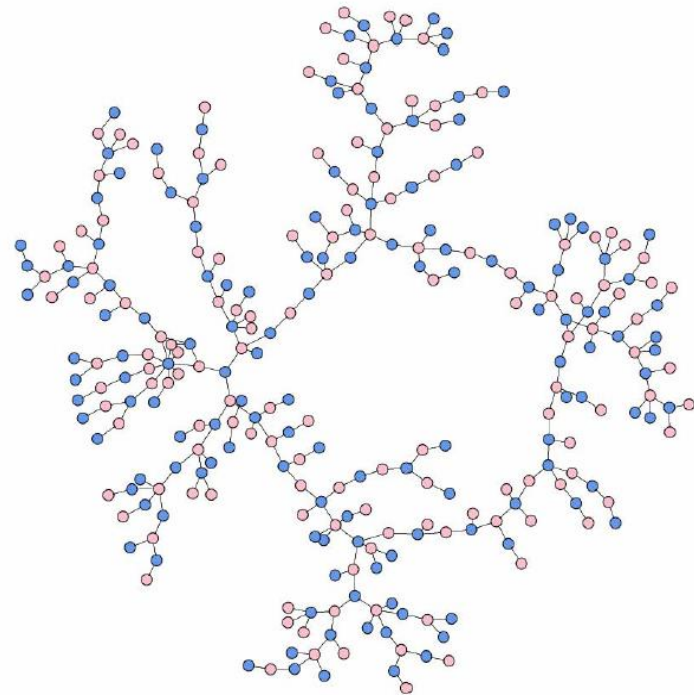
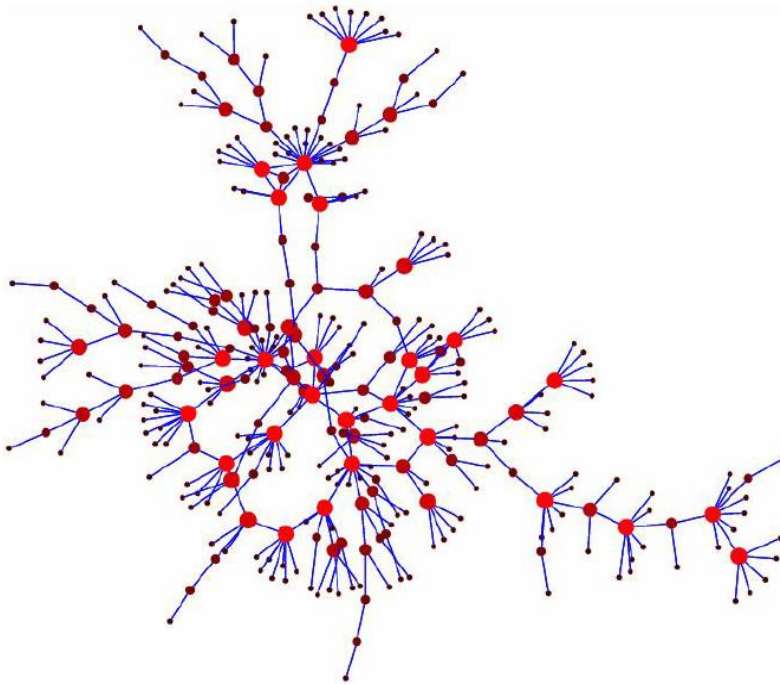
Network Science, Network Theory, Graph Theory

- Network science is an academic field which studies complex networks such as telecommunication networks, computer networks, biological networks, cognitive and semantic networks, and social networks, considering distinct elements or actors represented by nodes (or vertices) and the connections between the elements or actors as links (or edges).
 - Graph theory
 - Statistical mechanics
 - Data mining
 - Information visualization
 - Inference modeling
 - Social structure



Social Networks

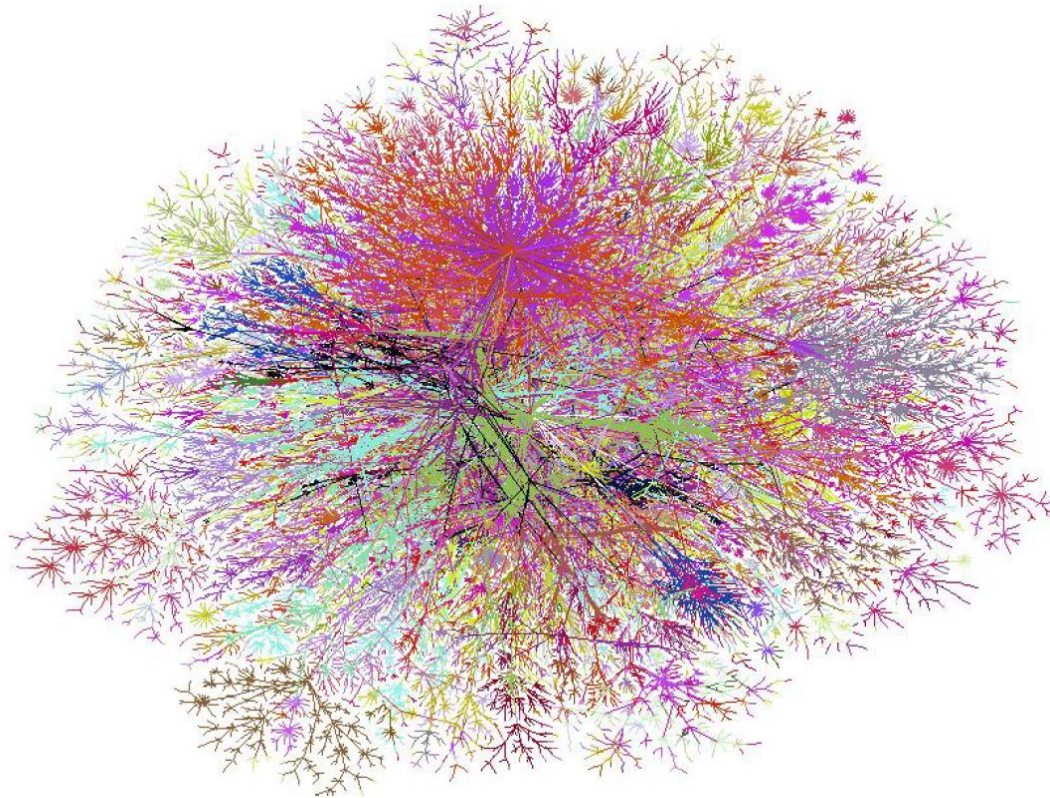
- Immunology; viral marketing; alliance; policy



M. E. J. Newman

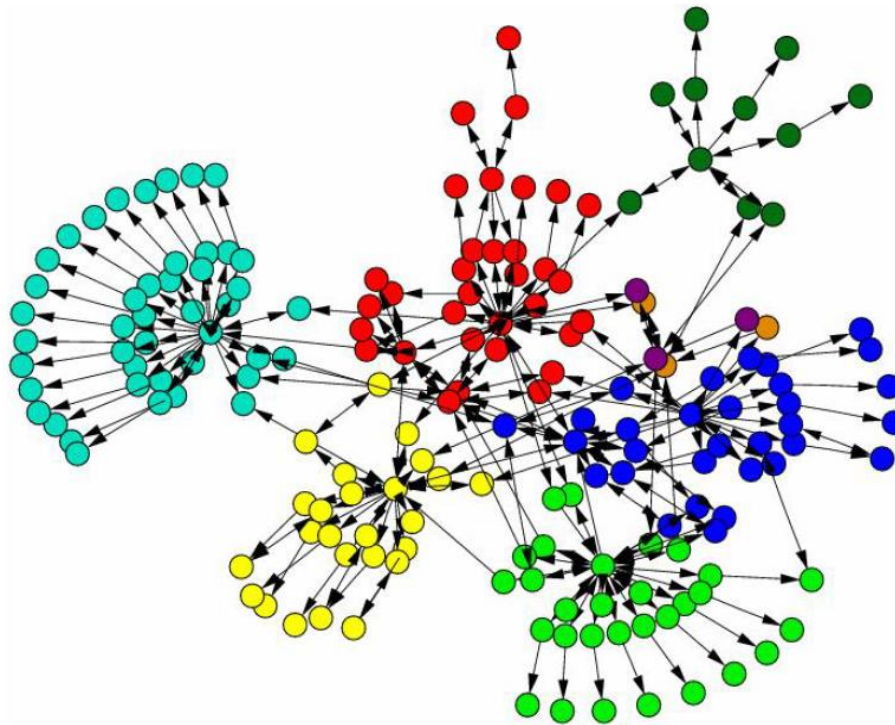
Internet

- Robustness to failure; optimizing future growth; testing protocols on sample topologies



H. Burch and B. Cheswick

- Web search/organization and growth; centralized vs. decentralized protocols; page rank



M. E. J. Newman

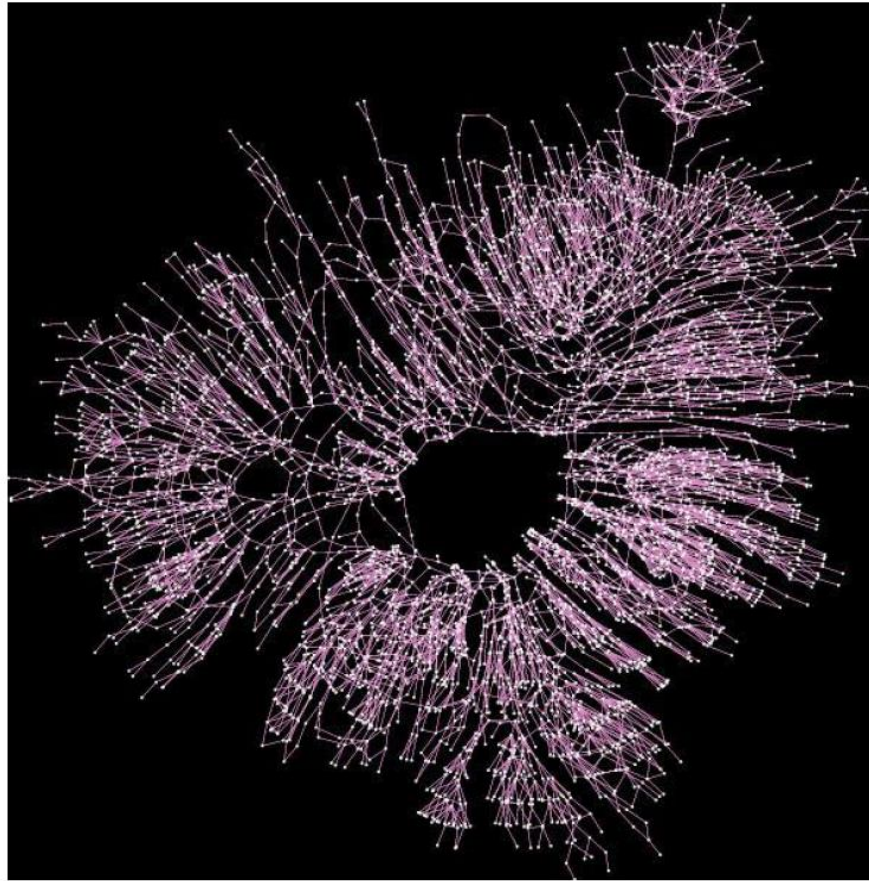
Airline Network

- Optimization; dynamic external demands



Power Grid

- Mitigating failure; distributed sources

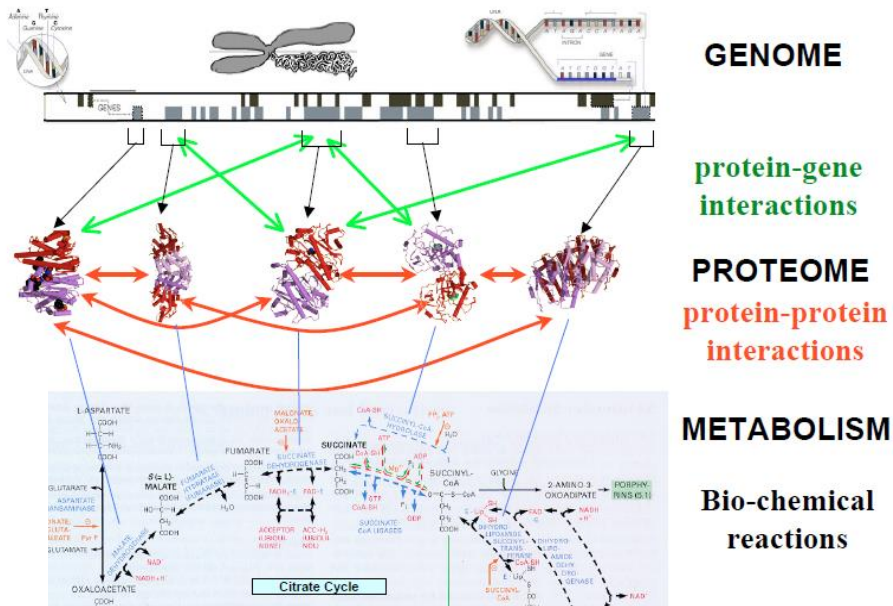


M. E. J. Newman

HANYANG UNIVERSITY

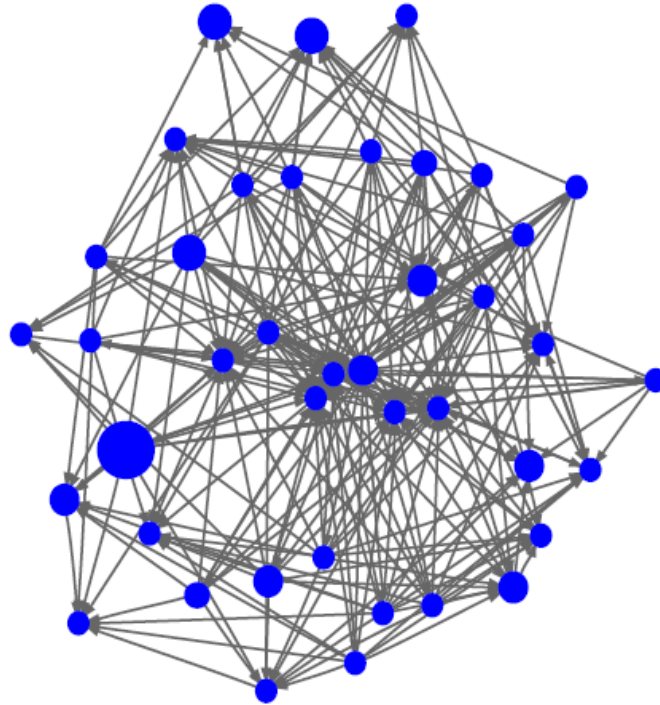
Biology

- Control mechanisms; drug design; gene therapy; biomarkers of disease; gene regulatory networks



Software Systems

- Function calls; email communication; socio-technical congruence



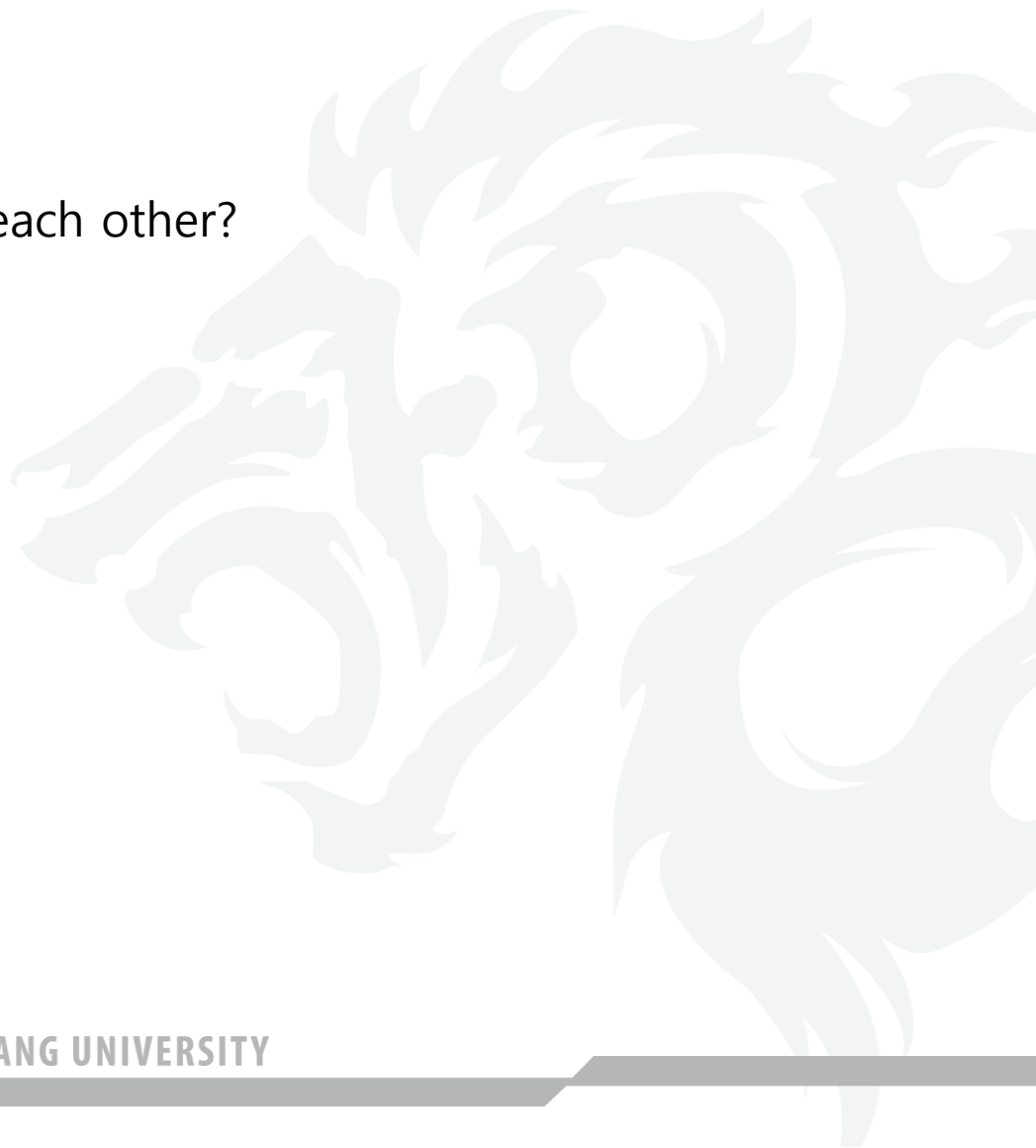
Bird, Devanbu, D'Souza, Filkov, Saul, Wen

COLLEGE 식표 | **표**



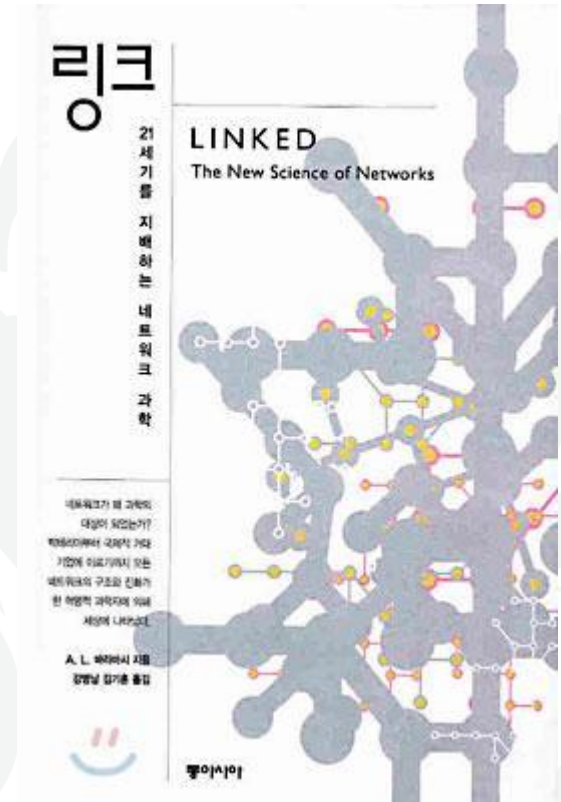
Typical Measures of Network Topology

- Degree distribution
- Clustering coefficient
 - Are my friends friends with each other?
- Diameter
- Path length
- Betweenness Centrality
- Assortative mixing (유유상종)
- ...



추천도서

- 링크(21세기를 지배하는 네트워크 과학)
 - 바라바시 지음



Week 9: Network Science

